

HEARING, SMELLING, FEELING – THE IMPACT OF ATMOSPHERIC CUES ON A PERSON'S EMOTIONAL STATE

- A dentist environment field study -

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Abstract

Due to the high level of anxiety in dental patients, dentist offices are constantly searching for ways to create a relaxed atmosphere for their patients, especially while waiting for their treatment. This field study aims at finding ways to positively impact patients' emotions, specifically anxiety in the waiting room of a dentist, with the help of atmospheric cues. Two pre-studies were conducted to choose atmospheric cues that have most potential in the waiting environment of the dentist; piano music and lavender scent. The main study was conducted at the dentist office "Wededent" in Bissendorf, Germany, during a research period of three weeks. Overall, 112 patients participated in the 2 (Music/No Music) x 2 (Scent/No Scent) experimental field study. Results showed that within this field study music had an impact on the avoidance level of patients by increasing it, as well as on the perceived control of patients, by decreasing it. Furthermore an interaction effect of music and scent on arousal showed that scent only has an impact in the absence of music. In conclusion, the findings of this study suggest that music does not have a direct impact on the emotions of patients in the waiting room of a dentist, while scent can have positive effects on the arousal of patients if used separately from music. Overall, these results show that atmospheric cues should be used sensibly and combining them should happen with caution in the dentist waiting room.

Keywords: Atmospheric Cues, Piano Music, Lavender Scent, Emotions, Anxiety

1. Introduction

Many adults suffer from the fear of the dentist, even if they know that most of the dental treatments are not painful. When asked about their feelings towards visiting the dentist, it is likely that many people will include words such as stress, fear, anxiety or nervousness. In this context, previous research has shown the association of fear and anxiety related to the dental visit and the positive effects that atmospheric cues can have in reducing them (Lehrner et al., 2000; Lehrner et al., 2005).

Fear of the dentist is a problem that affects many people (Beaton et al., 2013). Factors, such as the severity of the treatment, the distinctive and penetrating smell of the dentist, as well as the sound of the drill, that can be heard throughout the office, have impact on a patient's anxiety (Toet et al., 2010). Furthermore, the dental patients, in most part, undergo treatments because their health requires it, and have in those cases no real control over the situation. Nevertheless, dentist visits are crucial, since avoidance due to dental anxiety can have serious health consequences (Olszewska & Zarow, 2003; Toet et al., 2010). While dentists cannot change the treatments they have to perform, there are other ways how they can make their patients feel more comfortable and relaxed. Here, a crucial point in time to impact the patients' emotions are the first moments of their experience, namely entering the dentist office as well as the waiting room and the time they spend there (Cooper & Foster, 2008).

An aspect of the waiting experience that has grown in importance is the design of the waiting environment, and creating a positive and calming atmosphere within. Research shows, that an attractive and entertaining waiting environment can function as an extrinsic cue for customers' satisfaction and their perception of the service (Baker & Cameron, 1996; Pruyn & Smidts, 1998). Overall, physical design elements, atmospherics, decor elements and elements of distraction can be seen as part of the waiting environment (Bitner, 1992; Pruyn & Smidts, 1998) and have therefore the potential to influence waiting experiences.

Within this research, focus will be on the emotions, specifically pleasure, arousal and anxiety, that arise when visiting the dentist and on whether dentists can make use of atmospheric cues, such as music and scent, to ease negative emotions. An experimental field study has been conducted at the dentist office "Wededent" in Bissendorf, Germany.

While dentist offices like "Wededent" already took a lot of measures to make their patients more comfortable, such as comfortable seating and colourful designs, anxiety is still a common feeling that patients experience. Dentist offices, such as "Wededent", are therefore still searching for additional ways to ease their patients' worries and anxiety. The main goal of this research is hence to find ways to help dentist offices create a comfortable waiting environment for their patients that can help them reverse from a negative, anxious, state of mind to feeling safe, comfortable, relaxed, and thereby improve their overall emotional state.

This research investigates the impact that atmospherics can have on customers' emotions in relation to their emotional and behavioural responses towards their dentist visit while waiting. Within the field of atmospherics, a desired mood or atmosphere is created with the help of atmospheric cues, such as ambient elements. Specifically, focus will be on the atmospheric cues piano music and lavender scent as previous studies have found a positive impact of these atmospheric cues on emotions (Bitner, 1992; Grewal et al., 2003; Morrison et al., 2011; Puccinelli et al., 2009; Spangenberg et al., 1996; Turley & Milliman, 2000; Yalch & Spangenberg, 2000).

With the help of this research, dentist offices may gain insight into how to keep customers comfortable and relaxed while waiting, thus easing their anxiety and improving their overall dentist experience. However, the dentist experience is only one example of a situation where people feel anxiety and discomfort. The results of this study can therefore help in finding ways to ease anxiety and worries in other contexts within the service sector, including medical environments and other anxiety related settings, where easing peoples' emotional state would bring benefits.

The research question of this study can thus be summarized as follows:

How do the ambient cues, piano music and lavender scent, influence patients' emotional states (e.g. anxiety) and evaluations related to their dentist visit, specifically in the waiting area?

2. Theoretical Framework

Fear of the dentist, also called *dental anxiety* is a problem that affects approximately 36% of the population (Beaton et al., 2013). Therefore it is crucial for dental offices to find ways to help patients feel comfortable and relaxed while visiting for routine examinations or more elaborate procedures.

Generally, the experience of patients at a dental office starts with the waiting room and it is therefore a good way to set the overall tone for the dentist experience. When entering the dentist office or sitting in the waiting room, patients are confronted with many environmental cues, such as the sounds of dental equipments as well as the distinctive dentist smell.

In the following, different emotional states will be defined and explained, as well as connected to theories to build a foundation for this research. Furthermore, relevant atmospheric cues for this research, music and scent, will be described and their importance for this research will be stated.

2.1 Emotional States and Evaluations

Pleasure, Arousal and Dominance

It has been argued that emotional states, arising in any environment can be used to explain consequent customer behaviour, such as approach or avoidance. These emotional states are: *pleasure*, *arousal* and *dominance* (Ang et al., 1997; Bitner, 1992; Mehrabian & Russel, 1974). *Pleasure* refers to how pleasant a waiting or service experience is, *arousal* refers to how stimulating it is, while *dominance* describes the amount of control that a customer feels (Ang, et al., 1997; El-Bachir, 2014; Turley & Milliman, 2000).

Pleasure and arousal are common concepts in defining waiting experiences, within empirical research. While pleasure and arousal can impact behavioural intentions independently of each other, there can also be a conditional interaction between pleasure and arousal in determining behavioural intensions, specifically approach and avoidance behaviours (Donovan & Rossiter, 1982; Hines & Mehrabian, 1979; Morrison et al., 2009; Van Kenhove & Desrumaux, 1997). For this interaction the PAD (pleasure-arousal-dominance) model by

Mehrabian & Russel specified that "In a pleasant environment, the greater the arousal, the greater the approach behaviour. In an unpleasant environment, the higher the arousal, the greater the avoidance behaviour" (Donovan & Rossiter, 1982, p. 39).

While pleasure and arousal are common emotions used in research, the concept of dominance was found not to be applicable to all of research settings. Therefore, many researchers have opted to leave out dominance from the number of emotional states within their research (Ang, et al., 1997; El-Bachir; Van Kenhove & Desrumaux, 1997). Yet, for some research surroundings, for instance the dentist environment, where patients experience feelings of pressure and submissiveness, the feeling of control can be an important aspect. For this reason it was decided to include the emotional state of dominance, along with pleasure and arousal, in this field study.

Approach and Avoidance Behaviour

As a consequence to the previously mentioned emotional states, customers can create two kinds of behaviour: *approach* or *avoidance*. Generally, it can be understood that *approach behaviour* is the result of a positive evaluation of the experience, while avoidance behaviour can be seen as the result of a negative evaluation (Bitner, 1992; Dubé & Morin, 2001; El-Bachir, 2014; Mehrabian & Russell, 1974; Spangenberg et al., 1996; Turley & Milliman, 2000).

The approach/avoidance behaviour can be explained on the basis of the Stimulus-Organism-Response Paradigm (SOR) model. The model assumes the environment as stimulus (S) that has a direct impact on customer evaluations (O) by giving environmental and atmospheric cues. As a result of these evaluations, customers will then act upon their approach or avoidance impulse as response (R) (Bitner, 1992; Dubé & Morin, 2001; El-Bachir, 2014; Mehrabian & Russell, 1974; Spangenberg et al., 1996; Turley & Milliman, 2000; Yalch & Spangenberg, 2000). In this study music and scent will function as the stimuli, customer evaluations will be represented by emotional dimensions (pleasure, arousal and dominance), while the responses will be represented by approach and avoidance behaviours.

2.2 Atmospherics

Atmospherics is a research area that has gained a lot of interest since the 1970s, yet many aspects of this field of research have not been investigated thoroughly up to this point. Generally atmospherics is used to create a desired mood or atmosphere, with the help of atmospheric cues, such as music and scent. The importance of atmospherics can be stressed by the fact that it can add to the overall product or service experience of people. This suggests a necessary congruency between the product or service itself and the atmospherics surrounding it (Kotler, 1973-1974; Paunksnienè & Banyté, 2012).

Kotler (1973-1974) defined atmospherics as "the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability" (p.50). In addition to the goal of influencing customers' emotions in order to achieve a purchase, atmospherics can be used as a tool in designing positive environments where people have a positive experience. Consequently, atmospherics can be a helpful tool in designing waiting environments, especially in the medical sector, that help ease the anxiety of patients and make the experience more pleasurable.

