

Healing Environments: Classical Music in the Waiting Room of a Mental Health Care Facility

Is Anxiousness a Moderator for the Susceptibility to
Environmental Stimuli?

Bachelor Thesis

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Abstract

Introduction: This study explores the effects of classical music in the waiting room area of an ambulant mental health care facility on clients with predominantly anxiety and mood disorders. Classical music as a component of *healing environments* is thought to have various beneficial effects on people.

Method: The investigated variables in this case were the clients' *anxiety* and *stress* levels and furthermore their evaluations of the *perceived attractiveness of the waiting room* and the *perceived quality of care*, which were measured using a questionnaire with semantic differential scales as well as visual analogue scales. Participants of this study ($n = 77$) were therefore placed in either an experimental condition with exposure to classical music or a no-music control condition.

Results: After correcting for confounders, multivariate and univariate follow-up analyses of variance found no significant main effects of classical music on the majority of measurements except for one (VAS anxiety). However, even this single main effect was contradictory to the established hypotheses. Moreover, there was only one significant main effect found for the investigated moderator of *having an anxiety disorder* on the VAS anxiety. No interaction between this moderator and the condition could be found, suggesting no difference between the experimental and the control condition in this subpopulation.

Discussion: Implications for the use of classical music in healthcare settings, comparisons to past music-related findings with main regard to this study and possible explanations for the results obtained are discussed.

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

Samenvatting (Dutch Abstract)

Introductie: Deze studie onderzoekt de effecten van klassieke muziek in de wachtkamer van een ambulante psychiatrie op cliënten met voornamelijk angst- en stemmingsstoornissen. Het wordt verondersteld dat klassieke muziek als onderdeel van *healing environments* (gezondheidsbevorderende omgeving) verschillende voordelige effecten kan hebben op mensen.

Methode: In dit geval was de focus zowel op de variabelen *angst* en *stress* als op beoordeling van de *waargenomen attractiviteit van de wachtkamer* en de *waargenomen kwaliteit van de zorg*. Deze werden gemeten aan de hand van een vragenlijst met semantiek differentiële schalen en visueel analoge schalen. Hiervoor werden de deelnemers ($n = 77$) van deze studie in een experimentele of een controle conditie geplaatst. In de experimentele conditie werd klassieke muziek gedraaid en in de controle conditie was er geen muziek te horen.

Resultaten: Nadat voor confounders gecorrigeerd werd, bleek uit multivariate en univariate follow-up variantie analyses geen significant hoofdeffect van klassieke muziek op de meeste gemeten schalen behalve op één (VAS angst). Dit effect was echter in tegengestelde richting dan verwacht. Verder werd de moderator *gediagnosticeerd met een angststoornis* onderzocht. Deze leverde alleen één hoofdeffect op één schaal op (VAS angst), maar zonder interactie met de condities. Dit suggereert, dat er geen verschil was tussen de experimentele en de controle conditie met betrekking tot deze subpopulatie.

Discussie: Implicaties voor het gebruiken van klassieke muziek in gezondheidszorg omgevingen, de vergelijking met andere muziekgerelateerde bevindingen en mogelijke verklaringen voor de resultaten van deze studie worden besproken.

Sleutel woorden: healing environment, geestelijke gezondheidszorg, klassieke muziek, wachtkamer

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Introduction

Anxiety and mood disorders are serious and frequently occurring forms of mental diseases. In the Netherlands the estimated prevalence of people aged between 18 and 65 years suffering from anxiety disorders was 1.061.200 in the year 2011 (De Graaf, Ten Have, & Van Dorsselaer, 2010; De Graaf, Ten Have, Tuithof, & Van Dorsselaer, 2013). In general anxiety disorders take the third rank, first rank for women and sixth rank for men, on the list of diseases which cause the highest burden of disease (Schoemaker et al., 2013). The prevalence of mood disorders, of which all are characterized as some form of depression, was estimated as high as 649.500 of people aged between 18 and 65 years (De Graaf et al., 2010). This means that mood disorders take the fourth rank right after anxiety disorders on the list of diseases which cause the highest burden of disease (Poos et al., 2013). Taken together the lifetime prevalence estimates in the Netherlands were 19.6% for anxiety and 20.2% for mood disorders (De Graaf, Ten Have, Van Gool, & Van Dorsselaer, 2012).

To counteract these kinds of mental diseases, mostly ambulant treatments are administered in a health care facility like a clinic, a hospital or a counseling center. However, such ambulant visits can cause feelings of discomfort or even outright fear in the clients, since therapy sessions can be associated with negative feelings, cause stress to the clients, and furthermore heighten their level of anxiety even more (Adams, Cimino, Arnold, & Anderson, 2012). Stress and anxiety can have negative effects on mental well-being, on physical health (Rabin, 1999; Malkin, 2008) and beyond that indirectly on the therapy outcomes (Cooke, Chaboyer, & Hiratos, 2005). Therefore, especially in a target group of clients suffering from anxiety and mood disorders, it is important to minimize the negative effects of such visits on their mental state by making the circumstances of the visits more convenient and comfortable for the clients (Malkin, 2008).

