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Classical Music in the Waiting Room of an Ambulant Mental Healthcare Setting

Bachelor Thesis

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Abstract

Introduction: Ambulant mental healthcare implies spending some time in a waiting room, where anxiety and stress regarding the consultation are likely to build up: feelings that counteract therapeutic progress. Changing the ambience of the waiting room by using the concept of healing environments from the medical sector seems to have a favorable effect on the patient's well-being. Research stresses that classical music turned out to have those favorable effects, independent of the preference for this genre.

Method: Within the scope of a Bachelor thesis at the University of Twente, an experiment on the favorable effects through classical music was conducted at Dimence, a mental healthcare institute in Almelo. Independent of the classical music preference, it was expected that the classical music positively influenced the patients' states of stress and anxiety, and their perceived attractiveness of the waiting room and the quality of Dimence. Patients were assigned to either the experimental condition (classical background music) or the control condition (unchanged environment). After at least five minutes of exposure in the waiting room and before the consultation started, the participants got a questionnaire containing primary questions (semantic differentials for all four measurements and furthermore VAS scales for an additional measure of stress and anxiety) and secondary questions (over patient characteristics, demographical data, and classical music preference). The total sample size consisted of 76 participants.

Analysis: The data was analyzed with multivariate and univariate analyses of (co-) variance in order to control for confounders and to see possible main effects of the condition and the potential moderating effect of classical music preference. No significant differences between the two conditions could be found regarding the stated hypotheses. The preference did not moderate any of the results but had a significant main effect on the VAS anxiety scale.

Discussion: Possible reason for the results was most probably an inappropriate waiting-room to conduct the research regarding the unquiet atmosphere and the entrance hall character. Additionally, an unmeasured underlying bias because of different group characteristics seemed to counteract finding potential effects of classical music. Future research can build on those limitations and suggestions for improvement of the study to conduct further research on music as a favorable ambient feature in mental healthcare.

Keywords: healing environment, mental healthcare, classical music, waiting room

Samenvatting (Dutch Abstract)

Inleiding: Patiënten die gebruik maken van de ambulante Geestelijke Gezondheidszorg moeten enige tijd in een wachtruimte doorbrengen. Tijdens het wachten kunnen patiënten stress en angst ten opzichte van hun behandeling ervaren en opbouwen, wat de effectiviteit van de behandeling zou kunnen verminderen. Uit wetenschappelijk onderzoek blijkt dat het veranderen van de wachtruime volgens het concept van *healing environments* het welbevinden van de patiënten positief kan beïnvloeden. Klassieke muziek blijkt een factor te kunnen zijn die het welbevinden van patiënten positief kan beïnvloeden ongeacht de preferentie voor dit genre.

Methode: In het kader van een bachelor opdracht van de Universiteit Twente werd onderzoek gedaan naar de positieve effecten van klassieke muziek in de wachtruimte, in het geestelijk gezondheidsinstituut Dimence in Almelo. Er werd verwacht dat klassieke muziek, onafhankelijk van de attitude van de patiënten ten opzichte van klassieke muziek, een positief effect op angst, stress, de waargenomen attractiviteit en kwaliteit van de zorg van Dimence heeft. De patiënten werden in een experimentele conditie (klassieke muziek in de wachtkamer) en in een controle conditie (geen veranderingen van de wachtkamer) verdeeld. Nadat de patiënten ten minste vijf minuten in de wachtkamer zaten, vulden de patiënten die mee wilden doen een vragenlijst in. De vragenlijst bestond uit primaire vragen (semantisch differentialen voor de 4 test variabelen en bovendien VAS skalas voor angst en stress) en secundaire vragen (patiënten karakteristieken, demografische gegevens en klassieke muziek preferentie). In totaal deden 76 participanten mee in het experiment.

Analyse: De hypotheses werden met multivariate en univariate follow up (co-) variantie analyses getoetst. Daarbij werd voor confounders gecontroleerd en bovendien werd een moderatie effect van klassieke muziek preferentie en hoofdeffecten van de moderator getoetst. Er werden geen significante verschillen tussen de twee condities gevonden. Verder was er geen moderatie effect van de preferentie ten opzichte van klassieke muziek gevonden.

Discussie: Een reden waarom de studie geen significante verschillen tussen de twee condities heeft gevonden was een onbetrouwbare wachtruimte. Kortom het was erg onrustig en heel groot. Verder bleek er een bias in de steekproef te zijn. Een variabele die niet als confounder werd geïdentificeerd heeft eventueel het resultaat beïnvloed. Vervolgonderzoek zou kunnen proberen deze limitaties te verbeteren en aan te passen.

Sleutel woorden: healing environment, Geestelijke Gezondheidszorg, klassieke muziek, wachtkamer

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Contents

Abstract 2
Samenvatting (Dutch Abstract) 3
Introduction 7
Environmental Impact 7
Waiting Room 8
Music 9
Relevance 10
Setting and Hypotheses 10
Method 11
Research Design 11
Participants 12
Procedure 12
Musical Treatment 13
Measures 14
Anxiety. 14
Stress. 15
Perceived attractiveness of the waiting room. 15
Perceived quality of care. 16
Background data 16
Statistical Analysis 17
Reliability and validity. 17
Distribution of scores. 17
Main effects. 17
Confounders. 18
Moderating variables. 19
Results 19
Patient Characteristics 19
Reliability and Validity 21
Distribution of the Scores on the Questionnaires 21
Main Effects 23
Confounders 24
Moderating Variables 25
Discussion 27
Aims and Findings 27
Susceptibility of Anxiety Patients 28
Sample Size, Power and Normal Distribution 29

Questionnaire, Convergent and Divergent Validity 30
Found Confounders and Remaining Underlying Unmeasured Bias 31
Measurement not Sensitive for Possible Effect 32
Classical Music Preference 33
Conclusion 34
References 35
Appendix 39
Appendix 1: Partially Informed Consent 39
Appendix 2: Part one of the Questionnaire (Anxiety, Stress, Room, Care) 40
Appendix 3: Part two of the Questionnaire (Client Characteristics) 42
Appendix 4: Observation Form 44
Appendix 5: Debriefing 45
Appendix 6: Playlist of Classical Music 46
Appendix 7: Photographs of the waiting room 47

Introduction

In the Dutch society, mental disorders are highly prevalent (de Graaf et al. 2012). To point out, the Netherlands has a lifetime prevalence of mental disorders of 42.7 percent (de Graaf, ten Have, van Dorsselaer, 2010). The mood and anxiety disorders are the most prevalent ones with 20.1 percent and 19.6 percent, respectively. Currently, round 18 percent from the 18- to 65- year-old Dutch population has at least one mental illness (Gijsen, van Oostrom & Schellevis, 2013). Primarily, having a mental illness is a heavy burden for the person concerned. Furthermore, it is also a problem for society. In 2013, about 30.7 percent of working disability was caused by mental diseases (Van den Ende, Roelen & Eysink, 2013). The high prevalence raises the question about an effective therapy. In order to help the clients handling the burden of the disorder and to promote healing, different types of therapy like pharmacological treatment, psychoanalytic or behavioral psychotherapy exist (Hansen, 2002). Although these treatments are to some extent effective, new approaches are needed to make the therapy more comfortable for patients (Dijkstra, 2009).

As mentioned by Dijkstra (2009), influencing the clients positively through the counseling environment can facilitate the counselor's task. Being positively affected by the counseling environment makes client growth more likely. In contrast, being negatively affected by the counseling environment can counteract the counseling process. Therefore, the design of counseling environments progressively changes to become psychologically supportive (Dijkstra, 2009). On the one hand, such a supportive setting in psychotherapy can have a *direct* impact on the wellbeing of the patient (Pressly & Heesacke, 2001). This is illustrated for example in an improved mood of the patients. On the other hand, the environmental setting of the counseling process can also lead *indirectly* to an improved well-being through a more effective therapy. According to Pressly and Heesacke (2001), facilitators such as self-disclosure, the development of the relation between client and counselor, and self-exploration might be either positively influenced or disturbed by the environment. In addition, environmental features are able to influence the perceived stress and furthermore feelings of anxiety (Dijkstra, 2009). Decreased anxiety, in turn, can lead to a stronger stamina of patients in psychotherapy (Pressly & Heesacke, 2001). Considering this, the adapted environment is an effective and inexpensive tool to create a better healthcare experience (Dijkstra, 2009).

Environmental Impact

The concept of changing the environment to facilitate the healing process is called *healing environment*. For the last decades, this concept has been more popular in the medical

healthcare than in the mental healthcare (Nanda et al. 2011). Most recently, interest also focused on conducting research on healing environments in the mental healthcare (Richter & Hoffmann, 2014).

The way this environment can influence the well-being of patients can be divided into two forms (Dijkstra, Pieterse & Pruyn, 2006). First, there are immediate influences on health such as by exposure to dangerous toxics that do not occur because of mediation or moderation by psychological processes (Taylor et al. 1997). The second form is the mediating or moderating influence through psychological processes. For instance, plants as environmental features have an impact on the emotional state and cognition. This in turn influences the recovery of a disease (Dijkstra, Pieterse & Pruyn, 2006). The study of *healing environments* deals with the second form, the psychological processes, and forms the background of this research paper.