Atmospheric cues can be divided into three categories: *ambient elements, design elements,* and *social elements* (Baker & Cameron, 1996). For the purpose of this research, at a dentist office waiting room, it was decided to focus on two factors of the *ambient elements* that have already shown to be effective in a variety of research settings: scent and music. These atmospheric factors have shown positive or calming effects on participants in previous studies and are therefore suitable for this study that aims at easing dental patients' anxiety and improving the overall dentist experience (Baker & Cameron, 1996; Bitner, 1992; Grewal et al., 2003; Kotler, 1973-1974; Puccinelli et al., 2009; Pruyn & Smidts, 1998; Spangenberg et al., 1996; Turley & Milliman, 2000; Yalch & Spangenberg, 2000). While previous research has already shown the effectiveness of music and scent, another reason to use these two atmospheric cues is the ease of use and application, which is important in a dentist office in order not to disturb the everyday processes of the service provider.

For this research, it was decided to use a combination of more than one atmospheric cue, since research in other settings showed this to be effective in creating a positive service and waiting environment (El-Bachir, 2014). Yet, even in the retail sector atmospheric cues have

mostly been investigated individually in previous research, and only little research was conducted, in the retail or other sectors, that combines music and scent in relation to waiting experiences. Since most research in the area of atmospheric cues has been conducted in the retail sector, applying the logic of these studies to the medical sector will be interesting and may result in many possibilities for medical environments, such as the dentist office.

2.2.1 Ambient Element: Scent

The atmosphere of any environment, such as a waiting room, is widely influenced by sensory cues. One of the ambient elements chosen for this research is olfactory cues that patients experience. The use of scent can especially be useful in medical environments, such as the dentist office, since it aims at masking unpleasant smells, such as the distinctive dentist smell. Research has shown that scent is a useful tool to influence customer behaviour, specifically the perceived time that people spend in an environment and their emotional state (Bitner, 1992; Spangenberg et al., 1996; Turley & Milliman, 2000). Scent has previously shown to have calming effects on the emotions of people and is therefore suitable as an element in this research that is being conducted at a dentist waiting room.

Nevertheless, previous research results on the effect of scent vary. For example, Morrin et al. (2010) did not find any significant effect of scent on the time perception of customers and their emotional state. A reason for this could, however, be that the effect of scent differs for various contexts and the susceptibility of customers. Yet, Gulas and Bloch (1995) showed that scent has an impact on customers and their perception of the environment, whether the scent is perceived as pleasant or not. This suggests that, depending on the research surroundings, adding scent to an environment can have a positive effect on the experience and emotions of patients and reduce their perceived waiting time.

When using scent, ambient scent is expected to be most useful in a waiting room, since it is not localized but spreads in the room and has an effect on the environment as a whole (Spangenberg et al., 1996). However, it is important to confront patients with a pleasant intensity of scent, in order to not overwhelm them but still have a noticeable effect. For this

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research the scent of lavender was chosen on basis of previous findings concerning lavender scent as well as a pre-study that was conducted.

Lehrner et al. (2005) examined the effect of orange and lavender scent in the waiting room of a dentist, with regard to anxiety, mood, alertness and calmness. Their findings show that patients who were confronted with the scent of lavender or orange had lower levels of anxiety while experiencing higher levels of calmness. Another study by Zabirunnisa et al. (2014) supported the results by Lehrner et al. by testing the effects of lavender essential oil on the dental anxiety levels of patients. Zabirunnisa et al. placed candle warmers with lavender essential oil or water in the waiting area of five dental clinics. After waiting for 15 minutes patients were asked to indicate their anxiety scores. Participants within the lavender group exhibited significantly lower levels of anxiety compared to the control group. A similar study was conducted by Kritsdima et al., (2010), which showed the effect of lavender scent on the current anxiety of patients in the waiting room at a dentist office.

Since lavender scent has previously shown a calming effect and an effect on a person's overall well-being it is expected to reach similar results in the context of this field experiment at the dentist office "Wededent" (Kritsidima et al., 2010; Lehrner et al., 2005). However, a pre-study was conducted in order to confirm the effectiveness of lavender that was shown in previous studies. Therefore, participant perceptions of three calming scents were compared in order to find the scent best suited for this study. Results for this study are depicted in Study one. The theoretical foundations lead to the following hypothesis for the main research within this study.

H1: The use of lavender scent in the waiting environment of a dentist office has a positive impact on patients' emotional state, by easing their anxiety level and positively influencing emotional dimensions, as opposed to no scent being present.

2.2.1 Ambient Element: Music

The second sensory cue that was chosen to be used in this research is an auditory cue. Music was chosen, since sounds at a dentist, such as the sound of the drill, are an important part of the waiting experience and are generally heard throughout the entire dentist office. If dentists manage to whitewash the sounds of the dentist drill and other equipment with the sound of music, it can go a long way towards their patients' comfortability. It can be assumed that if people do not hear the dentist equipment, they are more likely to focus on something pleasant while waiting for their dentist treatment.

Music is one of the atmospheric cues that has been studied most extensively, yet mostly within retail sectors. From research it was shown that music has an impact on time perception, buying behaviour of customers, and customers' emotions, as well as their heart rate. This leads to the conclusion, that music can also have an impact within an emotional and stressful environment, such as the dentist office and other medical sectors. Overall, results on the impact of music vary, since they are depending on music volumes, genres, and preferences of the target audience. Nevertheless, a common denominator in these studies is that music should be pleasant and suit the target group and atmosphere of the environment (Baker & Cameron, 1996; Dubé & Morin, 2001; Grewal et al., 2003; Kellaris & Kent, 1994; Puccinelli et al., 2009; Turley & Milliman, 2000; Yalch & Spangenberg, 2000). The logic behind this conclusion is that people will only enjoy music if they experience some kind of liking towards it.

Overall, research showed that slow and soft music has a positive and calming impact on customer responses, such as emotions and their time perception (Grewal et al., 2003; Puccinelli et al., 2009; Tansik & Routhieaux, 1997; Yalch & Spangenberg, 2000). Although most of this research was conducted within the retail sector, similar effects could be found in studies that were conducted within the medical sector.

Tansik & Routhieaux (1997) conducted research on the impact that music can have within the waiting room of a hospital on visitors waiting for patients. For this study, slow and soft music, including mostly classical pieces, was tested with regard to stress measures (anxiety, nervousness and tension), as well as relaxation measures (ease and calmness). The results showed that the use of slow and soft music can significantly reduce stress and increase calmness within the waiting room of a hospital.

Another study by Dijkstra (2009) expands the outcomes of Tansik & Routhieux by testing the effects of classical music against popular music within the waiting room of a dentist. Within this research, Dijkstra focused on measures of dental anxiety, stress and environmental appraisal, and her research concluded that classical music can reduce stress and anxiety, as well as environmental appraisal. Furthermore, Dijkstra determined that the use of music is most beneficial within the waiting room of a dentist, in contrast to other situations within the dentist experience, such as the treatment room.

However, to further define the genre of music best suitable for this experimental field study, a pre-study was conducted, testing three genres of music (classical, piano and current), all with the characteristics of being slow and soft, against each other. The results of the prestudy are depicted in study one and led to piano music being used within the field study at the dentist office "Wededent".

The hypothesis that was drawn up for the main research within this study is presented below:

H2: The use of soft piano music in the waiting environment of a dentist office has a positive impact on patients' emotional state, by easing their anxiety level and positively influencing emotional dimensions, as opposed to no music being present.

2.2.1 Interaction of Scent and Music

While research showed that each of the atmospheric cues, scent and music, has an impact on emotions, it is also expected that the atmospheric cues interact when used simultaneously. Most of the previous research on atmospheric cues has tested only one type of atmospheric cue at a time, while only few researchers combined multiple cues within their research. Previous research that was conducted in retail settings showed positive interaction effects of music and scent on emotions (Michon & Chebat; 2004; Morrison et al., 2011). While the research setting in these studies is different, the more current research study conducted by Fenko & Loock (2014) used a more similar research setting to this study. The study by Fenko & Loock (2004) was conducted at a plastic surgeon and focused on the effect of nature sounds and lavender scent on anxiety of patients, as well as on the evaluation of the waiting environment and the perceived waiting time. Results indicated that these two atmospheric cues are effective in the research surrounding of the waiting room at a plastic surgeon but only if used separately. Results showed that both nature sounds and lavender smell can significantly reduce the anxiety level of patients, but only if it was the only atmospheric cue tested within that condition. When used simultaneously, the atmospheric cues did not manage to significantly lower the level of anxiety compared to the control condition, where no atmospheric cues were present. This might suggest that confronting patients with too many atmospheric cues can lead to overloading their sensations, thus negating any desired effects. Furthermore, no effects were found for the evaluation of the waiting environment and time perception within this study. Hence, this research indicated that within plastic surgeon waiting rooms relaxing scent or music can reduce anxiety if used separately but it does not impact patient evaluations.

Overall research on interaction effects of music and scent in a medical environment is scarce and further research is needed to evaluate potential interaction effects for different medical settings. A unique aspect of the dentist environment, compared to other medical environments, is the distinctive sound and smell that patients are confronted with. Since the atmospheric cues, music and scent, can mask these environmental aspects to some extent, it can be expected that the combination of them within the dentist waiting environment can have a positive impact on patients' anxiety and emotional dimensions.