Hence, other elements besides the therapy itself can be taken into account when looking for a starting point to optimize the experience of ambulant visits. Besides receiving therapy, the clients also spend time in other parts of the facilities, for example in the waiting room areas before their treatment begins. In these areas especially the clients can become increasingly nervous or distressed while anticipating their treatment (Leather, Beale, Santos, Watts, & Lee, 2003). However, often these areas are designed to be practical rather than comfortable or relaxing (Baron & Greene, 1984). Changing this condition and designing a more pleasant health care environment could have many beneficial outcomes in various respects (Dijkstra, Pieterse, & Pruyn, 2006; Malkin, 2008; Dijkstra, 2009). First of all, the clients might feel better and be more relaxed. Secondly, the consultation with the attending

psychiatrist or therapist might be more fruitful if clients are in a better mood. Thirdly, it is reasonable to assume that feeling better and more successful therapy sessions may lead to the formation of more positive associations with their ambulant therapy visits. Taken together, it can be assumed that these advantages could cause the clients to attend therapy more regularly, to complete all the sessions and therefore altogether to achieve a more successful therapy outcome. To reach these beneficial outcomes the idea is to optimize the conditions for the clients by introducing the concept of so-called *healing environments* to health care facilities.

The role of healing environments in health care settings is presently becoming increasingly important. Healing environments aim at creating a setting which promotes the well-being of clients “by reducing effects of negative stimuli or by adding positive stimuli to environments” (Dijkstra, 2009, p. 17). This can be accomplished by adjusting either the ambient features like smells, sounds or lighting, by changing the architectural features like for example the size or shape of a room or by installing interior design features like plants, pictures or wall colors (Harris, McBride, Ross, & Curtis, 2002). A review by Dijkstra et al. (2006) in which 30 studies on this topic were taken into account, suggests positive effects on different outcome measures of the stimuli sunlight, windows and odor but mainly inconsistent effects of nature, television, spatial layout, sound and multiple stimuli interventions. Furthermore, it is worth mentioning that besides suggesting an effect of the physical healthcare environment on the well-being of clients they state that “conclusive evidence is still limited or lacking with regard to specific environmental stimuli” (Dijkstra et al., 2006, p. 14).

One of these stimuli, on which so far not much research has been conducted in mental health care facilities, is music (Dijkstra et al., 2006; Ulrich, Zimring, Quan, Joseph, & Choudhary, 2004). As far as the ambient features go, next to olfactory and visual stimuli also the auditory stimuli play an important role in healing environments and offer a promising and convenient option to optimize the environment inside of healthcare facilities, since it is neither difficult nor expensive to implement music in various settings. A body of research indicates how music has been used either as an ambient background stimulus in various settings or as an instrument for purposive therapy to potentially influence the affective mental state of people. Furthermore, some studies try to investigate which kinds of music might be more effective than others. It is important to take into consideration that the body of research discussed in the next paragraph has studied non-psychiatric population samples, which on the one hand leads to a high level of novelty in the present study but on the other hand makes it difficult to base expectations of the effects on earlier research outcomes.

Research on music as an ambient background stimulus has been performed for example by Dijkstra (2009). She studied the effects of classical music versus popular music or no music on - amongst other outcome variables - the levels of stress and anxiety of clients in the setting of a waiting room area of a dental clinic. She found that classical music was effective in reducing feelings of anxiety and stress compared to the no-music condition, independent of musical preferences. However, she neither found differences in effects between the no-music and popular music conditions nor between the popular and classical music conditions.

In another study conducted in a cardiac laboratory, clients undergoing heart surgery perceived the sound environment as more pleasant when exposed to background music, which was beneficial to their feelings and well-being (Thorgaard, Henriksen, Pedersbeak, & Thomsen, 2004). Also self-report measures indicated a reduced level of stress when clients were exposed to music in waiting rooms (Tansik & Routhieaux, 1997). However, Ferguson, Singh, and Cunningham-Snell (1997) came to the ambiguous result that the exposure to music during blood donation had either negative or positive effects on environmental appraisals. This was strongly dependent on the amount of previous blood donation experience of the participants. They found no significant effect on mood in this study.

Next, research on the effects of background music can be found in another area called retail marketing in which the settings are different from clinical ones but nevertheless some outcome measures are similar. Retail marketing aims at creating “an audio environment where their customers feel comfortable, relaxed and happy” (Morrison, 2001, p. 2). Slow and relaxing music in a book store for example led to customers spending more time there, being more relaxed and moving more slowly compared to a no-music and a fast music condition (Milliman, 1982). Moreover, slow tempo music in a shopping mall appeared to have a positive influence on emotions and the perception of the environment (Michon & Chebat, 2004). Sweeney and Wyber (2002) also illustrated that slow popular music and fast classical music beneficially influenced fashion shoppers’ perception of service quality and their pleasure while shopping.

When looking at music as an instrument for purposive therapy - either consciously listening to it via headphones for example or even actively making music oneself - more effects of this stimulus can be found in a number of studies as follows. To begin with, listening to self-chosen music before surgery reduced objective anxiety measures like heart rate and variability in one study performed by Lee et al. (2012). Evans (2002) also found reduced anxiety levels in clients of normal care delivery when being exposed to music.

Moreover music therapy - a form of counseling to treat multiple different mental diseases or conditions - was found to be effective for instance in reducing depression in clients with a diagnosis of depression (Erkkilä et al., 2011) or in reducing the level of anxiety in pediatric patients in a terminal stage of cancer (Fagen, 1982).

Finally, some studies assess the effects of different styles of music and musical properties on emotional states. Labbé, Schmidt, Babin, and Pharr (2007) showed that classical music and self-selected relaxing music are effective in reducing negative emotional states (e.g. anxiety) after being exposed to a stressor, compared to silence or heavy metal music. In their study they randomly assigned the participants to one of the three music conditions or the silence condition and administered the music via headphones. In this case the question can arise how meaningful the results are since heavy metal and no music are extreme comparison variables, with heavy metal differing from classical music with regard to most musical properties like pitch, tempo or rhythm. Nilsson (2008) and Lee et al. (2012) both suggested “that therapeutic music should have a slow tempo, low pitch, regular rhythm, and pleasing harmonics and consist of string, flute, and piano selections” (Lee et al., 2012, p.79).