To test the effect of such a supportive setting, several studies were conducted and summed up by Dijkstra, Pieterse and Pruyn (2006). With reference to the results of 30 topic relevant studies, the manipulation of healthcare environment showed to have an impact on the well-being. Following this, three dimensions of the environmental setting can affect the well-being. The first one covers architectural features such as the room size. The second dimension is about the interior design features such as plants or the wall-color. The last dimension implies ambient features such as music (Harris, McBride, Ross & Curtis, 2002). Despite the empirical findings that a healing environment can alter the well-being, there is a lack of studies in mental health care and a lack of empirical studies on mediating effects (Dijkstra, 2009). According to Dijkstra (2009), possible mediators are affective responses such as feelings of pleasure as well as cognitive responses such as the perceived attractiveness of the room. Furthermore, Richter and Hoffmann (2014) state that the patient's perception of *something new* can mediate the environmental effect on the well-being. Nevertheless, such a mediator has only a temporal effect until the *new* is not new anymore. Therefore, it should be concentrated on a sustainable effect of an intervention.

Waiting Room

Several studies that deal with an optimal creation of the *healing environment* focus on changing the surgery room (Dijkstra, Pieterse & Pruyn, 2006). Nevertheless, patients do not only spend time in the surgery, but also in the waiting room. Especially, patients of ambulant medical or mental healthcare have to wait at least a short time before the appointment starts. According to Dijkstra (2009), this is the place where anxiety is likely to build up. The anxiety may also intensify the feelings of anxiety because the waiting time offers the opportunity for

thinking, worrying and fearing the imminent surgery (Cooke et al., 2005). Regarding this, it turned out to be beneficial to adapt the waiting-room of the ambulant facilities to decrease distress and enhance the well-being (Cooke et al., 2005, Tansik & Routhieaux, 1997).

Certain research in medical as well as in mental waiting-rooms supports the impact of such an intervention. For instance, Nanda et al. (2011) conducted research in a lounge for psychiatric patients and showed that a wall-art with realistic nature on it could significantly reduce states of the patient's anxiety whereas abstract or no pictures did not. Moreover, a *nouveau* created neurology waiting area, characterized by an aesthetic alternative design, showed positive environmental appraisals, an improved mood, an altered physiological state, and a greater reported satisfaction (Leather et al., 2003). Moreover, Tansik and Routhieaux (1997) conducted a study in a room of a hospital where patients waited to undergo surgery. They found that relaxing music in the waiting-area had a positive effect on relaxation and perceived stress prior to undergo surgery, leading to an improved quality of the counseling process. Finally, Dijkstra (2009) illustrated the facilitating effect of background music in the waiting room of a dentist and furthermore, in a general practitioner's waiting room. The following paragraph offers more details for this study.

Music

One factor that is said to have a positive effect on mood, perceived stress, well-being, relaxation and the feeling of pain is the ambient feature music (Dijkstra, 2009; Labbé et al., 2007; Tansik & Routhieaux, 1997). Music is rarely used in healthcare yet, but the research on music as a feature that influences people is not new. Physical retail environments already demonstrated that music has impact on psychological states, cognitions, and consumer behavior (Dijkstra, 2009). For example the study of North, Hargreaves and McKendrick (1999) showed that French and German music played in a wine store raised the number of sales of the wine produced by that country.

Concerning music in healthcare, there are two established types of using this medium to enhance the well-being of patients (Dijkstra, 2009). Music can be either played in order to *listen* (consciously) to it as an alternative to other relaxation techniques. Or alternatively, the music can be played as *background* music (Dijkstra, 2009). Next to this, it is assumed that the music type is relevant for the effect of music. The properties of a genre according to the tempo are seen as essential. As Tansik and Routhineaux (1997, p. 3) said, "[…] *tempos of 60 to 80 beats per minute reduce the stress response and induce relaxation, while tempos between 100 and 120 beats per minute stimulate the sympathetic nervous system*".

To continue, several studies were conducted by implementing this influential medium in medical healthcare settings. First, Good et al. (2005) showed that listening to music helped to reduce the feeling of pain after an injury. Moreover, *self-chosen* music seems to contribute to relaxation by music (Tansik & Routhieaux, 1997). Furthermore, Cooke et al. (2005) showed that self-chosen music could reduce feelings of anxiety during pre-operative wait compared to the non-music condition.

In contrast to the studies where music was used as a therapeutic instrument by making the patients *listen* to music, Dijkstra (2009) made use of *background* music. Regarding her mentioned study in the waiting room of a dentist and the general practitioner's waiting room, background music showed to reduce stress and anxiety. Since *preferred self-chosen* music was not possible to implement in the waiting room because of the many people in the shared environment, it was chosen for two genres. *Classical* music and *popular* music were both compared to one another and to the non-music condition. Only *classical* music had a significant effect on the reduction of stress and anxiety and the overall judgment of the practice. Against expectations, the *preference* of music did *not* moderate the effect of *classical* music on the measured variables (Dijkstra, 2009). Therefore, *classical* music turned out to be a good alternative to *preferred* music, especially in environments where *self-chosen* music cannot be provided as is the case in a waiting room.

Relevance

Summing up, *classical background-music* in a *waiting-area* as a factor of *healing environments* might enhance the well-being of patients and facilitate the counseling process. Up to now, this research is largely restricted to *somatic* healthcare. Despite the lack of theoretical and empirical content (Leather et al., 2003), there is an obvious benefit of applying healing environments in the *mental* healthcare as well. Patients with mood and anxiety disorders are likely to score high on anxiety (Gorman, 1997). For this reason, they may have characteristics that make them especially sensitive to environmental interventions.

Setting and Hypotheses

The current study concentrated on enhancing the psychological well-being of the clients that were waiting for their counseling appointment by reducing stress and anxiety with classical music in the waiting room. The study was conducted at Dimence, an ambulant mental healthcare institute in Almelo. Adults came there for the treatment of mental diseases, especially for anxiety or mood disorders. Patients in the experimental condition were exposed to classical background music in the waiting room prior to their counseling session. Patients in the control condition did not get a treatment.

Regarding the earlier research of Dijkstra (2009), the following hypotheses were stated with the expectation to have comparable results in an ambulant mental healthcare institute with patients waiting for their consultation. Figure 1 illustrates an overview.

Hypothesis 1: The presence of classical music in the waiting room leads to reduced levels of *anxiety* and *stress* and furthermore to higher *perceived attractiveness of the room* and higher *perceived quality of care*.

Hypothesis 2: The effects are <u>not</u> moderated by the preference for classical music.

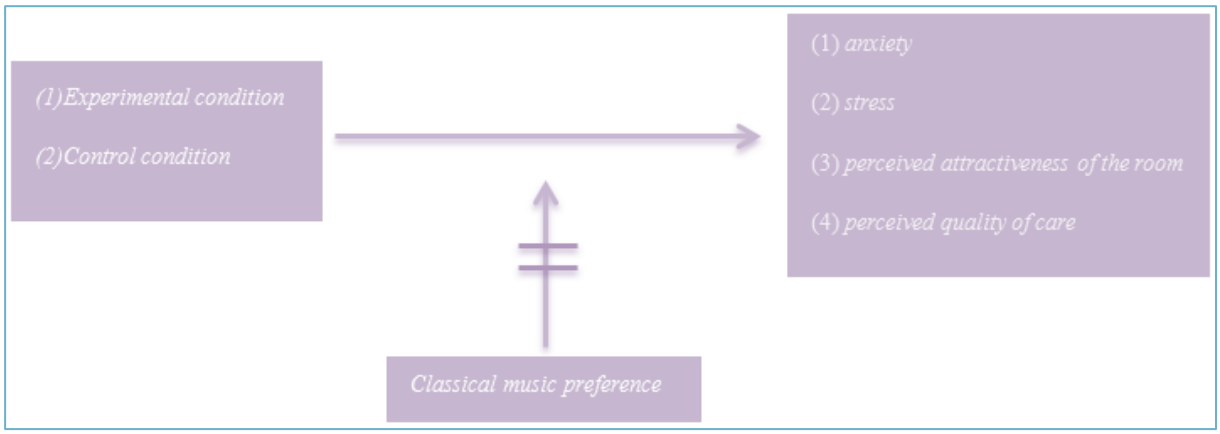

Figure 1. Overview of the stated hypotheses.

Method

Research Design

A single factor between-subjects design quasi-experiment was conducted. To measure the hypotheses, a short questionnaire was used. All participants were assigned either to the experimental group (classical music coming from hidden speakers in the background) or to a control group (soft radio music in the background). The control group was set up this way instead of taking a non-radio control condition because switching off the radio would have possibly reduced the working satisfaction of the employees who usually listen to the radio. This, in turn, could have had a confounding influence on the measured variables. However, it turned out that the radio music was almost inaudible so that this condition can be seen as a no-music condition. The conditions varied from day to day and were kept counterbalanced in order to achieve equal group sizes and in order to eliminate confounding effects due to variations in days (some days were busier than others). The participants were assigned to one of the conditions dependent on what condition was scheduled for that day. In order to conceal

the actual objectives of this research project, the patients were blinded with a cover-up topic: the perceived customer-friendliness of Dimence. The participants were provided with a partially informed consent of their right to withdraw from the study at any time (Appendix 1). Additionally, after completing the questionnaire, a debriefing was provided that revealed the actual aim of this study. Ethical approval was obtained from the ethical committee of Dimence.

Participants

The study sample consists of patients waiting for their ambulant consulting appointment, mainly to treat anxiety and mood disorders, in the waiting room area of this clinic. According to the here listed exclusion criteria not all participants were eligible:

1. clients listening to music on their own electronic device;
2. clients with hearing impairment;
3. clients with an insufficient understanding of the Dutch language;
4. clients who entered the waiting room area less than five minutes before their therapy began;
5. clients who already filled in the Routine Outcome Monitoring questionnaire (ROM) on the same day, since this already cost them a lot of time.