Research has shown that when combining atmospheric cues, it is important that they follow the concept of congruency (Morrison et al., 2011; Oakes & North, 2008). In this context, soft piano music and lavender scent both have shown a calming effect and are assumed to be congruent. Therefore, the following hypothesis was formulated in addition to the two already established hypotheses.

H3: The combination of soft piano music and lavender scent in the waiting environment of a dentist has a positive impact on patients' anxiety and emotional state.

3. Selection of Atmospheric cues

3.1 Scent

The overall goal of this pre-study was to validate and select a scent that is appropriate for this study and suggests the desired effect for a dentist waiting room, being pleasant and soothing. By being pleasant and soothing, it can be assumed that the scent has a positive effect on the emotional state of patients, specifically their anxiety, based on previous research by Fenko & Loock (2014).

Method

In order to find a scent that is perceived as both pleasant and soothing in the context of the waiting room at a dentist, three scents were chosen to be included in a pre-study: Lavender, Sandalwood and Vanilla. Each of these scents was shown to be perceived as pleasant and soothing in previous studies (Lehrner et al., 2005; Sheen & Stevens, 2001; Warrenburg, 2005). Since scent is a very personal and subjective sense, people perceive it differently, connecting scents with a variety of emotions and memories. Therefore the results of this pre-study were expected to be spread. Yet, the study was aimed at finding a scent that is perceived as pleasant and soothing by most people.

For this pre-study, 16 people (n=16) between the age of 18 and 62 agreed to participate. The participants were asked to smell each of the scents and then answer a short questionnaire. The questionnaire included two questions for each scent, asking participants how pleasant and soothing they find the scent. The questions were asked in form of a 5-point Likert-scale. The three scents, in the form of essential oils, were each placed in a small plastic tin on some cotton. The participants were given a few minutes time between each scent to neutralize their sense of smell.

Since smell is an important part of a dentist experience, it was decided to tell participants about the context of the research. Generally, at dentists, one can smell the distinctive dentist smell that people might connect with discomfort, pain and anxiety. Thus, for this prestudy, participants were asked to imagine being at the dentist, while filling in the questions.

Results

For the pre-study a simple analysis was conducted. Therefore, the results were analyzed on basis of the mean scores for pleasantness and soothingness for each of the three scents. The results (based on a 5-point Likert scale) are depicted in Figure 1.



Figure 1: Mean scores for scent

Overall, it was noticeable that perceptions for pleasantness and soothingness for each scent, as well as within each scent, differ. The scent that scored the highest mean scores with 3.56 for pleasantness and 3.37 for soothingness was lavender. Vanilla reached mean scores of 3.25 for pleasantness and 3.00 for soothingness and is therefore the second most popular scent. The third scent, sandalwood reached mean scores of 2.94 for pleasantness and 2.81 for soothingness. Since Sandalwood is a very unique scent this was to be expected, yet previous researched has shown Sandalwood to be very soothing (Sheen & Stevens, 2001; Wallenius, 2014).

On basis of this pre-study Lavender scent was chosen to be used in this field study at a dentist waiting room.

3.2 Music

The second pre-study aimed at defining music that is both pleasant and soothing and therefore suitable for research in the waiting room of a dentist.

Method

To find a suitable music for the main study, a simple pre-study was conducted, which included three types of music: Piano music, classical music and calm music from the current billboard charts (modern). The three types of music were selected, since they have previously shown a calming effect on the researcher involved in this study. A similar experience with the music chosen might therefore be applied to other people. For each type of music one song was chosen representatively. For the category piano music "Love me" by Yiruma was chosen, while Mozart's "Violin Concerto No. 5 in A major" represented the classical category. The third category, calm music from the current billboard charts, included "Calm after the Storm" by the Common Linnets.

The pre-study was conducted in a Marketing Communication class at the University of Twente. Overall, 24 students (n=24) participated in the pre-study for music. The participants each received a short questionnaire, asking them two questions about each song, how pleasant and how soothing they rate the song. The students then had to answer on a 5-point Likert-scale, after listening to each song for about one minute.

Results

The analysis for this pre-study was conducted on basis of the mean scores for pleasantness and soothingness for each type of music. The results (based on a 5-point Likert scale) are shown in Figure 2.



Figure 2: Mean scores for music

Overall, it can be concluded that all types of music were perceived as somewhat pleasant or soothing. The analysis showed that piano music was clearly perceived as most pleasant and soothing, reaching mean scores of 4.17 for pleasantness and 4.25 for soothingness. The second most suitable music for this study was classical music with a mean score of 3.75 for pleasantness and 4.00 for soothingness. The least suitable type of music within this prestudy was current music with a mean score of 4.00 for pleasantness and a mean score of 3.54 for soothingness.

Based on the results of this pre-study and previous research, piano music was chosen to be used in this study at the waiting room in a dentist office.

4. Research Design and Methods

4.1 Research Model

On basis of the theoretical framework, the following research model was developed. The model includes two independent variables, representing the atmospheric cues, as well as the dependent variable, representing customer responses after waiting, including varying aspects of responses. These *patient responses* were chosen, to show a thorough combination of emotional and wait related responses, with relation to the theoretical framework. The measures for the dependent variable can be found in Figure 3.



Figure 3: Research design

4.2 Experimental Design

In order to explore the impact of the atmospheric cues individually as well as combined, a 2 (Music/No Music) x 2 (Scent/No Scent) experimental design was chosen. In order to thoroughly investigate this topic and the underlying processes, an experimental field study was conducted at the dentist office "Wededent" in Bissendorf, Germany.

Location for the Experimental Field Study

The location that was chosen for this study is a dentist office in Bissendorf, Germany, close to Hannover and with a great commuting area.

The office has a modern, friendly and welcoming atmosphere, with a young team and a well applied design strategy. Yet, the dentist office is always looking for more ways to help their patients feel more comfortable. The study was conducted in close cooperation with the employees of the dentist office, in order not to disturb working life at the office and the routine of dentist patients.

4.3 Method

4.3.1 Procedure

Upon entering the dentist office, patients were welcomed by an employee of "Wededent" and asked to participate in a study concerning emotions at the dentist office. Yet, further details of the study were omitted, in order not to influence the results of this study. The participants were then informed about the anonymity and the voluntariness of the study. Upon agreement to participate, they were then directed to the waiting area and given a questionnaire to fill in, including written agreement to participate and permission for their data to be used.

The participants were given sufficient time to fill in the questionnaire. The questionnaire was split in two parts, a general part and a part that focused on emotions. The first part included, next to demographic matters, questions about regularity of dentist visits, previous visits to this dentist as well as the treatment the patient was about to receive. These questions were included in order to check a possible impact on emotions. The second part of the questionnaire included questions about emotions, specifically the different measures within

the dependent variable. The questionnaire was designed to take between five and seven minutes, in order not to overwhelm patients in an already potentially stressful situation and to ensure the timing within the dentist office.

Upon having finished, participants were asked to hand the questionnaire to the researcher or one of the employees, where the questionnaire was numbered, labelled and assigned to the correct research condition. The data of this research was then entered into SPSS for further analysis and checked by two researchers independently.

Within the three weeks that the study was conducted, two atmospheric cues used in this study were combined in sequence in the waiting room of the dentist office. This resulted in four conditions, presented in Table 4.1 below. The music used within the conditions was played via the central audio system of the dentist office and was therefore noticeable at the same level upon entering, as well as in the waiting room. The music included approximately two hours of songs that were repeated throughout the day. The volume of the music was tested and approved by several employees and the researcher, in order to reach a pleasant level.

Since scent has a tendency to linger, the two conditions that included scent were tested last. To subtlety scent the waiting room, as well as the reception, Lavender essential oil was used. The oil was combined with water in a ceramic essential oil burner. Candles, oil and water were regularly checked by the researcher and refilled on a regular base to ensure a constant level of scent.

Each condition was adapted within the waiting room for two to three days, until a minimum of 25 participants for each condition was reached, but depending on a suitable timing to change conditions within the dentist office. The conditions were tested in the same order as listed in Table 4.1.

	No Music	Music
		Widsic
No Coort	Condition 1:	Condition 2:
No Scent	Control	Music
Scont	Condition 3:	Condition 4:
Stent	Scent	Scent + Music

Research conditions Field Study "Wededent"

4.3.2 Participants

For the sampling in this field experiment, the researcher relied on the appointment scheduling of the dentist office "Wededent". The resulting sample was therefore a convenient sample within the research period from the 23rd of June 2015 until the 14th of July 2015. Within this time period, all patients above the age of 18 were asked to participate in this study, not depending on the kind of treatment they were receiving. Yet, it has been ensured by employees and the researcher that patients could only participate in this study once, even though some patients visited the dentist multiple times during the research period.

Sample characteristics

Overall, the sample consists of 112 people within the age of 19 and 80. Within the complete sample, this equals a median age of 43.71 years. Furthermore, it is to be stated that the distribution of gender is not equal within the sample. While only 43 men participated in the study, equalling 38% of the sample, 69 women participated, equalling 62%.

Complete sample n=112				
Age:	M= 43,71	SD= 11,333	_	
Gender:	Male= 43	Female= 69		
			-	

Table 4.2Overview of the distribution of Gender and Age for the complete sample

Next to the characteristics of the sample as a whole, it is important to keep in mind that, within this field experiment, the sample has been split in four conditions. Table 4.3 shows the distribution of age and gender among the four conditions. It can be seen that in conditions one, three and four the distribution between men and women is nearly the same (40% Male, 60% Female), while the ratio in condition two is slightly different, yet not statistically significantly different (33% Male, 67% Female). Furthermore, the median ages of the four conditions differ.