This growing body of research points to the assumption that music as an ambient background stimulus in various settings or as an instrument for purposive therapy can be effective in altering the affective state and in promoting mental and even physical well-being. To gain more insight in which settings, which situations or for which target group a musical intervention is especially effective, various aspects can be taken into account when conducting research on this.

When it comes to individual differences in personality traits concerning the relationship between people and the surrounding environment, the sensitivity towards environmental stimuli varies (Dijkstra, 2009). As Mehrabian (1977) states, the so-called high-screenerers are people who are able to filter irrelevant stimuli from the environment, whereas the so-called low-screenerers are less able to reduce the complexity of an environment. In this framework of *stimulus screening ability*, low-screenerers are more strongly influenced by environmental information than high-screenerers. Furthermore, Dijkstra (2009) assumes that anxiousness may be related to an individuals’ stimulus screening ability, in the sense that more anxious people possess a less pronounced ability to screen out environmental stimuli. This leads to the assumption that they perhaps will be more susceptible to environmental influences and therefore may benefit more from calming environmental properties like classical music.

When taking stimulus screening ability and its relation to anxiousness as a basis and moreover assuming that clients diagnosed with an anxiety disorder as well as clients not using medication will show higher anxiety levels than the other participants, it may be hypothesized that these two subgroups will be more susceptible to the musical intervention. A classical music intervention in the waiting room of a psychiatric health care facility, to which especially anxious clients come for counseling, could therefore be effective in calming and relaxing them and in promoting their positive affective state.

In line with this framework, two hypotheses concerning moderation effects within the two subgroups (having an *anxiety disorder* and not using *medication*) can be established. The first hypothesis is more general and concerns the main effects of the musical intervention on the outcome measures within the total sample. Independent of the outcomes of the first hypothesis, moderation effects within a subpopulation are nevertheless possible, which will be explored in the second and in the third hypothesis.

Hypothesis 1: The classical music intervention will have a beneficial effect on anxiety levels, stress levels, the evaluation of the perceived attractiveness of the waiting room and on the evaluation of the quality of care within the total sample.

Hypothesis 2: The effect will be stronger in the subpopulation of clients with an anxiety disorder compared to clients without an anxiety disorder (trauma, mood disorder etc.), indicating a moderation effect.

Hypothesis 3: The effect will be stronger in the subpopulation of clients not using medication compared to clients using medication, indicating a moderation effect.

Method

Design

This research was conducted as quasi-experimental design with two conditions in a psychiatric setting by using a questionnaire as measurement. Accordingly, there was an experimental as well as a control condition enabling a single factor between-subjects design. In the experimental group there was classical music coming from loudspeakers in the waiting room area. The classical music was played without an interruption and there were no disturbing noises coming from other musical devices like a radio. The control condition on the other hand did not include any classical music but was rather like the current situation in the waiting room, in which conventional radio music softly was played at the secretarial desk.

Switching off the radio might have reduced the working satisfaction of the employees who usually listen to it. This in turn could have had a confounding influence on the measured variables. However, it turned out that the radio music was almost inaudible for the clients so that this condition can be seen as a no-music condition.

Both conditions were purposely varied over the days of the week and counterbalanced in the sense that on the same day of the week (e.g. Wednesday) once the experimental condition and once the control condition took place. Which condition took place first did not matter and was varied every day. These steps were taken in order to achieve equal group sizes and to eliminate confounding effects due to variations in days (some days were busier than others). Besides, this way a quasi-random assignment could be approached in both conditions, since it could not be foreseen which clients would come in on which day or in which of the two weeks. The participants were assigned to one of the conditions dependent on what condition was scheduled for the according day.

In order to disguise the actual objectives of this research project, the clients 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. Additionally, after completing the questionnaire, a debriefing was provided that revealed the actual aim of this study. Ethical approval was obtained from the ethical commission of Dimence.

Participants

The respondents in this research were adults who came to the facility of Dimence as ambulant psychiatric clients mainly for the treatment of anxiety or mood disorders. Not all of the clients were eligible for being included in the study, following the listed exclusion criteria which were considered before approaching a client:

1. clients listening to music on their own electronic device;
2. clients with hearing impairments;
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 completed the *Routine Outcome Monitoring questionnaire* (ROM) on the same day, since this already cost them a lot of time.

The total sample size consisted of 77 participants (22 males and 55 females). 41 of them were assigned to the experimental condition and 36 to the control condition. The mean age of the participants was 38.0 years ($SD = 12.0$). Following the study of Dijkstra (2009)

and the categorization of Cohen (1988), it was expected that the classical music would lead to a medium to high effect ($f > .30$) with this sample size and a power of .80. All data was collected within ten days.

Procedure

About five minutes after the clients 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 and asked whether they were willing to participate in the study. If they agreed, they were provided with the questionnaire to measure the levels of *anxiety* and *stress*, the *perceived attractiveness of the waiting room* and the *perceived quality of care* (Appendix 2).

Since time was usually limited until the participants were asked into the counseling room for their therapy, it was decided to split up the completing of the different documents. First of all, the participants were asked to read carefully and subsequently sign the partially informed consent (Appendix 1). Following this, the first part of the questionnaire contained the measurements for the primary outcome measures *anxiety*, *stress*, the *perceived attractiveness of the waiting room* and the *perceived quality of care*. This first part of the questionnaire had to be completed before therapy began; otherwise the data was not included in the study. It was admissible to either finish the whole questionnaire before therapy or to continue to complete the second part of the questionnaire (Appendix 3), which asked about demographical data and other client characteristics (secondary outcome measures) after the therapy session. In the end, the respondents were provided with a verbal debriefing and in addition with a written debriefing form (Appendix 5) so that they could read it again later if they wished.