The total sample size consists of seventy-seven patients (22 males and 55 females) with a mean age of 38.0 years (*SD* = 12.0). Following the study of Dijkstra (2009) and the categorization of Cohen (1988), it was expected to see a medium to high effect of the classical background music (f>.30) by using this sample size and a power of .8. Within 10 days, all data was collected.

Procedure

About five minutes after the respondents had sat down in the waiting room area of Dimence in Almelo, they were approached by one of the researchers in order of their arrival. Each investigator approached only one patient at one point in time. To avoid an information variation and a possible influence of the researcher on the clients, a standard text was used to introduce the participants to the procedure. To clarify, the participants were friendly asked to participate in the study of the University of Twente about the perceived customer-friendliness of Dimence. This topic was stated because the awareness of the original purpose might have influenced the study. Next, the patients got the permission to withdraw from the study at any time. Besides, the confidential processing of data was accentuated. Given the case that the patients wanted to participate, they were asked to read carefully and subsequently sign the

informed consent and furthermore, to contact the researcher if any question arose while completing the questionnaire. After that was done, the patients received the questionnaire (Appendix 2 & 3) to complete it.

Time was usually limited because the patients arrived relatively on time. The structure of the questionnaire (with part one containing primary outcome measures *anxiety*, *stress*, the *perceived attractiveness of the waiting room* and the *perceived quality of care*, and part two containing the secondary outcome measures such as the patient characteristics) made it possible to split the completing of the questionnaire if the client had to go to the counseling before finishing the questionnaire. If the patients had finished part one before the consultation and only part two was missing, the patients were allowed to split up the completing. Thus, taking the questionnaire with them to their appointment and finish it afterwards. As those were demographic variables and patient characteristics, the point of time did not influence the answers to these items. It was important to collect the dependent items before the appointment to measure the conditional effect on stress and anxiety. Thus, patients that had to stop with part one of the questionnaire without finishing, were excluded from the sample.

As soon as the second part of the questionnaire was completed, a debriefing took place. The participant was informed about the purpose of the study in order to be fully aware about the background of the study. It was possible to speak to the patients directly without distracting the further research and possible participants because the arriving time and leaving time of the patients differed. So, they did not cross each other in the waiting area. In addition, the patient received a letter (Appendix 5) with information about the study and contact details in order to enable further upcoming questions being answered.

Musical Treatment

The clients in the experimental condition underwent the treatment of being exposed to a playlist of classical music (Appendix 6), which was played non-stop by using a wireless music box. The playlist was taken from the dental practice study of Dijkstra (2009) mentioned earlier and for the most part contained typical pieces of music for example by Johannes Brahms or by Georg Friedrich Haendel. To be precise, eleven out of the twelve pieces of music from the originally used playlist were chosen and thereupon adapted to an equal volume level with help of the program *Adobe Audition*. The title removed was “Kommst du nun, Jesu, vom Himmel herunter” by the composer Johann Sebastian Bach. It deviated from the properties of the rest of the playlist concerning the music style and the instruments and was therefore not seen as suitable in the playlist. In contrast to the style of the other eleven pieces of music, the removed title was more similar to church music instead of standard

classical music. The total playing time of the revised list was 67 minutes. The volume on the music box was held constant at a level of 25. The exact level of decibel could not be determined.

Measures

To assess both the primary and the secondary outcome measures, a questionnaire divided into two parts was employed (Appendix 2 & 3). The first part of the questionnaire measured the primary outcome variables *anxiety*, *stress*, *perceived attractiveness of the waiting room* and *perceived quality of care*. The second part of the questionnaire aimed at collecting the secondary outcome variables about the demographical data and other background variables of the participants. In the following paragraphs, the measurements of the outcome and background variables are presented in more detail.

Additionally, in order to take into account potential moderators, confounders or interrupting variables, there was an observation list (Appendix 4) which the researchers used to note variables such as location of seat, number of other people present in the waiting room, distractions, other ambient stimuli or the total amount of time spent in waiting room (exposure time). This was done to be able to examine possible interrupting variables with a potential influence on the effect of the musical intervention.

Anxiety. To measure the degree of anxiety the participants experienced, it was decided to use two types of measurement of this single construct, which allows a cross-validation of either measure. Moreover, it was decided not to employ the same questionnaire as Dijkstra (2009), who used the *AZI-State Questionnaire*, since this one contained specific questions concerning dental treatments. Instead, an alternative measurement for anxiety was used, namely a Dutch, shortened version of the *State-Trait Anxiety Inventory* (STAI). According to Bekker and Marteau (1992), this inventory is a reliable and sensitive measurement of anxiety and one of the most frequently used ones in applied psychology research. It comprises six statements, for which clients could choose to give their appraisal on a four-point *Semantic Differential* ranging from 1 = *absolutely not* to 4 = *very much*. To continue, the positively formulated items were reverse-coded. This concerned the items *I feel calm*, *I feel relaxed* and *I feel content*. To be certain of having a representative number of items per construct, the computed mean score per person required at least 80% of answered questions per construct (Downey & King, 1998). Although this is a primitive way of imputation, there was only a low number of participants to whom this method applied. To obtain a score that indicates the degree of anxiety, the mean for each participant was calculated by summing up the scores and dividing this by the number of answered items.

Consequently, a higher score indicates a higher level of anxiety. The STAI indicated a high reliability with this sample, showing Cronbach's $\alpha = .79$.

Furthermore, the degree of anxiety was to be rated by the clients on a *Visual Analogue Scale* (VAS) which consists of a straight line ranging from 0 to 100 mm on which they can mark wherever they feel it reflects their anxiety level best. The left side (score 0) represents the statement *I do not feel anxious*, whereas the right side of the line (score 100) represents the statement *I feel extremely anxious*. The VAS is especially useful for transforming a qualitative judgment about one's feelings into a quantitative score by adopting the mm of the mark as the final score. The higher it is, the higher the feeling of anxiety. The VAS anxiety has shown to be both a reliable and valid way of measurement (Williams, Morlock, & Feltner, 2010).

Stress. Stress was also measured using two types of measurement, which allows a cross-validation of either measure. First, a Dutch, shortened version of the *Profile of Mood States* (POMS) was applied (Van der Ark, Marburger, Mellenbergh, Vorst, & Wald, 2006). According to Curran, Andrykowski, and Studts (1995) the shortened version of the POMS is a reliable and valid measurement for stress. It consists of six items for each of which participants can indicate on a five-point *Semantic Differential* ranging from 1 = *absolutely not* to 5 = *very much* how they are feeling. Also in this case, to be certain of having a representative number of items per construct, the computed mean score per person required at least 80% of answered questions per construct (Downey & King, 1998). To obtain a score, which indicates the degree of stress, the mean for each participant was calculated by summing up the scores and dividing this by the number of answered items. A higher score thus indicates a higher level of stress. The questionnaire asked clients for example to mark how *nervous*, *tense* or *panicky* they felt. The POMS also indicated a high reliability with this sample, showing Cronbach's $\alpha = .91$.

Additionally, also for the level of stress there was a VAS. The left side (score 0) represents the statement *I do not feel stressed*, whereas the right side of the line (score 100) represents the statement *I feel extremely stressed*. The higher the indicated mark in mm, the higher the feeling of being stressed. The VAS stress has shown to be a reliable as well as valid way of measurement (Lesage, Berjot, & Deschamps, 2012).

Perceived attractiveness of the waiting room. The *perceived attractiveness of the waiting room* was measured by using a seven-item bipolar scale (Lohr & Pearson-Mims, 2000; Dijkstra et al., 2008), on which clients were able to state their opinions by indicating an according mark. After reverse-coding, the scores on the five-point *Semantic Differential*

ranged from 1 = *low appraisal of the attractiveness of the waiting room* to 5 = *high appraisal of the attractiveness of the waiting room*. For example they were asked to rate the attractiveness using items such as *lively - boring*, *stimulating - depressing*, *pretty - ugly* or *comfortable - uncomfortable*. Again, the computed mean score per person required at least 80% of answered questions per construct (Downey & King, 1998). To obtain the mean score for a participant, the scores were summed up and divided by the number of answered items. A higher score thus indicates a more positive appraisal of the attractiveness of the waiting room area. With this sample, the Cronbach's $\alpha = .87$ indicated a high reliability of this measurement.

Perceived quality of care. To measure the *perceived quality of care*, a five-item bipolar scale developed by Dijkstra in 2009 was used. This measurement is a five-point *Semantic Differential* and contains items such as *efficient - not efficient*, *professional - unprofessional* or *good - poor*. After reverse-coding of the scores, they ranged from 1 = *low appraisal of the quality of care* to 5 = *high appraisal of the quality of care*. Clients were thus asked to tick one of the five boxes which was most appropriate regarding their opinion about the quality of care of Dimence. Requiring at least 80% of answered questions per construct (Downey & King, 1998), the mean score for a participant was obtained by summing up the scores and dividing them by the number of answered items. A higher score thus indicates a more positive appraisal of the quality of care. This measurement also indicated a high reliability with this sample, showing Cronbach's $\alpha = .90$.

Background data. The participants were asked to indicate demographical data and other client characteristics in the second part of the questionnaire for the variables *sex*, *age*, *education level*, whether it was the *intake conversation*, the *kind of mental disorder*, *number of session week*, *experience with earlier psychiatric treatment(s)* and *how long ago*, *earlier treatment(s) in this location*, *medication* and *classical music preference*. These questions could be answered either by indicating *yes* or *no*, by ticking the appropriate category, by indicating a certain number of weeks or years if applicable or in the case of preference of classical music by making a mark on a VAS ranging from 0 = *not liking classical music* to 100 = *liking classical music very much*. The education levels were categorized into *low*, *medium* and *high* for the subsequent analyses. Based on the categorization by Verweij (2008), *low* included basisonderwijs and VMBO/ MAVO, *medium* included HAVO, VWO and MBO and *high* included HBO and WO. All of these measures have been selected on the basis of demographical data from comparable studies.