Condition 1: Control n=35		Condition 2: Music n=27			
Age:	M= 45,29	SD= 10,867	Age:	M= 44,30	SD= 9,619
Gender:	Male= 14 = 40%	Female= 21 = 60%	Gender:	Male= 9 = 33%	Female= 18 = 67%

Condition 3: Scent n=25			Condition 4: Music + Scent n=25		
Age:	M= 42,68	SD= 14,05	Age:	M= 41,88	SD= 10,978
Gender:	Male= 10 = 40%	Female= 15 = 60%	Gender:	Male= 10 = 40%	Female= 15 = 60%

Table 4.3Direct comparison of the distribution of Gender and Age among the four experimentalconditions.

From looking at the general questions that have been asked within the questionnaire and answered by the participants in this study the underlying processes of the dentist visit become clearer. From the descriptive questions, shown in Table 4.4, it can be seen, that most participants in this study visit a dentist occasionally or frequently, which leads to the assumption that their teeth are regularly checked and maintained properly. Furthermore, it can be seen that most participants have visited "Wededent" before and are familiar with the office and its employees. In addition to this, the participants' opinion about "Wededent" was shown and it was established that patients of "Wededent" are overall satisfied with the dental office, while most participants would rate "Wededent" as better than other dental offices.

Complete Sample N=112						
	Very rarely/ Much better	Rarely/ Somewhat better	Occasionally/ The same	Frequently/ Somewhat worse	Very frequently/ Much worse	NA
Do you visit a dentist regularly?	2.7%	5.4%	40.2%	44.6%	7.1%	-
Have you visited this dentist before?	4.5%	3.6%	15.2%	58.9%	17.8%	-
In comparison to other dentists, this office is:	53.6%	25.9%	15.2%	-	-	5.3

Table 4.4

Visit regularity, previous visits and comparison to other dentists among the sample

4.4 Measures

Within this research, the positive influence of atmospheric cues on the emotions that arise during a dentist experience of patients are investigated. Since an important moment in a dentist experience is entering the office and the waiting area, the atmospheric cues, soft piano music and lavender scent, function as independent variables in these moments. The independent variables were chosen on basis of previous research and a pre-study, showing calming effects as well as a positive impact on emotions. In addition to that, the dependent variable will consist of the different aspects of *patient responses*.

Dependent Variable

The dependent variable was divided into different measures that all represent *patient responses* in the waiting room of the dentist "Wededent".

The measure emotional dimensions was split into the items for pleasure, arousal and dominance.

Pleasure was measured with a 5-point scale and three items, rating current emotions: *Annoyed – Pleased, Unhappy – Happy and Despairing – Hopeful.* The reliability check showed a Cronbach's Alpha of .79.

Arousal was measured on a 5-point scale with three items, rating current emotions: *Relaxed* – *Stimulated* and *Dull* – *Jittery* and *Sleepy* – *Wide awake*. Due to low internal reliability scores, the third item (*Sleepy* – *Wide awake*) was excluded from the analysis. A reliability check for the two-item scale showed a Pearson Correlation of .48. The questions and scales for the measures of *pleasure* and *arousal* were adapted from Mehrabian & Russel (1974) and have shown to be effective in previous studies.

Dominance was tested with the measure *perceived control* on a 5-point Likert-Scale with two items, ranging from "strongly disagree" to "strongly agree": *I have the feeling that I am in control of this dentist experience* and *I feel like the dentist and everyone else involved attends to me and my needs.* The reliability check for this measure showed a Peason Correlation of .49. The questions and scales for this measure were based on the study by Hui & Bateson (1991). Within this study it was opted to use the measure *perceived control*, since it better suits the dentist waiting environment, while still representing aspects of dominance and submissiveness.

Approach and avoidance behaviour were each tested on a 5-point Likert-scale, ranging from "strongly disagree" to "strongly agree", with two items. Approach behaviour included the items: I enjoy waiting in this room and This is a place where I feel friendly and talkative to a stranger who happens to be next to me. The Pearson Correlation showed a moderate inter-item correlation of .35.

For the items included: *I would avoid having to return to this office* and *This is a place where I try to avoid people and avoid talking to them.* The reliability check showed a moderate Pearson Correlation of .31. The questions and scales for the measures of *approach* and *avoidance behaviour* were adapted from Mehrabian & Russel (1974) and have shown to be effective in previous studies.

Appraisal of the wait was measured with a 5-point scale and 5 items: Long – Short, Inadequate – Adequate, Unacceptable – Acceptable, Stressful – Calming and Annoying – Pleasant. The reliability check showed a Cronbach's Alpha of .85. The measures of Appraisal of the wait, as well as perceived waiting time were based on the study by Pruyn & Smits (1998).

In addition to the multiple item measures, *perceived waiting time*, *anxiety level*, and *pain level* were measured. For *perceived waiting time*, participants were asked to estimate the time they feel they have just waited in minutes. For *anxiety* a 5-point scale was used with one item, ranging from *Relaxed* to *So anxious that I sometimes beak out in sweat or almost feel physically sick*. This scale was adapted from the Corah's Dental Anxiety Scale (DAS) (Corah, 1969).

For *pain level*, participants were asked to indicate their current pain level with a vertical line on a visual analogue scale (VAS-scale). The VAS-scale measures characteristics or attitudes that are not easily measured but rather subjective. For a VAS-scale, participants mark their level of agreement on a horizontal axis. The position of the agreement is then measured on the axis in millimetres and can henceforth be analyzed.

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5. **Results**

5.1 Hypothesis Tests

In order to gain a first understanding of the results and potential effects within the dataset of the study, a Multivariate Analysis of Variance was conducted. The results from this analysis showed no statistically significant results for the independent variables, music and scent, on any of the measures of the dependent variable at a significance level of α =.10. The test statistics are displayed in Table 5.1.

Wilks' lambda	F-value	p-value
Music	.662	.74
Scent	.953	.49
Music x Scent	.760	.65

 Table 5.1
 Multivariate Analysis of Variance Results for the measures of Patient Responses (N=112).

Note. **marginally significant p<.10

To gain more insight into the different measures of the dependent variable *patient responses* and possible effects that *music* and *scent* have on them, a Univariate Analysis of Variance was conducted for each of the measures independently. By doing so, the effects of music and scent were tested for individually, as well as the interaction effects of *music* and *scent*. The results of the analyses are summarized in Table 5.2.

	F-value	df	p-value	η²
Pleasure				
Music	.157	1	.69	.002
Scent	1.585	1	.21	.020
Music x Scent	2.029	1	.16	.026
Arousal				
Music	.310	1	.58	.004
Scent	.565	1	.45	.007
Music x Scent	3.944	1	.05**	.049
Perceived control				
Music	2.925	1	.09**	.027
Scent	.360	1	.55	.003
Music x Scent	1.393	1	.24	.013
Approach behaviour				
Music	.029	1	.87	.000
Scent	.103	1	.75	.001
Music x Scent	.029	1	.87	.000
Avoidance behaviour				
Music	3.671	1	.06**	.034
Scent	.006	1	.94	.000
Music x Scent	1.200	1	.28	.011
Anxiety				
Music	.003	1	.96	.000
Scent	.000	1	.99	.000
Music x Scent	1.751	1	.19	.016
Perceived waiting time				
Music	.374	1	.54	.004
Scent	1.632	1	.20	.016
Music x Scent	.794	1	.38	.008
Appraisal of the wait				
Music	.162	1	.69	.002
Scent	.004	1	.95	.000
Music x Scent	.190	1	.66	.003
Pain Level				
	2.461	1	.12	.023
Scent Music v Scent	2.436	1	.12	.022
SUCHT WINSIE & SUCHL	.129	1	.72	.001

Table 5.2 Univariate Analysis of Variance Results for Patient Responses measures individuality (N=112	Table 5.2	Univariate Analysis of Variance Results for Patient Responses measures individually (N=112)
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Note. **marginally significant p<.10

Main effects

At a significance level of p<.10 two marginally significant effects could be found for *music* on *avoidance behaviour* (F (1, 105) = 3.671, p =.06) as well as for *music* on *perceived control* (F (1, 107) = 2.925, p = .09).

	No music (N=59) Mean (SD)	Music (N=50) Mean (SD)	Total (N=109) (Mean (SD)
Avoidance Behaviour _{a)}	0.83 (1.469)	1.09 (1.521)	0.95 (1.509)
Perceived control [*] _{a)}	4.57 (1.121)	4.39 (1.242)	4.48(1.186)

Table 5.3 Univariate Analysis of Variance Results for Music on the significant measures

*Note. **marginally significant p<.10*

a) Conducted on a 5-point Likert-scale (Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Hypothesis one (H1) predicted that lavender scent has a positive impact on patients' responses, especially their emotional state and their anxiety. As shown in Table 5.2, no statistically significant results were found for *scent* on *patient responses*. From the results of this study, H1 cannot be supported and must therefore be rejected. In other words, in this experimental field study, scent did not have an impact of patients' emotional state and anxiety while in the waiting room of the dentist "Wededent".

Hypothesis two (H2) predicted that soft piano music has a positive impact on patients' emotional states and their anxiety level. The results show a marginally significant effect for *music* on the measures avoidance behaviour and perceived control within patient responses. Yet, no statistically significant results were found for *music* on any of the other measures within *patient responses*.

For *perceived control*, the results show higher levels of perceived control when there is no music (M=4.57, SD= 1.121) than when music is present (M=4.39, SD= 1.242), and a partial η^2 of .027. This indicates that music has a negative impact on perceived control, since scores for perceived control were higher in the conditions without music.