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 *AKAI ASB66K Soundbar* 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. 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 form (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 allowed for 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 each of which the clients could choose to give their appraisal on a four-point semantic differential scale ranging from 1 = *absolutely not* to 4 = *very much*. To continue, the negatively 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 which indicated the degree of anxiety, the mean for one participant was calculated by summing up the scores and dividing them by the number of answered items. Consequently, a higher score showed a higher level of anxiety. Examples of items are *I am confused* or *I am worried*. 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 could mark wherever they felt it reflected 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. The degree of stress was established using two types of measurement, which also allowed for 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 scale 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 indicated the degree of stress, the mean for one participant was calculated by summing up the scores and dividing them by the number of answered items. A higher score thus meant 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 scale 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 showed a more positive appraisal of the attractiveness of the waiting room. 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 scale 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 meant 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 $\alpha = .80$ is regarded as an indicator of high reliability (Field, 2013).

Furthermore, 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).

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, classical musical preference, being accompanied, location of seat, reading, total number of people in the waiting room*) were tested with the Pearson Chi-Square test. The age, which was the only scale variable, 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 pertaining to the contents (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 - pertaining to the contents - 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 - pertaining to the contents - 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 using the median, the group with fewer people ranged from 0 to 2 and the group with more ranged from 3 to the highest.

Finally, in the main analyses and in the moderator analyses it was simultaneously corrected for the variables identified as confounders. To do so, a MANOVA 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*). Independent of whether the testing value was significant or not, univariate follow-up analyses were conducted as well, to see possible effects on the individual variables.

Main effects. The six dependent variables (VAS anxiety, VAS stress, STAI, POMS, *perceived attractiveness of the room* and *perceived quality of care*) were analyzed with a MANCOVA in order to see potential significant differences between the classical music condition and the control condition. Furthermore, 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 η^2) and the power were calculated.

Moderating variables. It was tested whether a heightened anxiety level could account for a potential moderator. Therefore the two variables assumed to indicate a higher level of anxiety (having an *anxiety disorder* and *not using medication*) were tested for two effects. Firstly, to see whether they moderated a difference between the two conditions in one or more of the dependent variables (scores on the six measures) and secondly, to examine whether they had a significant main effect on one of the six measures independent of the conditions. While simultaneously correcting for the confounders, MANCOVA was used to measure the possible moderators. Univariate follow-up analyses of the GLM were also conducted to examine possible effects on the individual variables. An interaction effect between the condition and respectively one of the two variables would be indicative of an effect being moderated.

Results

Client Characteristics

In total, 96 participants completed the questionnaire of which 77 were included in the statistical analysis to form the results. The other 19 participants had to be excluded from the data set because of not having completed the first part of the questionnaire before the therapy session or because of 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 with a standard deviation of 12.0 years. 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 client characteristics per condition and in total are shown in Table 1.

Table 1

Frequencies of Client Characteristics

Condition		Experiment		Control		Total		Chi ²
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p</i>
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	.026*
	medium	28	68.3	19	52.8	47	61	
	high	6	14.6	13	36.1	19	24.7	
	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	.735
	no	31	75.6	26	72.2	57	74	
Medication	yes	26	63.4	19	52.8	45	58.4	.345
	no	15	36.6	17	47.2	32	41.6	
Accompanied	yes	3	7.3	3	8.3	6	7.8	.868
	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	yes	13	31.7	14	38.9	27	35.1	.510
	no	28	68.3	22	61.1	50	64.9	
Musical pref. (log. cut-off)	≤ 40	28	68.3	18	50	46	59.7	.171
	≥ 60	10	24.4	13	36.1	23	29.9	
	41-59	3	7.3	5	13.9	8	10.4	
Musical pref. (med. cut-off)	< 20	23	56.1	13	36.1	36	46.8	.079
	≥ 20	18	43.9	23	63.9	41	53.2	
PW (log. cut-off)	≤ 3	24	58.5	26	72.2	50	64.9	.209
	≥ 4	17	41.5	10	27.8	27	35.1	
PW (med. cut-off)	≤ 2	16	39	24	66.7	40	51.9	.015*
	≥ 3	25	61	12	33.3	37	48.1	
Mean Age		36		40		38		.153

Note. Musical pref. = musical preference; PW = number of people in the waiting room; log. cut-off = cut-off point logically determined; med. cut-off = cut-off point determined using the median.

* $p < .05$.

Reliability and Validity

To begin with, the Cronbach's α of each of the four constructs was investigated. The STAI showed Cronbach's $\alpha = .79$, the POMS displayed Cronbach's $\alpha = .91$. Furthermore, the measurement of the *perceived attractiveness of the waiting room* presented Cronbach's $\alpha = .87$, and finally the measurement of the *perceived quality of care* showed Cronbach's $\alpha = .90$. These values point to a high reliability of the measurements.

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 measurements 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. All of the correlations between the four measurements were significant with $p < .001$, indicating a high convergent validity but also a low divergent validity. The correlation between the STAI and the POMS was the strongest, followed by the correlation between the VAS stress and the STAI (to measure *anxiety*). The correlations between these four measurements can be seen in Table 2.

Table 2

Correlations Between the Anxiety and Stress Measurements

	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.

*** $p < .001$.

Distribution of the Scores

The Kolmogorov-Smirnov test did not display a normal distribution of the scores neither on the STAI ($p = .046$), the VAS anxiety ($p = .001$), the VAS stress ($p < .001$) nor on the measurement of 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 measurement of the *perceived attractiveness of the waiting room* ($p = .200$). Despite the abnormal distributions, analyses of the GLM for normally distributed data were performed, relying on the robustness of ANOVA respectively MANCOVA.