Statistical Analysis

The encoded independent and dependent variables were entered into the data analysis program SPSS. Moreover, in line with the exclusion criteria, all participants who were not able to complete part one of the questionnaire before their appointment were labeled with a 0 at condition and were thus unselected from the data file and not taken into account in the further analyses. The experimental condition was labeled with a 1 and the control condition was labeled with a 2.

Reliability and validity. The four different dependent constructs of the questionnaire (STAI, POMS, the *perceived attractiveness of the waiting room*, the *perceived quality of care*) were tested for reliability. To investigate the reliability of the measurements, Cronbach's α was used as a measure. A value around α = .80 is regarded as an indicator of high reliability (Field, 2013). Finally, Spearman's correlations between the scores on the four measurements STAI, POMS, VAS anxiety and VAS stress were calculated to investigate both the convergent and the divergent validity of the constructs of the questionnaire (Himme, 2006). According to Dancey and Reidy's (2011) categorization a value of .40 to .60 is considered a moderate correlation and a value of .70 to .90 can be seen as strong.

Distribution of scores. Before conducting the analyses the assumption of normality, which is required for certain tests, was tested. Accordingly, two common methods were applied. First, the normal probability plots (P-P plots) illustrated the distribution and secondly, the Kolmogorov-Smirnov test was conducted. In the case of an abnormal distribution of scores, it was relied on the robustness of ANOVA, the parametric model of testing. In that case F (the test statistic of ANOVA) controls the Type I error rate well (rejecting the null hypothesis when it is in fact true) when using roughly equal group sizes (Field, 2013). In a second step, one non-normal variable was transformed in order to control for Skewness and/or Kurtosis. This enabled to see to what extent it could be trusted on the robustness by comparing the results of the main analyses of an abnormal with a nearly normal distributed outcome variable. Different methods were tried out to find a best possible transformation method (Schmidt, 2010). The inverse transformation and the square root transformation as well as the log10 transformation were conducted. Only if one of them resulted in a normal distribution of the VAS anxiety scale, the transformed scale was used for the further research.

Main effects. The six dependent variables (VAS anxiety, VAS stress, STAI, POMS, *perceived attractiveness of the room, perceived quality of care*) were analyzed with a MANOVA in order to see whether the condition has a significant effect on the dependent

variables. Furthermore, the univariate analyses were conducted independent of whether the testing value (Wilks' λ) was significant or not, to see possible effects on the individual variables, as well. Besides, an α-value of .05 was defined to examine whether there was a significant difference between the conditions with regard to the six dependent variables. Furthermore, the estimates of effect size (partial eta²) and the power were calculated.

Confounders. It was tested whether one or more client characteristics differed significantly between the experimental and the control group. Therefore the categorical variables (*sex, education level, medication, anxiety disorder, musical preference, being in company as opposed to being alone, location of seat, reading, number of clients in the waiting room*) were tested with the Pearson Chi-Square test. The age was tested with the independent samples t-test.

To facilitate the interpretation of a possible confounding effect on the two scale variables *classical music preference* and *total number of people in the waiting room*, it was useful to divide them into two groups. Categorizing them in a suitable way was difficult, since choosing the cut-off point either too low or too high might have influenced the subsequent analyses. Therefore, two ways of categorization were conducted. First, each of the variables was categorized content wise (setting the cut-off where it seemed to be representative) and second, a statistical method (the median) was used as the cut-off point.

For the first classification (content wise) of the variable *classical music preference*, the group representing a lower preference ranged from the scores 0 to 40 and the group indicating a higher preference ranged from the scores 60 to 100. Participants who scored 41 to 59 were removed from the sample. For the second classification using the median, the group representing a low preference ranged from the scores 0 to 19 and the group indicating a higher preference from 20 to 100.

For the first classification (content wise) of the variable *total number of people in the waiting room* the group representing few people ranged from 0 to 3 and the group presenting many people ranged from 4 to the highest. For the second classification (statistical method), the group with fewer people ranged from 0 to 2 and the group with more ranged from 3 to the highest.

Finally, it was simultaneously controlled for the variables identified as confounders. To do so, the MANCOVA of the General Linear Model (GLM) was conducted for the main analyses of all six dependent variables (VAS anxiety, VAS stress, STAI, POMS, *perceived attractiveness of the room* and *perceived quality of care*) and compared to the results of the

MANOVA. Again, univariate follow up analyses were conducted as well, to see possible effects on the individual variables.

Moderating variables. To go on with the analysis, it was tested whether the music preference did not moderate the difference between the condition and the concerning dependent variables. The possible moderator of classical music preference was measured using MANCOVA to simultaneously control for all confounding variables. Univariate follow up analyses were also conducted, to see possible effects on the individual variables. Both preference categorizations (content wise and statistical) were tested separately. An interaction effect of the condition and the classical music preference would have been indicative of an effect being moderated by the musical preference or not. Furthermore, a main effect of the moderator might have been seen.

Results

Patient Characteristics

In total 96 participants filled in the questionnaire and of these 77 were included in the statistical analysis to form the results. Thus 19 participants had to be excluded from the data set for not having completed the first part of the questionnaire before the therapy session or for having too many missing values in one or more of the constructs. The mean age of the included participants of this study was 38.0 years (*SD*= 12.0). About 70 percent of the participants were female and more than 60 percent of the participants indicated to have a medium education level (HAVO, VWO or MBO). The background variables and the patient characteristics per condition and in total are shown in Table 1.

Table 1

Frequencies of Patient Characteristics per Group

Condition		Exp.		Control		Total		Chi² test
		n	%	*n*	%	*n*	%	*p*
Sex	male	14	34.1	8	22.2	22	28.6	.248
	female	27	65.9	28	77.8	55	71.4	
Education	low	6	14.6	1	2.8	7	9.1	
	medium	28	68.3	19	52.8	47	61.0	**.026**
	high	6	14.6	13	36.1	19	19.7	
	missing	1	2.4	3	8.3	4	5.2	
Intake	yes	2	4.9	2	5.6	4	5.2	.914
	no	38	92.7	34	94.4	72	93.5	
Anxiety disorder	yes	10	24.4	10	27.8	20	26.0	.735
	no	31	75.6	26	72.2	57	74.0	
Medication	yes	26	63.4	19	52.8	45	58.4	.345
	no	15	36.6	17	47.2	32	41.6	
Being accompanied	yes	3	7.3	3	8.3	6	7.8	.868
by other persons	no	38	92.7	33	91.7	71	92.2	
Sitting place	couch	30	73.2	20	55.6	50	64.9	.106
	table	11	26.8	16	44.4	27	35.1	
Reading a magazine	yes	13	31.7	14	38.9	27	35.1	.510
or digital medium	no	28	68.3	22	61.1	50	64.9	
Music preference	≤40	28	68.3	18	50	46	59.7	.171
(content wise)	≥60	10	24.4	13	36.1	23	29.9	
	41-59*	3	7.3	5	13.9	8	10.4	
Music preference	<20	23	56.1	13	36.1	36	46.8	.079
(statistical method)	≥20	18	43.9	23	63.9	41	53.2	
People in waiting area	≤3	24	58.5	26	72.2	50	64.9	.209
(content wise)	≥4	17	41.5	10	27.8	27	35.1	
People in waiting area	≤2	16	39	24	66.7	40	51.9	**.015**
(statistical method)	≥3	25	61	12	33.3	37	48.1	
Mean Age			36		40		38	.153

Note. Exp.= Experimental condition; Chi² test = Pearson Chi-Square test; *p* = significance level; *not categorized in high or low; p<.05 are in boldface.

Reliability and Validity

To begin with, the Cronbach's α of each of the four constructs was investigated. The STAI showed Cronbach's α = .79, the POMS displayed Cronbach's α = .91. Furthermore, the construct for the perceived attractiveness of the waiting room presented Cronbach's α = .87, and finally the scale for the perceived quality of care showed Cronbach's α = .90.

The relation between the level of anxiety and the level of stress of the respondents was determined by assessing the correlations between the scores on the four scales STAI, POMS, VAS anxiety and VAS stress with the correlation coefficient Spearman's rho (r_s). The statements about the correlation sizes were based on the classification by Dancey and Reidy (2011) and appeared to be either moderate or strong for all measurements of stress and anxiety, regardless which they aimed to measure, indicating a high convergent and a low divergent validity. All of the correlations between the scales were significant at the value $p < .001$. The correlation between the STAI and the POMS was the strongest with $r_s = .80$. The scales to measure the level of anxiety (STAI and VAS anxiety) correlated with a value of $r_s = .54$ and the scales to assess the level of stress (POMS and VAS stress) displayed a correlation of $r_s = .65$. The correlations between all four scales and the corresponding p-values can be seen in table 2.

Table 2

Correlations Between the Stress and Anxiety Measurements

Scale	VAS anxiety	VAS stress	STAI	POMS
VAS anxiety	---	---	---	---
VAS stress	.63*	---	---	---
STAI	.54*	.69*	---	---
POMS	.60*	.65*	.80*	---

Note. VAS anxiety = Visual Analogue Scale for anxiety; VAS stress = Visual Analogue Scale for stress; STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States; * $p < .01$.