Furthermore, for the effect on *avoidance behaviour* it can be stated that in a no music condition patients have a lower tendency towards *avoidance behaviour* (M=0.83, SD=1,469)

than in a condition that included *music* (M=1.09, SD= 1.521). Partial eta-squared (η^2) for this effect was .034. This indicates that music has a positive impact on avoidance behaviours, since avoidance behaviours were higher when music was present.

Since the scale for avoidance behaviour included two items with diverse focus, the Univariate analysis was run for music and each item of avoidance behaviour separately to gain more insight into the effect. The items were: 1. *I would avoid having to return to this office* and 2. *This is a place where I try to avoid people and avoid talking to them*. The analysis showed a significant effect of the first item (F(1, 105) = 4.292, p = .04) while no significant effect was found for the second item (F(1, 107) = 1.907, p = .17). This indicates that music increases the avoidance behaviour of the place and situation (item 1) as opposed to social interaction (item 2).

Therefore H2 cannot be supported, as the results indicate that music in the waiting room of the dentist office "Wededent" rather had a positive impact on *avoidance behaviour* and a negative impact on *perceived control* of patients.

Interaction effect

From the Univariate Analysis of Variance, presented in Table 5.2, an interaction effect was found for *music* x *scent* on *arousal* (F (1, 77)= 3.944, p=.051, η^2 = .049) of patients in the waiting room of the dentist office "Wededent". The statistically significant interaction effect between music and scent indicates that music has an impact on the effectiveness of scent in the waiting room of the dentist "Wededent". Figure 4 shows the interaction effect graphically, which indicates that scent only has a statistically significant effect on *arousal* if there is no music (F (1, 77)= 3.944, p=.051).



Figure 4: The effect of Music and Scent on Arousal

In order to examine the interaction effect between *scent* and *music* for *arousal*, an ANOVA analysis was conducted. The results from the ANOVA indicate that *scent* has a statistically significant effect on *arousal* when there is no music F(1, 77) = 3.464, p < .05. However, there is no statistically significant effect for *scent* on *arousal* if music is being played F(1, 77) = 0.82, p = .2 and therefore not significant. Thus H3 cannot be supported.

To gain further insight into the interaction effect on *arousal*, the data set was then separated by *scent* and a one-way ANOVA was conducted with *arousal* as the dependent variable and *music* as the independent variable. The results showed no significant results for *scent* in the *music* condition F(1, 42) = 1.115, p = .2 and therefore not significant. However, in the condition without *music*, *scent* was marginally significant F(1, 37) = 2.681, p = .1. These results support the assumption that scent only has a statistically significant impact when there is no music.

5.2 Additional Results of Interest

Since anxiety is an important emotional concept within this research and an important factor for a dentist visit, further analyses have been conducted to analyze potential predictors for the level of anxiety. In order to do so, multiple regression analysis has been conducted for all factors that could predict anxiety, including the measures of the dependent variable as well as demographics and general measures. The multivariate analysis that was conducted was a hierarchical regression analysis. For this matter, the measures were divided into three models and then tested for their proportion of anxiety that they can predict.

Before the hierarchical regression analysis was conducted, the assumptions for normal distribution, linearity and homoscedasticity were tested. The examination of the normal probability plot of standardised residuals and the scatterplot of standardised residuals against standardised predicted values show that the assumptions for normal distribution, linearity and homoscedasticity were met. Furthermore, Mahalanobis distance was just below the critical χ^2 for df = 15 (at α =.001) of 37.7, indicating that multivariate outliers will not be of concern in this analysis. Furthermore, the tolerance scores for all predictors are above .10, which indicates that multicollinearity would not be a problem in this analysis.

Model one in the hierarchical regression analysis consisted of the measures *pleasure*, *arousal*, *perceived control*, *pain level*, *approach behaviour* and *avoidance behaviour*. The model accounted for a statistically significant 45.6% of the variance in anxiety, R^2 =.456, F (6, 56) = 7.828, p = .000.

The second model included the already mentioned measures as well as *perceived waiting time* and *appraisal of the wait*. The model did not account for any additional variance in anxiety, ΔR^2 =.000, ΔF (2, 54) = .014, Δp = .986. Overall, the second model was statistically significant with p=.000.

In the third model gender, age, visit regularity, previous visits and day before anxiety were added to the measures from model two. Here visit regularity was to measure whether patients regularly visit s dentist. With previous visits it was measured whether and to what extend patients have visited "Wededent" before. The variable day before anxiety measured the level of anxiety that patients indicated they had the day before their dentist visit at "Wededent". Model three accounted for an additional 19.6% of the variance in *anxiety*, ΔR^2 =.196, ΔF (5, 49) = .374, Δp = .000. In total, the thirteen predictor variables explained 65.3% of the variance in *anxiety*, R^2 = .653, adjusted R^2 = .561, F(13, 49) = 7.087, p < .010.

While each of the three models in total had a significant impact on *anxiety*, model two did not have additional value in explaining the anxiety levels of patients at the dentist. This shows that time perception and appraisal of the wait do not impact the anxiety of patients.

Unstandardized (*B*) and standardized (β) regression coefficients, as well as squared semipartial correlations (sr²) for each predictor on each step of the hierarchical regression analysis are reported in Table 5. As can be seen in the table, *Day before anxiety* (sr²= .189), *pleasure* (sr²= .024) and *arousal* (sr²= .027) were significant predictors of *anxiety* in the final model. Overall, day before anxiety is the strongest predictor of the anxiety of patients, while waiting in the waiting room.

	Measure	B[95% CI]	β	sr²
Model 1	Pleasure	.143 [.042, .244]**	.313	.078
	Arousal	231 [314,147]**	560	.298
	Perceived Control	.050 [113, .213]	.067	.001
	Pain Level	.011 [005, .027]	.156	.018
	Approach Behaviour	050 [210, .111]	076	.001
	Avoidance Behaviour	.125 [021, .272]**	.197	.029
Model 2	Pleasure	.142 [.036, .247]**	.310	.073
	Arousal	232 [318,146]**	562	.293
	Perceived Control	.047 [125, .220]	.063	.001
	Pain Level	.011 [005, .027]	.156	.018
	Approach Behaviour	052 [220, .115]	080	.001
	Avoidance Behaviour	.127 [027, .281]	.200	.028
	Perceived Waiting Time	002 [043, .038]	013	.000
	Appraisal of the wait	.005 [065, .076]	.020	.000
Model 3	Pleasure	.086 [009, .180]**	.188	.024
	Arousal	090 [184, .003]**	219	.027
	Perceived Control	088 [244, .067]	118	.001
	Pain Level	002 [018, .013]	032	.000
	Approach Behaviour	031 [172, .111]	047	.001
	Avoidance Behaviour	.040 [103, .183]	.062	.001
	Perceived Waiting Time	001 [036, .033]	007	.000
	Appraisal of the wait	.025 [035, .085]	.095	.001
	Gender	.019 [353, .391]	.011	.000
	Age	.009 [007, .025]	.102	.001
	Visit Regularity	.128 [136, .393]	.107	.001
	Previous Visits	046 [265, .174]	048	.001
	Day before Anxiety	.769 [.470, 1.067]**	.619	.189

Table 5.4Unstandardized (B) and standardised (β) regression coefficients and squared partialcorrelations (sr²) for each variable of the hierarchical regression predicting anxiety (N=112)

Note. CI = Confidence Interval

**marginally significant p<.10

6. Discussion

The aim of this experimental field study was to analyze the effect that the atmospheric cues, lavender scent and piano music, have on emotions and anxiety of patients in the waiting room of a dentist. The study was conducted at the dentist office "Wededent" in Bissendorf, Germany, where 112 dental patients took part in the study, within a period of three weeks.

The foundation for the framework of this study was the theories and studies focused on atmospheric cues, such as music and scent. In addition to this the foundation was built by the Stimulus-Organism-Response-Model by Mehrabian, including the emotions pleasure, arousal and dominance as well as the responses approach and avoidance behaviours. The results of the main study showed a marginally statistically significant effect for music on avoidance behaviour and for music on perceived control. Furthermore, an interaction effect of music and scent on arousal was found.

The effects indicated that within this study music increased avoidance behaviour, meaning the desire to avoid the waiting room as well as to avoid other people and talking to them was higher when music was being played. This effect was unexpected, since it was expected that music can decrease avoidance behaviours.

Since the items within the *avoidance behaviour* scale focused on two different aspects of avoidance behaviour, and to gain further insight, each item was additionally analyzed separately. This analysis showed that music only significantly increased avoidance behaviour, when patients were asked whether they would avoid having to return to the dentist office. Yet, there was no effect on whether patients would try to avoid other people while in the waiting room. Possible reasons for this effect could be that a number of patients had a dislike towards the music that was being played. Yet, overall avoidance behaviour was very low within this field study at the dentist office "Wededent".

The effect on *perceived control* showed that patients feel more in control of the situation when there is no music. This result could indicate that patients feel more distracted when listening to music and therefore less focused on themselves and their perceived control. Overall perceived control was very high within this field experiment, which can be explained by the way the dentist office "Wededent" is run and the fact that most patients are return customers at this dentist office. "Wededent" pays close attention to explaining the dental

procedures and what to expect to their patients before each treatment. Furthermore, patients can lift their hand during the procedure as a sign, that they want the dentist to stop if something is wrong, which is then directly translated into action by the dentists.