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* and the *total number of people in the waiting room* (second categorization using the median) differed significantly over the experimental and the control condition. It can be seen that the two confounders did not significantly influence the analyses and outcomes regarding the majority of dependent variables (Wilks' $\lambda = .878$, $F(6, 64) = 1.484$, $p = .198$) except for the scores on the VAS anxiety. The values for the significance levels, the power and the effect size respectively corrected and uncorrected can be seen in Table 3. The corrected and uncorrected means and standard deviations of the dependent variables are presented in Table 4.

Table 3

Results of the Main Analyses Obtained From the ANOVA and the ANCOVA

	Uncorrected				Corrected for education and PW			
	F	<i>p</i>	Power	Part. Eta ²	F	<i>p</i>	Power	Part. Eta ²
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= number of people in the waiting room; VAS anxiety = visual analogue scale for anxiety; VAS stress = visual analogue scale for stress; STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States.

** $p < .01$.

Table 4

Means and Standard Deviations on the Measurements per Condition Uncorrected and Corrected for the Confounders

Condition	Experiment		Control		Total	
	uncorrected	corrected	uncorrected	corrected	uncorrected	corrected
	(<i>n</i> = 41)	(<i>n</i> = 40)	(<i>n</i> = 36)	(<i>n</i> = 33)	(<i>n</i> = 77)	(<i>n</i> = 73)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
VAS anx.	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 stress	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. VAS anx. = visual analogue scale for anxiety; VAS stress = visual analogue scale for stress; STAI = State-Trait Anxiety Inventory; POMS = Profile of Mood States.

* $p < .05$.

Main Effects

Table 4 shows the means and the standard deviations of the measured dependent variables per condition. Uncorrected for the two confounders *education level* and *number of people in the waiting room*, there were no significant differences between the experimental and the control condition (Wilks' $\lambda = .917$, $F(6, 70) = 1.059$, $p = .395$). Table 3 presents an overview of the found univariate results. All effect sizes are $< .09$ (small). The power of all tests is $< .8$. When correcting for the two confounders, a significant effect could be found for the VAS anxiety. However, this significant difference between the two groups yielded higher scores in the experimental condition than in the control condition. Figure 1 visualizes the mean scores for VAS anxiety and VAS stress. Although not significant, the mean scores on both VAS measurements were higher in the experimental condition than in the control condition.

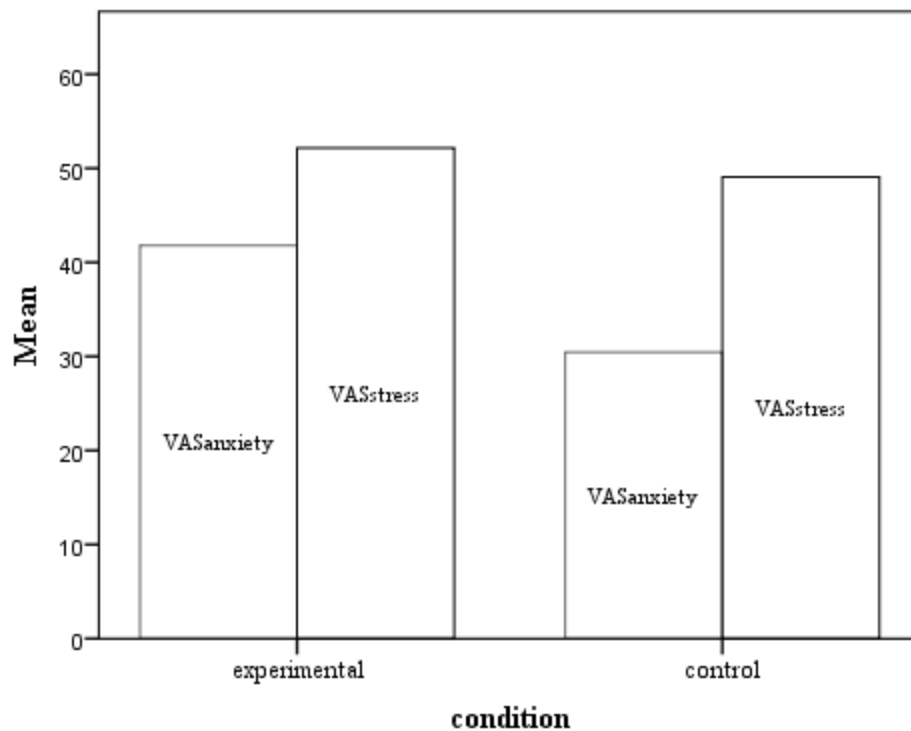


Figure 1. Mean scores per condition of the visual analogue scale for anxiety and the visual analogue scale for stress corrected for both confounders

Moderating Variables

In the multivariate test over all six dependent variables after correcting for both confounders, no significant interaction was found neither between the first moderator (*diagnosed with an anxiety disorder*) and the condition (Wilks' $\lambda = .945$, $F(6, 62) = .607$, $p = .724$) nor between the second moderator (*not using medication*) and the condition (Wilks' $\lambda = .916$, $F(6, 62) = .951$, $p = .466$). Also the multivariate main effect of the examined moderator *not using medication* was not significant in any of the six measurements with Wilks' $\lambda = .918$, $F(6, 62) = .927$, $p = .482$. Finally, there was a significant multivariate main effect of the examined moderator of *having an anxiety disorder* (Wilks' $\lambda = .810$, $F(6, 62) = 2.421$, $p = .036$).