Distribution of the Scores on the Questionnaires

The Kolmogorov-Smirnov test did not display a normal distribution of the scores neither on the STAI ($p = .046$), the VAS anxiety ($p = .001$) and the VAS stress ($p < .001$) nor on the scale to measure the *perceived quality of care* ($p = .004$). The test did show a normal distribution of the scores on the POMS ($p = .085$) and on the scale to measure the *perceived attractiveness of the waiting room* ($p = .200$). Table 3 shows the values of Skewness and

Kurtosis. Figure 2 illustrates the abnormal distribution of the VAS anxiety. The data is positive skewed and platykurtic. The log10 and the inverse transformation did not change the distribution of the VAS anxiety in order to achieve a more normal distribution. A square root transformation lowered the negative Kurtosis but resulted in a negative Skewness. Figure 3 illustrates the transformed scores of VAS anxiety. Since the distribution was still abnormal, the following analyses were conducted with the original scale.

Table 3

Distributions of the Outcome Variables

	Original			Transformed SQRT		
	Skew.	Kurtosis	N-distributed	Skew.	Kurtosis	N-distributed
VAS anxiety	.128	-1.282	no	-.623	-.806	no
VAS stress	-.513	-.794	no	-	-	-
STAI	.050	-.898	no	-	-	-
POMS	.396	-.647	yes	-	-	-
Room	-.052	-.228	yes	-	-	-
Care	-.877	.309	no	-	-	-

Note. STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States; VAS anxiety = Visual Analogue Scale for anxiety; VAS stress = Visual Analogue Scale for stress; SQRT = Square Root; N-distributed=Normal distributed; Skew.=Skeweness.

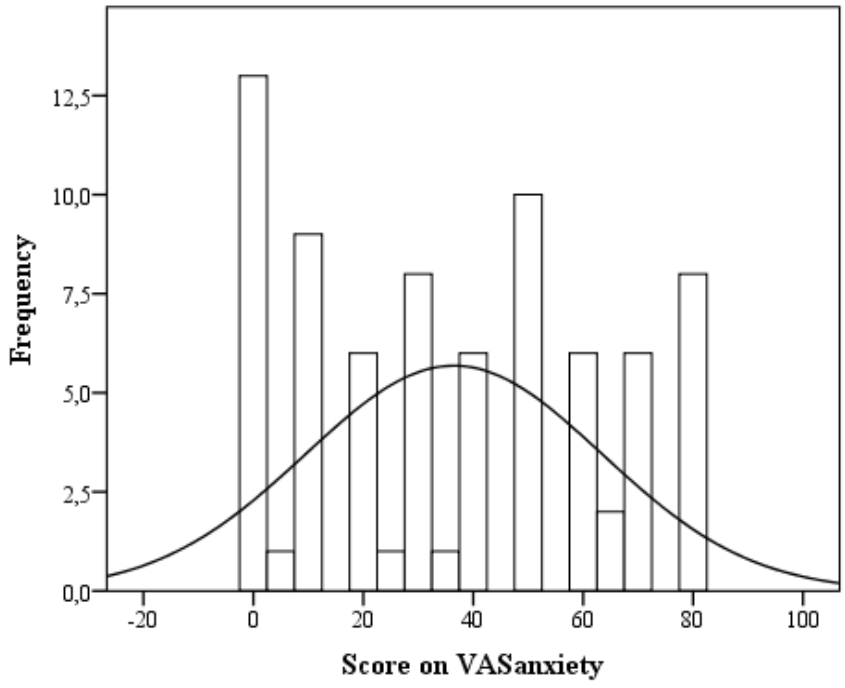

Figure 2: Distribution of the Visual Analogue Scale for anxiety.

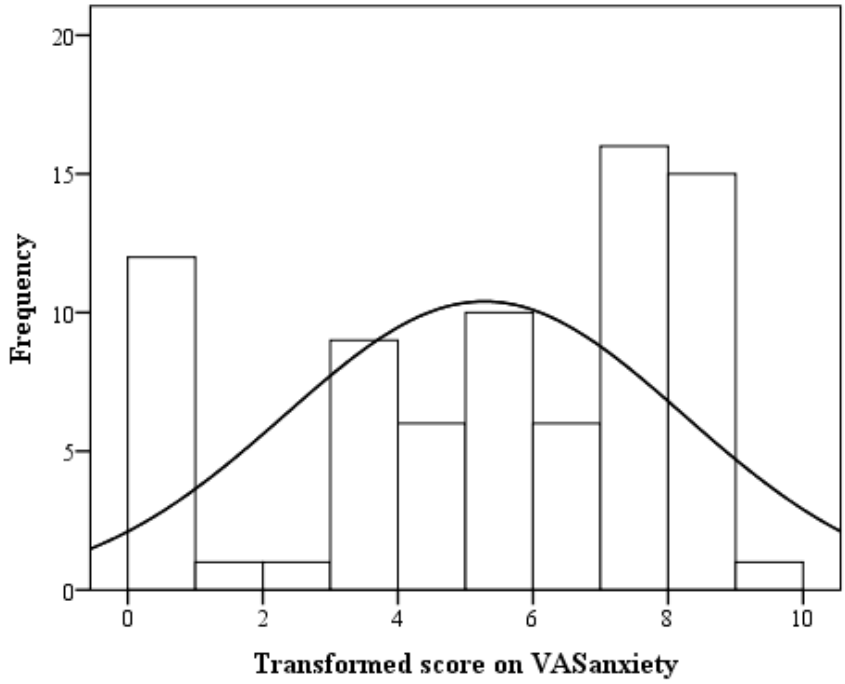

Figure 3: Distribution of transformed Visual Analogue Scale for anxiety.

Main Effects

Table 4 shows the means and the standard deviations of the measured dependent variables. Uncontrolled for possible confounders, there was no significant difference between the experimental and the control condition (Wilks' $\lambda = .917$, $F(6, 70) = 1.059$, $p = .395$). Table 5 presents an overview of the found univariate results. All effect sizes are <.09 (small). The power of all tests is <.8. Although not significant, the mean on both scales is higher in the experimental condition, than in the control condition.

Table 4

Mean Scores on the Measurements per Condition Uncontrolled and Controlled for the Confounders

	Experimental				Control				Total			
	uncontrolled *n*=41		controlled *n*=40		uncontrolled *n*=36		controlled *n*=33		uncontrolled *n*=77		controlled *n*=73	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
VAS a	41.8	25.6	42.1*	25.9	30.4	27.7	30.5*	29.0	36.5	27.0	36.8	27.3
VAS s	52.2	29.2	51.2	29.0	49.1	26.2	48.7	26.7	50.7	28.2	50.1	27.8
STAI	2.6	.6	2.6	.6	2.6	.5	2.6	.5	2.6	.6	2.6	.6
POMS	2.8	1.0	2.7	1.0	2.5	.8	2.5	.8	2.7	.9	2.7	1.0
Room	3.5	.6	3.5	.6	3.8	.7	3.7	.7	3.6	.6	3.6	.6
Care	4.1	.8	4.1	.8	4.3	.6	4.3	.6	4.2	.7	4.2	.7

Note. STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States; VAS a = Visual Analogue Scale for anxiety; VAS s = Visual Analogue Scale for stress; * p < .05.

Table 5

Results of the Main Analyses Obtained From the MANOVA and the MANCOVA Controlled for Both Confounding Variables

	Uncontrolled				Controlled for education and PW			
	F.	Sig.	Power	Part. Eta²	F.	Sig.	Power	Part. Eta²
VAS anxiety	3.484	.066	.453	.044	7.787	**.007**	.786	.101
VAS stress	.235	.629	.077	.003	1.090	.300	.177	.016
STAI	.198	.658	.072	.003	.637	.428	.123	.009
POMS	1.065	.305	.175	.014	1.535	.220	.231	.022
Room	2.378	.127	.331	.031	.906	.345	.155	.013
Care	1.544	.218	.232	.020	.468	.496	.104	.007

Note. PW= People in the waiting room (category 2); STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States; VASanxiety = Visual Analogue Scale for anxiety; VASstress = Visual Analogue Scale for stress; p<.05 are in boldface.

Confounders

Table 1 shows the results of the Pearson Chi-Square test for all tested variables. The two categorizations of the variables *classical music preference* and *total number of people in the waiting room* are also included. Only the *educational level* differed significantly over the

experimental and the control condition (p = .026) and furthermore, the *total number of people in the waiting room* (statistical categorization) (p = .015). The corrected means and standard deviations of the dependent variables are presented in Table 4. It can be seen that the two confounders did not significantly influence the analyses and outcomes regarding the majority of dependent variables (Wilks' λ = .878, F (6, 64) = 1.484, p = .198). A significant effect could be found for the VAS anxiety (p = .007). Figure 4 visualizes the mean scores for VAS anxiety and VAS stress. The mean on the VAS anxiety is significant higher in the experimental condition, than in the control condition. The values for the significance levels, power and effect size respectively controlled and uncontrolled for confounders can be seen in Table 5.