Moreover, the interaction effect shows that scent only has an impact on the arousal of patients in the waiting room of a dentist office if no music is played. This might indicate that the combination of music and scent overstrains the sensation of patients while waiting. A study conducted by Fenko & Loock (2014) investigated the impact of scent and music on patients' anxiety at a plastic surgeon. The results of their research showed that the combination of scent and music was not effective in reducing anxiety, while each factor had an impact on anxiety when used separately. Fenko & Loock reasoned that the combination of scent and music created a high level of arousal which was perceived as unpleasant by patients. Furthermore, they reasoned that arousal can be positive (excitement) as well as negative (anxiety) and therefore understood both ways. These two opposite ways of understanding arousal were based on Apter's reversal theory (1988), where patient's can reverse between these states of mind based on the specific situation.

Overall, there are a number of aspects that can explain the partially unexpected results within this study, such as no effects by music or scent on the anxiety of patients. One explanation can be found within previous studies, as results already differ between the individual studies and research surroundings. The effects of music on emotions, time perception and the overall well-being have been researched numerous times within the field of atmospherics. Although results vary, research findings overall showed a positive effect of music on the emotions of people if it is pleasant and suits the target group (Baker & Cameron, 1996; Dubé & Morin, 2001; Grewal et al., 2003; Kellaris & Kent, 1994; Puccinelli et al., 2009; Turley & Milliman, 2000; Yalch & Spangenberg, 2000). Nevertheless, only a small amount of research has been dedicated to the effect of music at dentist offices and the effect it can have on patients.

Scent is a common atmospheric cue that has shown to be effective on peoples' emotions in numerous studies. Yet, the impact of scent on peoples' emotions varies between the studies that were conducted (Morrin et al., 2010; Gulas & Bloch, 1995; Bitner, 1992; Spangenberg et al., 1996; Turley & Milliman, 2000). Within this field study at the dentist office "Wededent", scent did not have an effect on the emotions of patients and only had an effect on arousal in

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the absence of music. This is in line with the research conducted by Fenko & Loock (2014) at a plastic surgeon practice, that the ambient cues, music and scent only show an effect if used separately.

Another explanation for the results within this study can be based on the location for the research as well as the convenient sample that was collected. "Wededent" is a modern dentist office that is already quite active in trying to make their patients feel welcome and relaxed. This leads to patients returning to "Wededent" for their various dentist visits, thus being familiar with the dentist office, the people and procedures. Furthermore, most participants in this study had minor procedures, where anxiety levels are generally expected to be lower than during more elaborate dental treatments. Moreover, it has to be noticed that anxiety levels within the sample were lower than originally expected, indicating that the dentist office "Wededent" is already doing well in creating a comfortable environment for their patients. Furthermore, "Wededent" tries to schedule their appointments with limited waiting time beforehand, meaning that not many patients are waiting in the waiting room at the same time. Possibly patients feel comfortable with this process while not having to converse with other patients while waiting.

Another consequence of the composition of the sample was the spread of gender within the sample group, which was not entirely homogeneous. Since the sample selection at "Wededent" was random, this aspect could not be influenced by the dentist office or the researcher. Yet, gender could be important in a study concerning emotions, since men and women experience and convey emotions differently. The different effects of atmospherics and emotions on men and women have been shown in previous studies by a number of researchers (De Bois, 2014; Lehrner et al., 2000; Seubert et al., 2009). Yet, not only gender, but also other characteristics, can influence a person's perception of atmospheric cues. Especially scent is an atmospheric cue, which can be perceived differently by each person. Scent is a personal matter that is directly linked with memories and can therefore evoke different emotions. Furthermore, a person's physiological and psychological state can play a role in the impact of atmospheric cues, such as hearing music and smelling scent.

Overall, it can be said that not only the stimuli set in a study or the personal characteristics of a person can impact the effect of atmospherics but also external factors. Such stimuli can include the weather as well as private or professional matters in the life of patients, and can

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impact the emotions of a person without the researcher being aware and without the influence of atmospheric cues.

In addition to the testing of the outlined hypotheses of this study, further analyses were conducted in order to find possible correlations between anxiety and other variables within this study. For this reason, predictors for the measure *anxiety* were analysed by means of a hierarchical multiple regression analysis. The analysis showed that all three models can explain 65.3% of the variance in *anxiety*. However, in the final model the only significant predictors for *anxiety* were *day before anxiety*, *pleasure* and *arousal*. This shows that not only current emotions of pleasure and arousal have an impact on *anxiety*, but also the emotional state of a person before entering the dentist office. While pleasure and arousal can be impacted to some extend by dentists offices, the *day before anxiety* of a patient is an unknown variable for dentists. Yet, *day before anxiety* was shown to be the biggest predictor of patients' anxiety while in the dentist waiting room, showing that the greatest amount of patient anxiety cannot be directly influenced by the dentist and the dentist office.

Next to the significant predictors of anxiety, the analysis showed that *perceived waiting time* as well as *appraisal of the wait* did not have any added value for the anxiety of patients. This indicates that cognitive processes do not impact patients' anxiety, but prediction of anxiety happens on a rather affective level.

However, scores for *day before anxiety* were relatively low within this study, with 67% of the patients indicating that they were relaxed the day before their appointment. Only 2.7% of the participants indicated that they were anxious or very anxious the day before their appointment, 12.5% indicated that they felt tense, while the remaining 17.9% felt a little uneasy about their dentist appointment the next day.

6.1 Limitations and Further Research

Within this research, there were several limitations that might have influenced the study and results, while levelling the way for future research possibilities. An obvious limitation of this study was the location of the field experiment. While the dentist office "Wededent" always searches for new ways to help ease their patients' anxiety, they are already on the forefront of dentist offices. With the friendly atmosphere and the personal service, patients already feel welcome and mostly at ease at the dentist office. Therefore, it would be of interest to conduct this kind of study again in a dentist office that has proven to be of less quality in patient services and atmosphere. Furthermore, it would be interesting to see how the results of this study are applicable to, or vary for other medical and anxiety related settings.

Another limitation of this study was the research period, including the sample selection that was conducted within this period of time. As this study was of a limited amount of three weeks, the research period was relatively narrow. For future research, it would be interesting to conduct a study throughout a longer period of time and possibly only use severe treatment patients for this study. This would be relevant, since a higher level of anxiety can be expected in patients, who receive a more elaborate dental treatment.

While a longer research period will ensure participants with more elaborate treatments, it will also ensure a bigger variety of weather. The time period for this field study was situated in summer, including temperatures of up to 35°C at times. Temperatures this high can have an impact on emotions, as shown in a study by Kööts et al. (2011). Results from this study showed that an increase in temperature can intensify emotions, whether positive or negative. Since temperatures this high are rather extreme in Germany, it can be expected that these temperature not only affected the patients' physiological but also psychological states and thereby might have had an impact on the results of this study. Furthermore, the treatments for the sample group within this study were conducted back to back and are therefore all included within this meteorological frame.

While Pleasure and arousal were grouped as emotions within this study, they can be understood and analyzed differently. It would therefore be of interest to see research on pleasure and arousal specifically and with regard to atmospheric cues and/or anxiety related settings, especially since they were shown to be predictors of patient anxiety.

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6.2 Recommendations for the use of Atmospherics

This research showed that scent is most effective in the absence of music. Dentist offices should therefore avoid mixing these two atmospheric cues in the same room and environment. Rather, dentist offices should define the desired effect of each of the atmospheric cues, before deciding on one.

Furthermore, dentist offices should remember that many external factors, as well as other atmospheric cues, have the potential to impact patients and their emotions. While it is useful to be aware of factors that can impact patients on multiple levels, it should be clear that dentist offices and their employees cannot control all of these factors. Therefore, dentists should be aware of the small margin of possibilities to impact the emotions of their patients and use this in the best way. Often a number of atmospheric cues that have not been investigated here is already present in the waiting environment, such as seating and lighting, and can be used and adjusted in the best way.

Although this study did not show a significant positive impact of music and scent on the emotions and anxiety of patients, it can be assumed that masking the smell and sound of the dentist can still result in favourable changes in the atmosphere within the dentist waiting room. Therefore, the use of music and scent at a dentist office can still have positive effects, even if it does not directly impact patients' emotions and anxiety.

7. References

Ang, S. H., Leong, S. M., & Lin, J. (1997). The mediating influence of pleasure and arousal on layout and signage effects. *Journal of Retailing and Consumer Services*, *4*(1), 13-24

Apter, M. L. (1988). Reversal theory as a theory of the emotions. In Apter, M. L., Kerr, J. H., Cowles, M. P., *Progress in Reversal Theory* (pp. 43-62). North-Holland: Elsevier Science Publishers B.V.

Baker, J., & Cameron, M. (1996). The effects of service environment on affect and consumer perception of waiting time: An integrative review and research propositions. *Journal of the Academy of Marketing Science*, 24(4), 338-349.

Beaton, L., Freeman, R., & Humphris, G. (2013). Why Are People Afraid of the Dentist? Observations and Explanations. *Medical Principles and Practice*, 23, 295-301, doi: 10.1159/000357223

Bitner, M. J. (1992). Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *Journal of Marketing*, 56, 57-71

Bruner, G. C., Hensel, P. J. & James, K. E. (2005). Marketing Scales Handbook – A compilation of multi-item measures for Consumer Behaviour & Advertising. *South Western Educational Publishing*

Cook, M. R., Gerkovich, M. M., Potocky, M., & O'Connell, K. A. (1993). Instruments for the assessment of reversal theory states. *Patient Education and Counceling*, 22, 99-106

Corah, N. L. (1969). Development of a dental anxiety scale. Journal of dental research, 48(4), 596-596.