The values of the univariate significance levels for all six measurements can be seen in Table 5. When taking a closer look at the scores it was discovered that participants with an anxiety disorder had significantly higher scores on the VAS anxiety compared to participants without an anxiety disorder. However, this finding was independent of the condition to which the participants were assigned, hence not showing an interaction. The means per condition

and the total for the moderator *anxiety disorder* are presented in Table 6. Furthermore, the means per condition and the total for the moderator *medication* are shown in Table 7.

Table 5

Univariate Significance Levels of the Moderators Corrected for Both Confounders

	Anx. Dis.	Anx. Dis.*Cond.	Med.	Med.*Cond.
VAS anxiety	.022*	.526	.383	.917
VAS stress	.558	.679	.829	.850
STAI	.567	.948	.514	.680
POMS	.484	.943	.141	.135
Room	.574	.152	.473	.361
Care	.268	.687	.714	.547

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.

* $p < .05$.

Table 6

Means per Condition and Total for the Moderator of Having an Anxiety Disorder or not Corrected for Both Confounders

Condition	Experiment ($n = 40$)		Control ($n = 33$)		Total ($n = 73$)	
	yes	no	yes	no	yes	no
VAS anxiety	50.0	39.4	43.3	25.7	46.8*	33.3*
VAS stress	45.0	53.3	46.7	49.5	45.8	51.6
STAI	2.7	2.6	2.6	2.6	2.7	2.6
POMS	2.9	2.7	2.7	2.5	2.8	2.6
Room	3.4	3.6	4.0	3.6	3.7	3.6
Care	4.0	4.1	4.1	4.3	4.0	4.2

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.

* $p < .05$.

Table 7

Means per Condition and Total for the Moderator of Using Medication or not Corrected for Both Confounders

Condition	Experiment (<i>n</i> = 40)		Control (<i>n</i> = 33)		Total (<i>n</i> = 73)	
Medication	yes	no	yes	no	yes	no
VAS anxiety	42.3	41.7	33.6	26.7	38.7	34.2
VAS stress	49.8	53.6	48.1	49.5	49.1	51.5
STAI	2.7	2.6	2.6	2.5	2.6	2.6
POMS	3.0	2.4	2.5	2.5	2.8	2.4
Room	3.5	3.5	3.8	3.6	3.7	3.6
Care	4.1	4.1	4.2	4.3	4.1	4.2

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.

Discussion

The aim of this study was to test the hypothesis that exposing clients of an ambulant psychiatric facility to classical music in the waiting room could have beneficial effects on their *anxiety* and *stress* levels and furthermore on their judgments of the *perceived attractiveness of the waiting room* and the *perceived quality of care* compared to a no-music condition. Additionally, based on the stimulus screening ability framework (Mehrabian, 1977) paired with the assumption that a higher anxiety level makes people more susceptible to environmental influences (Dijkstra, 2009), it was investigated whether a possible effect was more pronounced in clients diagnosed with an *anxiety disorder* or in clients not using *medication*. These two subgroups were chosen in order to conduct a more exact investigation based on the assumption of them being more anxious compared to others and furthermore to demonstrate the usefulness of musical interventions in mental health care facilities for highly anxious clients.

A similar study conducted by Dijkstra (2009) in a waiting room of a dental practice showed that playing exactly the same classical music list (except for one song less in the present study) resulted in lower anxiety and stress levels in dental patients as well as in a more positive evaluation of the waiting room area compared to a no-music condition. Since these beneficial effects were only found for the classical music condition regardless of

musical preferences, this suggested calming properties of this kind of music. Therefore it seemed reasonable to expect that playing classical music in the waiting room area of an ambulant psychiatric clinic might bring about similar results. However, the effects found in the dental study could not be corroborated in this study.

Except for a single, small, main effect of classical music on the VAS anxiety after correcting for the *education level* and for the *total number of people in the waiting room*, in general - regarding the total sample - no main effects of music were found on the majority of outcome measures when comparing the two conditions. But even this small effect was contradictory to the first hypothesis, yielding a lower mean score of anxiety in the control condition than in the experimental condition. Although statistically insignificant, also the mean scores on the VAS stress and the POMS were lower in the control condition than in the experimental condition.

When considering the moderation effects, it can be acknowledged that participants with an anxiety disorder in both conditions scored significantly higher only on the VAS anxiety but on no other outcome measures. Since no significant interaction with the condition was found, this result does not possess much relevance.

The obtained results automatically lead to the question of whether the musical intervention exerted negative effects on the emotional states of the clients instead of positive ones. However, a wide range of possible explanations and limitations of this study remain to be discussed. In the following, the points for discussion will be roughly divided into five different areas: unmeasured underlying biases, the setting of the intervention, the client characteristics, the properties and working of the music and finally the measurements used. In addition, suggestions for future research will be made.

To begin with, these outcomes could suggest possible between-group differences like unmeasured underlying biases, which existed before allocation to the conditions. Although being able to correct for two confounders, it remains possible that not all confounders were identified and subsequently corrected for. For instance, day dependent variations may have occurred, like an uneven distribution of the sample over the two conditions or certain external circumstances which differed over the days. More specifically, perhaps in one of the conditions the clients were systematically under the influence of a certain medication or stimulant, which may have had a confounding effect on the results. Furthermore, with regard to external circumstances, it seems possible that other unidentified variables could have influenced the results more strongly in one of the conditions, such as deviating behavior of personnel or meteorological conditions. Given the limited number of days per condition on

which the measurements took place, unmeasured underlying biases do form a possible explanation for the obtained results. However, these possibilities seem somewhat unlikely given the quasi-random assignment of the participants.