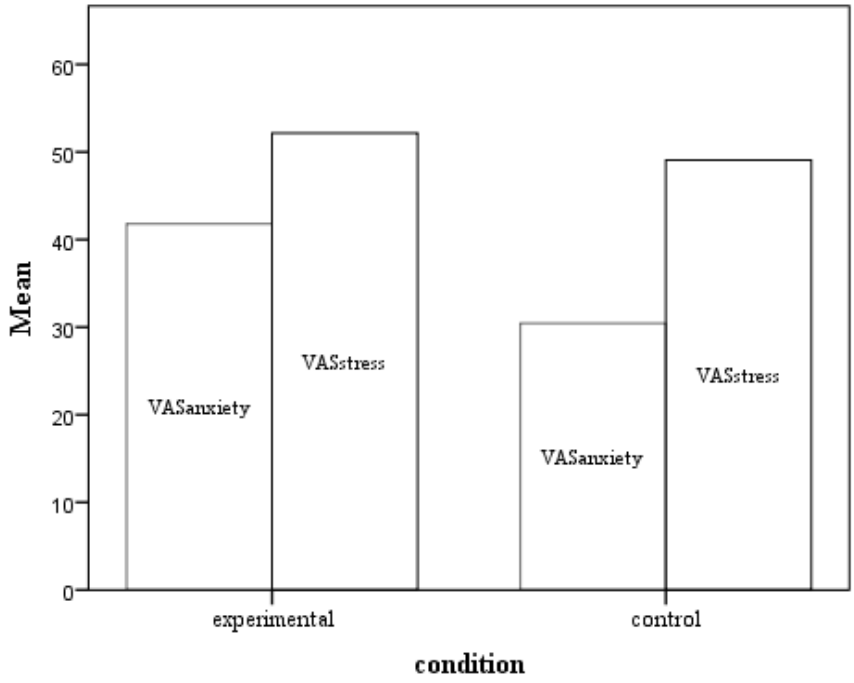

Figure 4: Mean scores per condition for the Visual Analogue Scale for anxiety and the Visual Analogue Scale for stress controlled for the education level and the total number of people in the waiting room

Moderating Variables

By analyzing the content wise category of classical music preference with the MANCOVA controlled for both confounding variables, the interaction term (classical music preference*condition) was non-significant for all testing variables (Wilks' λ = .949, F (6, 54) = .487, p = .815). The main effect of classical music preference was not significant either (Wilks' λ = .857, F (6, 54) = 1.50, p = .196). Nevertheless, the univariate main effect of

classical music preference regarding the VAS anxiety scale was remarkable. The score on the VAS anxiety scale was significantly higher in the low preference group (*M*=40.7) than in the high preference group (*M*=29.83).

By analyzing the same again with the statistical categorization of classical music preference, there was neither a major difference regarding the results of the Wilks's statistic of the interaction (Wilks' λ = .968, F (6, 62) = .341, p = .913), nor regarding the results of the Wilks's statistic of the main effect (Wilks' λ = .899, F (6, 62) = 1.167, p = .335). The same remarkable effect was seen on the VAS anxiety scale. Therefore, only the results of one categorization (content wise) are presented in Table 6. The mean scores for the classical music preference per measured variable are presented in Table 7.

Table 6

MANCOVA Results for the Moderating Effect and the Main Effect of Classical Music Preference Respectively Controlled for Both Confounders

	classical music preference*condition				classical music preference			
	F.	*p*	Power	Part. Eta²	F.	*p*	Power	Part. Eta²
VASanxiety	.378	.541	.093	.006	4.777	**.033**	.575	.075
VASstress	.215	.645	.074	.004	2.561	.115	.350	.042
STAI	.183	.670	.071	.003	2.440	.124	.336	.040
POMS	.052	.821	.056	.001	3.718	.059	.475	.059
Room	.101	.752	.061	.002	1.660	.203	.245	.027
Care	1.221	.274	.193	.020	.558	.458	.114	.009

Note. STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States; VASanxiety = Visual Analogue Scale for anxiety; VASstress = Visual Analogue Scale for stress, p<.05 are in boldface.

Table 7

Mean Scores per Condition and in Total for the Moderator of Classical Music Preference Controlled for Both Confounders

Condition	Experiment (n = 40)		Control (n = 33)		Total (n = 73)	
Anx. Dis.	low	high	low	high	low	high
VAS anxiety	43.6	38.6	38.3	23.1	41.7*	29.83*
VAS stress	52.7	47.5	57.7	45.4	54.5	46.3
STAI	2.6	2.6	2.8	2.5	2.7	2.5
POMS	2.8	2.4	2.8	2.4	2.8	2.4
Room	3.6	3.3	3.8	3.6	3.7	3.5
Care	4.1	4.0	4.1	4.5	4.1	4.3

Note. Anx. Dis. = anxiety disorder; VAS anxiety = Visual Analogue Scale for anxiety; VAS stress = Visual Analogue Scale for stress; STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States.
* $p < .05$.

Discussion

Aims and Findings

The aim of this experiment at Dimence was to test the hypothesis that playing classical background music in the waiting area would have favorable effects on (1) *anxiety* (2) *stress* (3) *perceived attractiveness of the room* and (4) *perceived quality of care*. Furthermore, the hypothesis was tested that none of those effects on the testing variables would have been moderated by the preference of classical music.

The study demonstrated that classical music did not affect *anxiety*, *stress*, the *perceived attractiveness of the room*, or the *perceived quality of care* in a positive way after controlling for the confounders *education level* and the *total number of people in the waiting room.* More to the contrary, after correction the scores on the VAS anxiety scale were significantly higher in the control condition than in the classical music condition. Regarding the categorization of Cohen (1988), the corrected effect sizes for the VAS anxiety scale were large whereas those of the other testing variables were small. Finally, it was found that the classical music preference did not moderate the effect of classical background music on any of the measured variables. Besides, a main effect of the classical music preference was found on the VAS anxiety scale. Patients with a low preference scored significantly higher on this scale than the group indicating a higher preference.

The found results are not in line with earlier research. Several researchers stated that music as a therapeutic intervention has a beneficial influence on patients (Dijkstra, 2009; Labbé et al., 2007; Tansik & Routhieaux, 1997). In the waiting area, there is time to worry about the forthcoming treatment, which in turn might lead to exacerbate feelings of anxiety (Cooke et al., 2005). Thus, next to the surgery room, the waiting area is also suitable to alter the environment. Since it is not possible to implement self-chosen music in this shared environment, classical music was implemented in two studies of Dijkstra (2009). It turned out to have a favorable effect, independent of the preference for this genre. This raises the question why the results of the current experiment with the classical background music in the *mental* healthcare waiting area differed from the results of the experiment in the dental waiting area by Dijkstra (2009).

Susceptibility of Anxiety Patients

To begin with, it is conceivable that some important circumstances differed in the two experiments. First, as Dijkstra (2009) stated, the waiting-room is the place where the feelings and emotions are likely to build up. It was thought that patients with mental disorders are especially sensible to the anxiety reducing music-intervention since those patients are likely to score high on anxiety (Gorman, 1997). However, there is also an argument against this idea. Regarding the states of anxiety and stress, there are qualitative differences between patients with and patients without pathological anxiety. On the one hand, patients' anxiety and stress in the dental waiting room is most probable related to the situation. States of fear can be increased because of the specific counseling or surgery. On the other hand, the states of anxiety and stress in the mental healthcare waiting area are not necessarily related to the specific treatment. They can also be part of the mental disorder and be deeply rooted in the participants. According to Wells and Carter (1999), anxiety patients for example are not anxious because of *something* that they can determine*;* they can feel panic and fear without any reference point, which leads to a persistent worry. Because of the high comorbidity of mood and anxiety disorders (Gorman, 1996), the persistent worry also applies to mood disorder patients. Additionally, some studies stated that stress- and anxiety reducing effects of classical music are mediated by a more positive state (Dijkstra, 2009). Following this, one might argue that anxiety and comorbid disorder patients are less likely to have a favorable effect of classical music because a momentary enhancement of feelings and emotion might not be strong enough to make persistent worry disappear. Thus, the mediating effect of a more positive state is not present in this subpopulation. Nevertheless, mediating effects through a positive affective state have no empirical evidence yet (Dijkstra, 2009). Another approach

could be to test whether a stronger exposure of the stimuli leads to a more significant difference between the experimental and the control group, especially for the patients that have an anxiety disorder. According to Richter and Hoffmann (2014), a short exposure time might reduce the potential effect. Regarding the exposure time of five to ten minutes in the dental waiting room experiment of Dijkstra (2009), the minimal exposure time of five minutes in the current study was seen as appropriate. Nevertheless, a stronger exposure might increase the possibility to see an effect. The ambient feature music is only perceived by the sense of hearing. The volume can be increased to increase the exposure. However, in order to provide a pleasant music exposure, the volume cannot be increased endlessly. Thus, when an increased volume is not enough to intensify the exposure, elements that stimulate other senses need to be added. For example, a screen with an orchestra playing the classical music could be used. Thereby one thing should be taken into account: exposure to ambient features might be also unfavorable in the population of patients that experience therapy as something unpleasant. Instead of benefiting from the ambient feature, the patients could associate their unpleasant feelings with classical music whenever they hear it. According to Juslin and Sloboda (2001), ambient features like music and odors are strong cues that bring back emotional experiences from memory into awareness. Thus, a negative feeling because of the patients' therapy might become reactivated when being exposed to classical music. A stronger exposure might increase not only a positive effect but also this unfavorable effect. Therefore, this disadvantage should be well considered before implementing a too strong exposure.

Another way of intensifying the exposure without adding more topic related features is to find a waiting room that is smaller and quieter. The waiting area at Dimence did not seem calm but noisy because of the size of space and the fact, that the service desk as well as the main entrance was included in this room. Many distracting elements have been available such as talking professionals and secretaries or ringing phones at the desk. Furthermore, there was often a professional or a secretary crossing the room for example to take coffee or to meet for a talk with a workmate at the service desk. Reducing those elements would support intensifying the music exposure. Therefore, further research should seek a calmer waiting room separated from the working place of the professionals and the secretaries. Nevertheless, this also implies that classical music might not be useful in a (frequently occurring) hustling waiting area.