De Bois, S. (2014). Contesting 'sex' and 'gender' differences in emotions through music use in the UK. *Journal of Gender Studies, DOI: 10.1080/09589236.2014.894475*

Cooper, L., & Foster, I. (2008). The use of music to aid patients' relaxation in a radiotherapy waiting room. *Radiography*, *14(3)*, *184-188*.

Dijkstra, K. (2009). Understanding healing environments: Effects of physical environmental stimuli on patients' health and well-being. *University of Twente*

Robert, D., & John, R. (1982). Store atmosphere: an environmental psychology approach. *Journal of retailing*, *58*(1), *34-57*.

Dubé, L., & Morin, S. (2001). Background music pleasure and store evaluation Intensity effects an phsychological mechanisms. *Journal of Business Research*, 54, 107-113

El-Bachir, S. (2014). The Influence of the Store Atmosphere on the Consumer Behavior. *Mediterranean Journal of Social Sciences*, 5(8), 229-235

Fenko, A., Loock, C. (2014). The Influence of Ambient Scent and Music on Patients' Anxiety in a Waiting Room of a Plastic Surgeon. *Health Environments Research & Design Journal, 7* (3), 38-59

Grewal, D., Baker, J., Levy, M., & Voss, G. B. (2003). The effects of wait experience and store atmosphere evaluations on patronage intentions in service-intensive retail stores. *Journal of Retailing*, 79, 259-268

Gulas, C.S., & Bloc, P. H. (1995). Right Under Our Noses: Ambient Scent and Consumer Responses. *Journal of Business and Psychology, 10* (1), 87-98

Guido, G., Capestro, M., & Peluso, A. M. (2007). Experimental analysis of consumer stimulation and motivational states in shopping experience. *International Journal of Market Research*, 49(3), 365-386

Hines, M. & Merabian, A. (1979). Approach-Avoidance behaviours as a function of pleasantness and arousing quality of settings and individual differences in stimulus screeing. *Social Behavior and Personality*, 7(2), 223-233

Hui, M. K., Bateson, J. E. G. (1991). Perceived Control and the Effects of Crowding and Consumer Choice on the Service Experience. *Journal of Consumer Research*, 18(2), 174-184

Kellaris, J. J., & Kent, R. J. (1994). An Exploratory Investigation of Responses Elicited by Music Varying in Tempo, Tonality, and Texture. *Journal of Consumer Psychology, 2*(4), 381-401

Kööts, L., Realo, A., & Allik, J. (2011). The influence of the weather on affective experience. *Journal of individual differences*, 32(2), 74-84, doi: 10.1027/1614-0001/a000037

Kotler, P. (1973-1974). Atmospherics as a Marketing Tool. Journal of Retailing, 49(4), 48-64

Kritsidima, M., Newton, T., Asimakopoulou, K. (2010). The effects of Lavender scent on dental patient anxiety levels: a cluster randomized-controlled trial. *Community Dentistry and Oral Epidemiology, 38(1),* 83-87, doi: 10.1111/j.1600-0528.2009.00511.x

Lehrner, J., Eckersberger, C., Walla, P., Pötsch, G., & Deecke, L. (2000). Ambient odor of orange in a dental office reduces anxiety and improves mood in female patients. *Psychology & Behavior, 71*, 83-86

Lehrner, J., Marwinski, G., Lehr, S., Johren, P., & Deecke, L. (2005). Ambient odors of orange and lavender reduce anxiety and improve mood in a dental office. *Psychology & Behavior, 86*, 92-95

Lin, I. Y. (2004). Evaluating a servicescape: the effect of cognition and emotion. *Hospitality Management*, 23, 163-178, doi: 10.1016/j.ijhm.2003.01.001

Martin, R. A., Kuiper, N. A., Olinger, L. J., & Dobbin, J. (1987). Is Stress Always Bad? Telix Versus Paratelic Dominance as a Stress-Moderating Variable. *Journal of Personality and Social Psychology, 53*(5), 970-982

Massara, F., Liu, A. A., Melara, R. D. (2010). Adapting to a retail environment: Modeling consumerenvironment interactions. *Journal of Business Research*, 63, 673-681, doi: 10.1016/j.jbusres.2009.05.004

McGoldrick, P. J. & Pieros, C. P. (1998). Atmospherics, Pleasure and Arousal: The influence of response moderators. *Journal of Marketing Management*, 14, 173-197

Mehrabian, A., & Russel, J. A., (1974). An Approach to Environmental Psychology. *Cambridge, Massachusets, Institute of Technology*

Michon, R., & Chebat, J. C. (2004). The interaction effect of background music and ambient scent on the perception of service quality. *Journal of Business Research*, *34*(3), 191-196.

Morrin, M., Chebat, J.-C., & Gelinas-Chebat, C. (2010). The Impact of Scent and Music on Consumer Perceptions on Time Duration. In Krishna, A. (Edition 1), *Sensory Marketing: Research on the Sensuality of Products* (123-132). Taylor and Francis Group, LLC

Morrison, M., Gan, S., Dubelaar, C., Oppewal, H. (2011). In-store music and aroma influences on shopper behavior and satisfaction. *Journal of Business Research*, 64, 558-564, doi: 10.1016/j.jbusres.2010.06.006

Naja, M., Zaichkowsky, J. L., Dykstra, A., & Brée, J. (2014). Investigating the use of Scent in a Medical Service Environment. *Journal of Marketing Development and Competitiveness*, 8(1), 21-41

Oakes, S. & North, A. C. (2008) Using music to influence cognitive and affective responses in queues of low and high crowd density, *Journal of Marketing Management, 24*(5-6), 589-602, doi: 10.1362/026725708X326002

Olszewska, I., & Zarow, M. (2003). Does Music during a dental treatment make a difference. *J Dent Res, 82*.

Paunksnienè, Z., & Banyté, J. (2012). Consumers' emotions in store environment: Why do emotions arise? *Economics and Management*. 17(1), 279-288

Pruyn, A., & Smidts, A. (1998). Effects of waiting on the satisfaction with the service: Beyond objective time measures. *International Journal of Research in Marketing*, 15(4), 321-334.

Puccinelli, N. M., Goodstein, R. C., Grewal, D., Price, R., Raghubir, R., & Stewart, D. (2009). Customer Experience Management in Retailing: Understanding the buying process. *Journal of Retailing*, 85(1), 15-30

Reversal Theory: An Overview. (2013, January 1). Retrieved April 3, 2015, from http://www.reversaltheory.net/files/Reversal-Theory-Fact-Sheet.pdf

Ridgway, N. M., Dawson, S. A., Bloch, P. H. (1989). Pleasure and Arousal in the Marketplace: Interpersonal Differences in Approach-Avoidance Responses. *Marketing Letters*, 1(2), 139-147

Seubert, J., Rea, A. F., Loughead, J., Habel, U. (2009). Mood Induction with Olfactory Stimuli Reveals Differential Affective Responses in Males and Females. *Chem. Senses*, 34, 77-84, doi: 10.1093/chemse/bjn054

Sharma, A., & Stafford, T. F. (2000). The Effect of Retail Atmospherics on Consumers' Perceptions of Salespeople and Customer Persuasion: An Empirical Investigation. *Journal of Business Research*, 49, 183-191

Sheen, J. & Stevens, J. (2001). Self-perceived effects of Sandalwood. *The International Journal of Aromatherapy*, *11* (4), 213-219, doi: 10.1016/S0962-4562(01)80038-2

Spangenberg, E. R., Crowley, A. E., & Henderson, P. W. (1996). Improving the Store Environment: Do Olfactory Cues Affect Evaluations and Behaviors? *Journal of Marketing*, 60, 67-80

Svebak, S., & Murgatroyd, S. (1985). Metamotivational Dominance: A Multimethod Validation of Reversal Theory Constructs. *Journal of Personality and Social Psychology, 48*(1), 107-116

Sweeney, J. C. & Wyber, F. (2002). The role of cognitions and emotions in the music-approachavoidance behaviour relationship. *Journal of Services Marketing*, 16(1), 51-69, doi: 10.1108/08876040210419415

Tansik, D. A., & Routhieaux, R. (1999). Customer stress-relaxation: the impact of music in a hospital waiting room. *International Journal of Service Industry Management*, *10*(1), 68-81.

Toet, A., Smeets, M. A., Van Dijk, E., Dijkstra, D., & Van Den Reijen, L. (2010). Effects of pleasant ambient fragrances on dental fear: Comparing apples and oranges. *Chemosensory perception*, *3*(3-4), 182-189.

Turley, L. W., & Milliman, R. E. (2000). Atmospheric Effects on Shopping Behavior: A review of the Experimental Evidence. *Journal of Business Research*, 49,193-211

Van Kenhove, P. & Desrumaux, P. (1997). The relationship between emotional states and approach or avoidance responses in a retail environment. *The International Review of Retail, Distribution and Consumer Research*, 7(4), 351-368, doi: 10.1080/095939697342932

Warrenburg, S. (2005). Effects of Fragrance on Emotions: Moods and Psychology. *Chem. Senses, 30* (1), i248-i249, doi:10.1093/chemse/bjh208

Wallenius, M. (2014, July 7). WOOD PSYCHOLOGY. Retrieved January 5, 2015, from http://www.timberdesignmag.com/articles/wood-psychology/

Wright, J. J., Wright, S., Sadlo, G., & Stew, G. (2014). A reversal Theory Exploration of Flow Process and the Flow Channel. *Journal of Occupational Science*, *21*(2), 188-201, doi: 10.1080/14427591.2012.713313

Yalch, R. F., & Spangenberg, E. R. (2000). The Effects of Music in Retail Setting on Real and Perceived Shopping Time. *Journal of Business Research*, 49, 139-147

Zabirunnisa, M., Gadagi, J. S., Gadde, P., Myla, N., Koneru, J., & Thatimatla, C. (2014). Dental patient anxiety: Possible deal with Lavender fragrance.*Journal of research in pharmacy practice*, *3*(3), 100.