To come to the next point, it has to be acknowledged that the setting in which this study took place was not very calm or quiet but instead rather busy. As the waiting room had seven doors and two big windows facing a street on the one side of the building and a parking lot on the other, there was constant movement and a certain level of noise. Apart from the classical music, one could hear voices of people sitting or passing through the waiting room area, phones ringing at the secretarial desk, traffic from outside, children playing or the coffee machine. Thus it is clear that there were many distractions with a potential to undermine possible effects of the musical intervention. It seems reasonable to assume that classical music played in a calmer setting is more likely to have an influence on anxiety and stress levels as well as on the evaluation of the waiting room and the quality of care.

Apart from this, other people than the participants also played a crucial role when it comes to the setting of the study. Neither the researchers nor the staff (secretaries, therapists) was blinded, which could have had a potential influence on the outcomes of the research. For instance, it could be observed that secretaries and therapists showed deviating behavior on the experimental days compared to the control days, like dancing, singing or making comments about the classical music. When considering this in light of the present outcomes, the differing behavior of the staff may have indirectly led to a possible reduction of the effects of the musical intervention or even to the appearance of adverse effects. Although one might assume that a more cheerful staff could have beneficial effects on the clients, the simple fact that this behavior deviated from their behavior on regular days without music could have made the clients feel insecure. Certainly, this difference between the two conditions concerning the setting can be seen as a limitation of this research, even without knowing the exact way in which it may have influenced the participants and therefore the outcomes. To overcome this limitation, a solution for future studies may be to find a facility with two similar waiting rooms and populations, but in separate locations.

The next point, the target group - ambulant clients of a psychiatric facility with mainly anxiety and mood disorders - will be discussed to obtain further possible explanations for the outcomes of this research. As noted in the introduction, so far research on music as an environmental background stimulus had not been conducted in a psychiatric population. Based on the results of the study by Dijkstra (2009), which demonstrated beneficial effects of classical music for lowering anxiety and stress levels in dental patients, it was chosen to

examine another population, which was assumed to profit from this kind of intervention to reduce anxiety and stress. The sample of participants with anxiety and mood disorders and possibly even more heightened anxiety and stress levels due to the ambulant treatment visit, seemed suitable for the intervention.

However, a distinction needs to be made between on the one hand a population which very specifically fears a visit to the dentist and on the other hand a population with a constantly elevated, stable anxiety level. People with an anxiety disorder always feel fear and panic, without being able to determine something specific, which they are afraid of (Wells & Carter, 1999). It seems plausible that a similar intervention conducted in an average population versus in a psychiatric population may not necessarily lead to the same effects. Accordingly, it may be questioned whether a single stimulus intervention alone - music in this case - is perhaps not influential enough to generate beneficial effects in the clinical target group of the present study as it did in the dental study. This raises the question whether a multiple stimuli intervention, like administering music, indoor plants and wall-color at the same time, could in contrast yield an effect - assuming that these stimuli together could exert a stronger influence on people (Dijkstra et al., 2006). All in all, situational fear must therefore be distinguished from a mental anxiety condition, as the first mentioned may be less intense and therefore easier to influence by an intervention using only one stimulus, which is applied in that specific fear arousing context.

To continue with the fourth area of possible limitations and explanations, the basis of the study is discussed in more detail: the music. There is still a lack of clarity concerning the properties of music when it exercises an influence on people exposed to it (Kellaris & Kent, 1993), which also makes it hard to find explanations for when it does not. First of all, musical properties such as tempo, tonality, texture, volume level, rhythm, melodic contour, ambience, popularity and familiarity need to be investigated more profoundly. If more knowledge was gained in this domain, evidence-based musical interventions could be adapted accordingly. Thus, more research is needed to explore the effects of the above named musical properties in different populations as well as in different settings to see when classical music may be influential. Of course, also personal musical preferences can play a role when it comes to a potential effect on mood states, although Dijkstra (2009) for example indicated that musical preference was independent of the effects of classical music.

Furthermore, the working mechanisms of music are not definite either. It is uncertain whether the effects of music are stronger when it is consciously experienced or when it affects people subconsciously. In this study it cannot be stated that participants in the experimental

group were unaware of the classical music, given the fact that many comments were made about it to the researchers. But in either case, it is yet to be discovered through which mechanism music can influence people. Exposure to music is associated with positive changes in emotional states (Evans, 2002; Garlin & Owen, 2006) and cognitive processing (Sweeney & Wyber, 2002), possibly by refocusing attention onto pleasurable emotional states (Koch, Kain, Ayoub, & Rosenbaum, 1998).

This last aspect is also captured in the *Attention Restoration Theory* by Kaplan (1995), which suggests potential restorative qualities of the surrounding environment. If the environment possesses properties like for example compatibility (individuals must want to be exposed to and appreciate the environment) or soft fascination (aspects of the environment that capture attention effortlessly), it is said to provide restorative effects. Although this theory refers primarily to nature stimuli, it may be reasonable to assume that music could bring about similar restorative effects, as it is also likely to possess the properties compatibility and soft fascination. Finally, one could argue that the other environmental stimuli and noises in the setting of this research could also refocus attention, especially since the sound quality of the classical music in the current study was questionable. The classical music could be heard everywhere, but considering the large size of the waiting room, the utilization of only one music box might have had a negative impact on the sound quality in some sitting locations. These facts could be explanations for the absence of effects in the hypothesized directions.