Sample Size, Power and Normal Distribution

Although the effect size was not big enough to see possible differences between the conditions, the study succeeded in approaching as many patients as possible. Some patients

were highly motivated to participate. As soon as one patient agreed to participate, most of the other patients present gave their agreement, too. Anyway, 19 of 96 participants had to be excluded because they had to stop before their appointment. Given the observed effect sizes, the calculated power of the test was less than .8. Therefore, one cannot be confident that sufficient power was achieved to detect any effects that might have occurred. Extending the sample size might lead to a higher power but not to finding more clinically relevant effects as long as the effect sizes stay the same. In addition, the requirement of a normal distribution was not met for four of the six dependent variables. The attempt to transform the VAS anxiety scale in order to receive a normal distribution failed and it was relied on the robustness of the statistical analyses. Since there was no direct comparison between a normal and an abnormal distribution, it cannot be said how much impact the abnormal distributions had.

Questionnaire, Convergent and Divergent Validity

Regarding the content of the questionnaire, three problems arose. To begin with, the construct of the anxiety measurement from this study (STAI) differed from the one of the experiment of Dijkstra (2009). The AZI-state questionnaire (Dijkstra, 2009) could not be taken over since it was a measurement specific to anxiety in a dental waiting area. For example *I'm wondering whether the treatment will be painful*. Compared to the STAI, the measurement for the anxiety in the dental waiting room was much more situation specific. In addition, the constructs of the STAI (four-point *Semantic Differential*) and the POMS (five-point *Semantic Differential*) caused confusion for some patients. On the one hand, they had similar questions or variables to be answered. On the other hand, the constructs differed in the number of possible choices on the *Semantic Differential*. Patients could of course not understand why a moderate score was possible on the item *tense* (NL: gespannen) for the POMS, but not on the item *I feel tense* (NL: Ik voel me gespannen) for the STAI. This confusion could be easily avoided by enabling a comparable *scales* but this in turn might decrease the scale validity.

To continue, it is disputable whether the measurements of anxiety and stress really differed in what they presumed to measure. Spearman's rho showed a strong correlation of all four variables that measured either stress or anxiety, indicating a high convergent validity but also a low divergent validity. This finding supports already available evidence that stress and anxiety highly correlate with one another (Newbury-Birch & Kamali, 2001). In addition the impression also arose by having a look at the POMS. The item *anxious* (NL: angstig) is one variable of this stress-measurement. Regarding this, it is conceivable that the current study measured the overall stress with anxiety as one part of it. Taken together, further research

should be aware of the high correlation and in addition, stress and anxiety should be clearly defined when it is wanted to distinguish between them. Then, the choice of a valid convergent and divergent measurement for both of them would facilitate the interpretation of the results.

The third problem about the questionnaire was that the participants did not always know which emotion or feeling was meant. On the questionnaire it was clearly stated that it was about the *momentary state of feeling and emotions* but this was not always comprehended this way. One participant, for example, asked whether the underlined words *at this moment* (NL: op dit moment) referred to the general worries or the mood regarding the counseling appointment. One possibility to make the guidance clear would be to add an item about the general state (either about the previous week or the previous month). In addition, questions referring to the situation like the dental anxiety scale of Dijkstra (2009) could clarify that feelings and emotions related to the counseling appointment are meant. Possible statements could be for example: *Regarding the upcoming counseling appointment, how do you feel at the moment*. On the one hand, this might make the participants answers more comparable. On the other hand, it would be possible to control for the possibly confounding variables *general feelings and emotions*.

Found Confounders and Remaining Underlying Unmeasured Bias

The current study looked for possible confounding variables in order to control for them. Such a confounding variable can have impact on the analyses, as it was shown on the basis of the *education level* and *number of patients in the waiting area*. By controlling for those variables, the significance level of the VAS anxiety scale changed from non-significant to significant. Nevertheless, it changed in the unexpected direction.

Although it was tried to collect as much information as possible about possible confounding variables, it seemed as there was an unrecognized underlying bias left. The two found confounders raised the idea that the sample was unevenly distributed over the two groups. The participants were assigned to the music or control condition dependent on which condition was scheduled for that day. The conditions might have differed over the days because not all circumstances could be controlled. In both groups only some days were represented. Therefore, day variations might have unintentionally had a different consequence for the two groups.

Moreover, two influential confounders were considered but could not be eliminated because of lacking information. First, the medication that the patients took was not defined. According Richter and Hoffmann (2013), taking medicine can strongly influence the feelings and emotions of the participants. Since the patients do not always know what medicine they

take, this question was reduced to *yes* and *no*. Nevertheless, it would have been interesting to see at least a categorization in sedative and non-sedative medication. As a result, medication as a confounder could be analyzed and patients would not have to know what exactly they take.

Second, there was some unpredictable diversity about the consciousness of the classical background music. In some cases, the music was experienced very consciously because of obvious behavior at the women at the service desk. The service desk was located within the waiting-area and the women at the desk of course knew about the experiment. Since they were talking to each other, nearly every day the classical music was one topic of their conversation. Some participants might have heard them talking while others did not. In addition, on the experimental days the secretaries sometimes danced with rhythmic motion from their desk to the coffee dispenser in the waiting area and back again. This made the music much more obvious to some patients. Moreover, it seemed that some patients had seen a TV documentary about classical music in waiting areas (in a dental praxis) shortly before the intervention. This was another factor that might have influenced the conscious experience of the music. The question that arises is whether becoming aware of the music instead of being exposed unobtrusively changes its relaxing effect. Perhaps this creates a stronger exposure. To be able to control for consciousness as a possible confounder, future research should set a final question whether music was consciously experienced or not before reading this question. The observations showed that patients completed the questionnaire chronologically. Thus this funneled debriefing would not influence the testing variables.

Measurement not Sensitive for Possible Effect

Moreover, it is not sure whether this experiment was ineffective or whether the effect could just not be recognized because of the small power or because of one of the following reasons. First, simply the fact that a questionnaire was used in both conditions, the feeling could arise that something was being done for them to enhance their well-being at Dimence. According to Richter and Hoffmann (2013), reputation through perception of something new alone might influence the well-being of the patients. This influence on the participants might be reduced if the questionnaire was given in the frame of ‘just another questionnaire for data collection of Dimence’. Nevertheless, at least a partially informed consent has to be provided and therefore reducing the reputational influence is difficult.

A final reason why no effect was seen might be that it was only *direct* influence was considered. According to Pressly and Heesacke (2001), there are also *indirect* influences. It was not asked whether the self-disclosure or the development of the relation between client

and counselor changed. For instance, Tansik and Routhieaux (1997) have seen this positive effect on relaxation and perceived stress prior to counseling, leading to an improved quality of the counseling process. Although, this mediating variable was not measured in the current study it cannot be assumed that the patients were not influenced. Asking the professionals about a potential improvement of those factors would be not allowed due to the privacy of the patients. To measure the well-being again, after counseling, would be impossible since the patients are often very aroused, something that is not bad, but necessary to go through in psychotherapy. Even if there was a possibility to measure this construct, the question would remain whether this effect was mediated by better counseling due to less stress and anxiety in the patients. Nevertheless, this is a very interesting topic and should be granted more attention in future research. It is a challenge to find ways to make the measurement of indirect effects possible without the violation of privacy or adversely affecting the mental well-being.

Classical Music Preference

Finally, the *classical music preference* did not moderate any of the measured variables. This is in line with earlier research of Dijkstra (2009), which also demonstrated that the preference did not influence the effects of classical music. Nevertheless, the current study did not find any favorable effects of classical music. Additionally, it was noticeable that most patients did not like classical music (the median was 20). A comparison to the musical preference in the study of Dijkstra (2009) is not possible because it is not known how the preference was like. The low preference might explain that there was no difference regarding the perceived attractiveness of the waiting room between the classical music and the non-music condition.

A remarkable finding is the main effect of the tested moderator classical music preference. Those who did not like this genre scored significantly higher on the VAS anxiety scale than those with a higher preference. One explanation might be that higher preference is represented in people with higher education and that this has some influence on the anxiety level but it was controlled for education. Thus, the reason remains unclear.

To mention a last limitation, the variable *classical music preference* was a scale measurement and categorized regarding two different cut-offs (content wise and statistical). On the one hand, that should make later interpretation easier; on the other hand, the categorizations were not optimal because of an uneven distribution over the groups and not categorized participants. In hindsight, this decision should have been revised. Future research could directly ask the patients to fill in their preference in categories instead of on a scale. This would avoid the problem of setting cut-offs later on.

Conclusion

All in all, it can be said that classical background music had no favorable effects on the measured variables in a frequently occurring hustling waiting area of a psychiatric facility. Therefore the benefit of classical background music in an ambulant mental healthcare waiting room is doubtful. Nevertheless, the current study provides a good scientific basis for conducting further research in a calmer waiting area if the discussed limitations, as well as the suggested implications are considered and improved.

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Appendix

Appendix 1: Partially Informed Consent

Dit onderzoek gaat over wat cliënten vinden van de dienstverlening door Dimence en hoe zij zich voelen op het moment dat ze voor hun afspraak langskomen. Hiervoor vragen wij u een korte vragenlijst in te vullen in de wachtkamer. Na afloop krijgt u nog wat meer uitleg over dit onderzoek.

Dit onderzoek staat los van uw behandeling en uw behandelaar is hier op geen enkele manier bij betrokken. Alle gegevens worden volledig anoniem en vertrouwelijk behandeld.