Zhou, R., & Soman, D. (2008). Consumers' waiting in queues: The role of first-order and second-order justice. *Psychology and Marketing*, 25(3), 262-279.

8. Appendices

8.1 Appendix A – English Questionaire

Shown below is the English Version of the Questionnaire that was used in the experimental field study at the dentist office "Wededent" in Bissendorf, Germany. This Version was developed in English and then translated into German to ensure the correspondence of its scales with already existing scales.

Questionnaire for the field study in the dental office "Wededent" in Bissendorf, Germany

Thank you for agreeing to participate in this study. We are two Master students from the University of Twente in the Netherlands, currently doing our Master thesis, on the topic of emotions at a dentist office. The study will be separated into two small sets of questions, one while waiting for your treatment and the other one after your treatment.

This questionnaire will take you between five and ten minutes and you will have enough time to complete this questionnaire before your treatment. Please take it with you to the treatment room and hand it to the dentist. If you have questions at any point during this study, please do not hesitate to ask us. Please always choose for just one option in answering the questions – One answer per line.

We would like to remind you that participation in this study is entirely voluntary and the results will be treated confidentially. Also you have the right to terminate your participation in this study at any time and without giving reasons. If desired you will get a detailed debriefing after your participation at the end of this study.

I read the information given above and voluntarily agree to participate in this study. I reserve the right to terminate my participation at any point in time and without giving reasons. My results and data will be handled anonymously and not given to third parties.

□ I agree

□ I don't agree

Demographics:

What is your gender?

□ Male	🗆 Female

What is your age?



Do you visit a dentist regularly?

Very rarely	Rarely	Occasionally	Frequently	Very frequently
Have you visited t	this dentist before?			
Very rarely	Rarely	Occasionally	Frequently	Very frequently
In comparison to	other dentists, this offi	ce is:		
Much better	Somewhat better	The same	Somewhat worse	Much worse
What kind of trea	tment are you receiving	g today?		

Waiting Area:

Rate your emotions according to the way the waiting experience makes you feel.

Pleased			Annoyed
Нарру			Unhappy
Hopeful			Despairing
Stimulated			Relaxed
Jittery			Dull
Wide awake			Sleepy

Please indicate your current agreement with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have the feeling that I am in control of this dentist experience					
I feel like the dentist and everyone else involved attends to me and my needs					

Rate the level of pain you feel at the moment: Place a vertical mark on the line below to indicate the level of pain



Please indicate your agreement with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
l enjoy waiting in this room					
I would avoid having to return to this office					

This is a place where I feel friendly and talkative to a stranger who happens to be next to me			
This is a place where I try to avoid people and avoid talking to them			

How did you feel the day before you visited the dentist?

- □ Relaxed
- □ A little uneasy
- □ Tense
- □ Anxious
- $\hfill\square$ So anxious that I sometimes break out in sweat or almost feel physically sick

When you are waiting in the waiting area for your treatment, how do you feel?

- □ Relaxed
- □ A little uneasy
- □ Tense
- □ Anxious
- So anxious that I sometimes break out in sweat or almost feel physically sick

Please estimate the time you have just waited in the waiting room.

	Minutes

This waiting time was ...

Short			Long
Adequate			Inadequate
Acceptable			Unacceptable
Calming			Stressful
Pleasant			Annoying

Did you notice anything different in the waiting room, compared to your other dentist visits?

🗆 Yes

8.2 Appendix B – German Questionnaire

Shown below is the German version of the Questionnaire used in the experimental field study at the dentist office "Wededent" in Bissendorf, Germany. Since the study was conducted in Germany it was necessary to translate the questionnaire and thereby ensure a proper understanding of the questions by participants of the study.

Fragebogen für die experimentelle Studie in der Zahnarztpraxis "Wededent" in Bissendorf, Deutschland

Vielen Dank, dass Sie sich bereit erklärt haben, an dieser Studie teilzunehmen. Wir sind zwei Master Studentinnen von der Universität Twente in den Niederlanden und arbeiten derzeit an unserer Master Arbeit zum Thema "Emotionen in einer Zahnarztpraxis". Die Studie ist in zwei Sets von Fragen unterteilt: ein Set während Sie im Wartezimmer sind und ein Set nach Ihrer zahnärztlichen Behandlung.

Das Ausfüllen dieses Fragebogens dauert zwischen fünf und zehn Minuten. Sie haben genügend Zeit, um den Fragebogen in Ruhe vor Ihrer Behandlung auszufüllen. Bitte nehmen Sie den Fragebogen anschließend mit zur Behandlung und geben Sie ihn Ihrer Zahnärztin. Sollten Sie während der Teilnahme in dieser Studie irgendwelche Fragen haben, wenden Sie sich bitte an uns. Bitte geben Sie immer nur eine Antwort auf die Fragen an – pro Linie eine Antwort.

Wir möchten Sie hiermit daran erinnern, daß die Teilnahme an dieser Studie freiwillig ist und die Ergebnisse anonym behandelt werden. Außerdem haben Sie jederzeit, und ohne Gründe anzugeben, das Recht die Teilnahme abzubrechen. Wenn Sie möchten, bekommen Sie am Ende Ihrer Teilnahme an dieser Studie eine detailierte Erklärung über die Hintergründe und die Prozesse.

Ich habe die oben angegebenen Informationen gelesen und erkläre mich freiwillig bereit an dieser Studie teilzunehmen. Ich habe das Recht meine Teilnahme jederzeit abzubrechen ohne irgendwelche Gründe anzugeben. Meine Ergebnisse und Daten werden anonym behandelt und nicht an dritte weitergegeben.

□ Ich bin einverstanden

□ Ich bin nicht einverstanden

Demografische Daten :

Was ist Ihr Geschlecht?

Männlich	□ Weiblich
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Wie alt sind Sie?



Besuchen Sie regelmäßig den Zahnarzt?

Sehr selten	Selten	Gelegentlich	Häufig	Sehr häufig
Haben Sie schon eir	nmal den Zahnarzt "	Wededent" besucht	?	
Cabu caltau	Caltan	Calassatliah	112. f.	Cababi
Senr seiten	Selten	Gelegentlich	Haufig	Senr nautig
Im Vergleich zu and	eren Zahnärzten ist	diese Praxis:		
Viel besser	Etwas besser	Gleich	Etwas schlechter	Viel schlechter

Welche zahnärztliche Behandlung bekommen Sie heute?

Im Warteraum:

Bewerten Sie Ihre momentane Stimmung auf Grund der Erfahrung, die Sie jetzt beim Warten machen.

Zufrieden			Genervt
Glücklich			Traurig
Hoffnungsvoll			Verzweifelt
Angeregt			Entspannt
Nervös			Stumpf
Hellwach			Schläfrig

Bitte geben Sie Ihre momentane Zustimmung zu den folgenden Aussagen:

	lch stimme voll zu	Ich stimme zu	Neutral	Ich stimme nicht zu	Ich stimme absolut nicht zu
Ich fühle, dass ich diese Zahnarzt Erfahrung meistere					
Ich fühle mich durch den Zahnarzt und die Angestellten gut umsorgt					

Bitte beschreiben Sie Ihren momentanen Schmerzpegel: Setzten Sie eine vertikale Markierung in Bezug auf Ihren aktuellen Schmerzpegel auf der unten angegebenen Skala



Starke Schmerzen

Bitte geben sie an, inwiefern Sie den folgenden Aussagen zustimmen:

	lch stimme voll zu	Ich stimme zu	Neutral	lch stimme nicht zu	lch stimme absolut nicht zu
Ich warte gerne in diesem Raum					
Ich würde es vermeiden in diese Praxis zurückzukehren					

An diesem Ort fühle ich mich wohl und unterhalte mich gerne mit anderen Patienten			
Das ist ein Ort an dem ich Gesprächen und Menschen aus dem Weg gehen möchte			

Wie haben Sie sich am Tag vor Ihrem Zahnarztbesuch gefühlt?

- □ Entspannt
- □ Ein wenig unruhig
- □ Angespannt
- □ Ängstlich
- D So ängstlich, dass ich manchmal in Schweiß ausbreche und mich körperlich fast krank fühle

Wenn Sie im Warteraum auf die Zahnärztliche Behandlung warten, wie fühlen Sie sich?

- □ Entspannt
- □ Ein wenig unruhig
- □ Angespannt
- □ Ängstlich
- D So ängstlich das ich manchmal in Schweiß ausbreche und mich fast körperlich krank fühle

Bitte schätzen Sie, wieviel Zeit Sie gerade im Warteraum verbracht haben.

	Minuten

Diese Wartezeit war ...

Kurz			Lang
Angemessen			Unangemessen
Akzeptabel			Unakzeptabel
Beruhigend			Stressig
Angenehm			Nervig

Haben Sie einen Unterschied im Vergleich zu anderen Zahnärzten in diesem Warteraum festgestellt?

D Ja	🗆 Nein
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