Another point for discussion is the measurement of the variables in question. Regarding the correlations between the VAS anxiety, the VAS stress, the STAI and the POMS, it may be concluded that the four measurements showed a high convergent validity on the one hand but a low divergent validity on the other hand (all correlations $\geq .54$). The correlation between the STAI and the POMS, which made up the main measurements of this research to measure respectively *anxiety* and *stress*, was .80, showing the highest value and indicating the measurement of only one construct instead of two. Research by for example Newbury-Birch and Kamali (2001) also found a significant correlation of .59 between anxiety and stress scores, although different questionnaires were used in their study. This suggests that distinguishing between anxiety and stress and measuring them as separate constructs presents a challenge or might be downright impossible. Moreover, using four measurements for one construct seems pointless. Thus, it would have been possible to use fewer measurements or instead to add new ones to measure other constructs of interest, for instance stimulus screening ability (Mehrabian, 1977). When asking whether the present study in the

end measured stress or anxiety, one can call it a measurement of the overall stress level. For example, one of the items of the POMS was *anxious*, making anxiety one component of stress.

With regard to the other questions of the questionnaire concerning the client characteristics, it may be concluded that some of them apparently were too ambiguous to be included in the statistical analysis. For instance, the question whether clients had had therapy earlier, was not phrased precisely enough because it did not indicate that the question referred to a therapy other than the current one. Apart from this, most participants did not know exactly how many weeks of therapy sessions they had had. Thus, in the end no statements could be made about these questions in relation to the outcome measures, although these questions could have laid the basis for more potential moderator hypotheses. Furthermore, it would have been possible to ask the participants to indicate the use of for example nicotine, caffeine, alcohol or drugs since these substances can have a profound influence on anxiety and stress levels. Also in these cases, more moderator hypotheses could have been investigated.

As far as further research in this area is concerned, in healthcare settings it could be interesting to also ask therapists how they perceived the successfulness of the therapy or the mood of the clients, since in practice this should account for a highly important outcome measure as well. Furthermore, it may be advisable to include physiological measurements, like heart rate or skin surface reactions, in this kind of study to complement the results of the questionnaire and therefore to gain a deeper insight into the influences of the surrounding environment. These bodily responses may produce more objective results, since after all using questionnaires is a subjective way of measurement and therefore more prone to biases, such as the social desirability bias. However, physiological measurements might additionally influence the anxiety levels negatively because of the equipment being used or because of the participants being exposed to an unusual situation.

In conclusion, the current study did not demonstrate any of the results which were anticipated in the hypotheses. Only having found one small, main effect of classical music in the opposite direction in one of the six measurements after correcting for the confounders and a single moderation effect independent of the conditions, it can be said that the intervention was not effective the way it was administered in this research. This finding is in accordance with the review by Dijkstra et al. (2006) which found that multiple stimuli interventions appeared to be effective but single stimulus interventions tended to be highly inconsistent. Many possible explanations for the outcomes of the present study have been discussed and it

remains to be said that while taking current implications into account, more research is advisable in the area of healing environments with various target groups, in different settings, with other music styles, with multiple- and single stimuli interventions, and also with different outcome measures. Finally, the body of research is growing and along with a gradual gain of insight, evidence-based interventions can be designed to bring benefits to clients, staff and healthcare facilities.

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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.

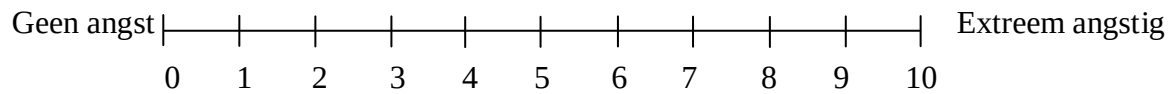
Naam onderzoeker:

Datum:

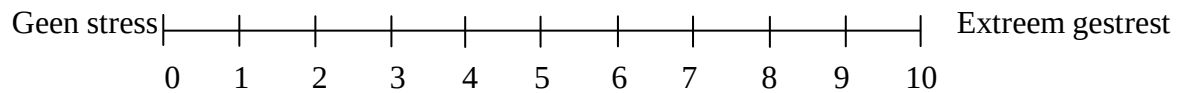
Handtekening:

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.

	Absoluut niet	Een beetje	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.

	Absoluut niet	Een beetje	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

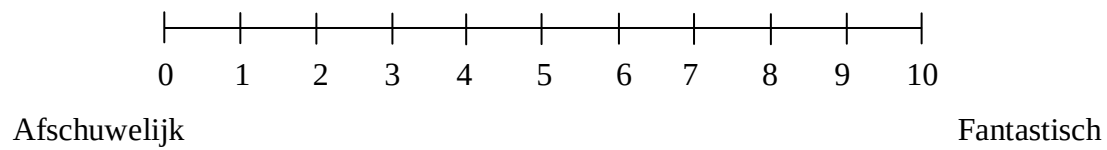
Indien ja, hoe lang is dit geleden?

..... jaar

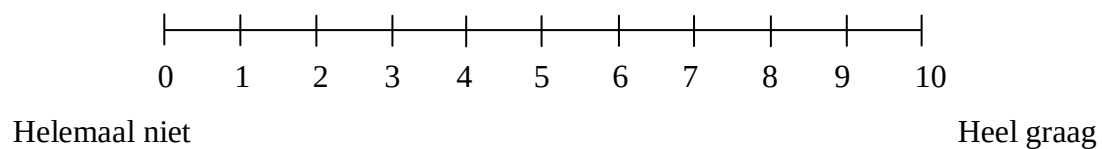
Gebruikt u op dit moment medicatie voor een psychische stoornis?

- ☐ Ja
- ☐ Nee

Hoe voelt u zich momenteel?



Luistert u graag naar klassieke muziek?



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 two Horns and Orchestra in E flat 2nd Movement
Dvorak - Symphony No 7 in D minor 3rd Movement
Haendel - Largetto Affetuoso
Haendel - Water Music Andante Allegro da Capo
Haydn - Flute Trio No 31 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