Onderzoek naar klantvriendelijkheid van Dimence

Ik verklaar hierbij op voor mij duidelijke wijze te zijn ingelicht over het onderzoek. Mijn vragen zijn naar tevredenheid beantwoord. Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Ik weet dat ik op ieder moment kan beslissen om toch te stoppen met het onderzoek. Indien mijn onderzoeksresultaten gebruikt zullen worden in wetenschappelijke publicaties, dan wel op een andere manier openbaar worden gemaakt, zal dit volledig geanonimiseerd gebeuren. Mijn persoonsgegevens zullen niet door derden worden ingezien zonder mijn uitdrukkelijke toestemming.

Naam respondent:
Datum:
Handtekening:

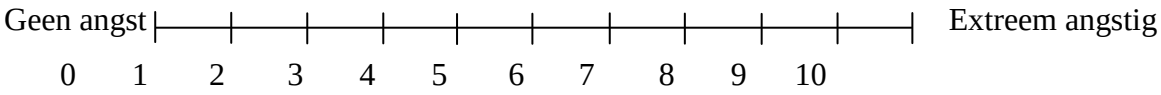
In te vullen door de onderzoeker

Ik verklaar hierbij dat ik deze respondent doelmatig geïnformeerd heb over het genoemde onderzoek. Ik verklaar mij bereid nog opkomende vragen over het onderzoek naar vermogen te beantwoorden.

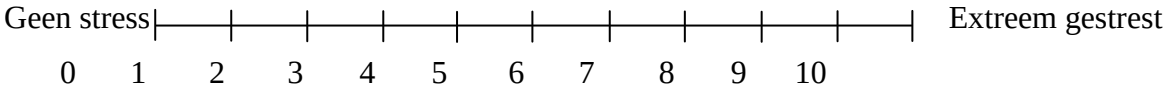
Naamonderzoeker:
Datum:
Handtekening:

Appendix 2: Part one of the Questionnaire (Anxiety, Stress, Room, Care)

Hoe angstig voelt u zich momenteel?



Hoe gestrest voelt u zich momenteel?



Gevoelens

Hieronder staan uitspraken die verschillende gevoelens beschrijven. Geef bij elk woord aan in hoeverre het beschrijft hoe u zich nu voelt. Kruis het vakje aan dat op dit moment op u van toepassing is.

	Absoluutniet	Eenbeetje	Behoorlijk	Heel sterk
Ikvoel me kalm.	❑	❑	❑	❑
Ik ben gespannen.	❑	❑	❑	❑
Ik ben in de war.	❑	❑	❑	❑
Ik ben ontspannen.	❑	❑	❑	❑
Ikvoel me tevreden.	❑	❑	❑	❑
Ikmaak me zorgen.	❑	❑	❑	❑

Emoties

Hieronder staan een aantal woorden die verschillende emoties beschrijven. Geef bij elk woord aan in hoeverre het beschrijft hoe u zich voelt. Kruis het vakje aan dat op dit moment op u van toepassing is.

	Absoluutniet	Eenbeetje	Matig	Behoorlijk	Heel sterk
Zenuwachtig	❑	❑	❑	❑	❑
Paniekerig	❑	❑	❑	❑	❑
Gespannen	❑	❑	❑	❑	❑
Rusteloos	❑	❑	❑	❑	❑
Angstig	❑	❑	❑	❑	❑
Onzeker	❑	❑	❑	❑	❑

Oordeel wachtruimte

Graag willen we weten wat u van de wachtruimte vindt. Hieronder staan steeds twee woorden tegenover elkaar. Tussen deze twee woorden staan 5 keuzevakjes. U kunt steeds aangeven wat u van de wachtruimte vindt door per woordpaar één van de 5 vakjes aan te kruisen.

Ik vind de wachtruimte:

Gezellig	◯	◯	◯	◯	◯	Ongezellig
Prettig	◯	◯	◯	◯	◯	Onprettig
Levendig	◯	◯	◯	◯	◯	Saai
Mooi	◯	◯	◯	◯	◯	Lelijk
Opwekkend	◯	◯	◯	◯	◯	Deprimerend
Comfortabel	◯	◯	◯	◯	◯	Oncomfortabel
Geruststellend	◯	◯	◯	◯	◯	Beangstigend

Oordeel zorg

Wij zijn geïnteresseerd in uw mening over de zorg die u hier ontvangt. Kruis het vakje aan dat uw mening over de zorg bij Dimence het beste weergeeft.

Ik vind de zorg:

Efficiënt	◯	◯	◯	◯	◯	Niet efficiënt
Professioneel	◯	◯	◯	◯	◯	Onprofessioneel
Goed	◯	◯	◯	◯	◯	Slecht
Zinvol	◯	◯	◯	◯	◯	Zinloos
Prettig	◯	◯	◯	◯	◯	Onprettig

Appendix 3: Part two of the Questionnaire (Client Characteristics)

Geslacht: ◯ Man
◯ Vrouw

Leeftijd: …….

Hoogst genoten opleiding:
◯ Basisonderwijs
◯ VMBO/MAVO
◯ HAVO
◯ VWO
◯ MBO
◯ HBO
◯ WO
◯ Anders

Komt u hier voor uw intake gesprek?
◯ Ja
◯ Nee

Wat is de aard van de stoornis?
◯ Stemmingsstoornis
◯ Angststoornis
◯ Cluster C persoonlijkheidsproblemen
◯ Complex trauma
◯ Anders

De hoeveelste behandelsessie is dit?
…….. behandelsessie

Hebt u eerder psychische behandelingen gehad?
◯ Ja
◯ Nee

Indien ja, hoe lang is dit geleden?

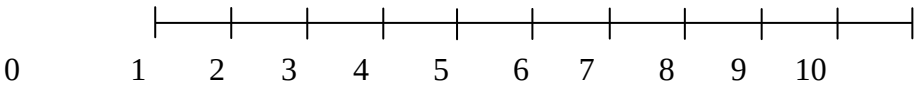
…… jaar

Gebruikt u op dit moment medicatie voor een psychische stoornis?

◯ Ja

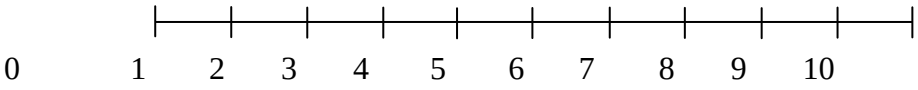
◯ Nee

Hoe voelt u zich momenteel?



Afschuwelijk Fantastisch

Luistert u graag naar klassieke muziek?



Helemaal niet Heel graag

Appendix 4: Observation Form

Tijdstip (ochtend of middag)

Weer Temperatuur (°C)
Zon (ja of nee)
Neerslag (mm)

Toiletgebruik (ja of nee)

Gezelschap (ja of nee)

Interactie met anderen (ja of nee)

Wachttijd (totaal aantal minuten in wachtkamer)

Zitplaats (bank of tafel)

Lezen/smartphone/tablet (ja of nee)

Aantal mensen in de wachtkamer als vragenlijst uitgereikt wordt

Opvallend gedrag (ja of nee)
Indien ja, wat dan? (Suf of geprikkeld)

Appendix 5: Debriefing

Geachte heer, mevrouw,

U heeft meegewerkt aan een klantvriendelijkheidsonderzoek. Dit onderzoek is uitgevoerd bij Dimence in samenwerking met de Universiteit Twente.

Wat is het doel van het onderzoek?

Het daadwerkelijke doel van dit onderzoek was niet zozeer het meten van klantvriendelijkheid, maar vooral het vaststellen of het afspelen van klassieke muziek in de wachtruimte een gunstige invloed heeft op gevoelens van angst en stress van bezoekers. Om dit goed te kunnen onderzoeken, was het noodzakelijk u tijdens het verblijf onwetend te houden over het doel van het onderzoek. Daarom krijgt u deze toelichting pas achteraf.

Wij hebben voor dit onderzoek op afwisselende dagen wel of juist geen klassieke muziek in de wachtruimte gedraaid. U zat in één van beide groepen en dit is op basis van toeval bepaald door de dag waarop uw afspraak was gepland.

De theorie achter dit onderzoek is dat klassieke muziek rustgevend werkt, waardoor angst en stress vermindert. Dit kan ook positieve invloed hebben op uw behandeling. Daarnaast zijn we geïnteresseerd in uw oordeel over de wachtruimtekamer en de kwaliteit van de zorg. Dit om wachtkamerbeleving in de toekomst te optimaliseren.

Wat gebeurt er met uw gegevens?

Persoonsgegevens die tijdens deze studie zijn verzameld, zullen worden vervangen door een codenummer. Alleen dat nummer zal gebruikt worden voor studiedocumentatie. Indien onderzoeksresultaten gebruikt zullen worden in wetenschappelijke publicaties, dan wel op een andere manier openbaar worden gemaakt, zal dit volledig geanonimiseerd gebeuren. Uw persoonsgegevens zullen niet door derden worden ingezien zonder uw toestemming.

Wilt u verder nog iets weten?

Mocht u in de toekomst vragen hebben of geïnteresseerd zijn in de resultaten van deze studie, kunt u de onderzoeker (Marcel Pieterse) benaderen via: m.e.pieterse@utwente.nl

Appendix 6: Playlist of Classical Music

Brahms - Hungarian Dance no 1 in g minor

Concerto for 2 horns & Orchestra in E flat 2nd movement

Dvorak - Symphony no 7 in D minor 3rd movement

Haendel - Larghetto Affetuoso

Haendel - Water Music Andante Allegro da Capo

Haydn - Flute Trio No31 in G 2nd movement

Strauss II - An der schönen blauen Donau

Strauss II - Wein, Weib und Gesang

Strauss - Wiener Blut

Tchaikowsky - String Serenade Waltz

Tchaikowsky - The Nutcracker Waltz of the Flowers

Appendix 7: Photographs of the waiting room