

# Peak Performance & Reducing Stage Fright

Research group Lifelong Learning in Music & the Arts  
Peter Mak



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# **Peak Performance & Reducing Stage Fright**

Implementation research HeartMath training programme  
with students of the Prince Claus Conservatoire

PETER MAK

Research Group Lifelong Learning in Music & The Arts

2010



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## Preface

*'Take an active approach to the problem of performance anxiety – don't let it ruin your life'*

Stage fright among musicians and music students is a severe problem, and a problem moreover that is not easily talked about. A variety of research shows that about a two-thirds of musicians suffer from or has suffered from stress. In 20% of this group the problems are so severe that they are hindered in functioning professionally. In the musicians' biographies Rineke Smilde wrote as part of her PhD<sup>1</sup> this subject is mentioned several times.

As professor of the Research Group Lifelong Learning in Music & the Arts of the Prince Claus Conservatoire in Groningen and the Royal Conservatoire in The Hague, Rineke Smilde has therefore put this subject on the research agenda. This was suggested to us by the psychiatrist Age Smilde working at GGZ Heerenveen. He drew our attention to the HeartMath method of trainer Ewold de Maar and brought us together. This resulted in the project Peak Performance & Reducing Stage Fright, in which six students of the Prince Claus Conservatoire got the opportunity to take the HeartMath training. The research, which is described in this report, was aimed at the usefulness of this training for professional music students.

During this project I worked together with HeartMath trainer Ewold de Maar. His constructive and inspirational contribution to the research I have felt to be extremely pleasant. The way he worked with our students commands respect and serves as an example for dealing with students. The students were unanimously positive in their appreciation of Ewold, judging the remarks in their notebooks, and during the meetings.

Working with students who spoke openly about their stage fright and who confronted the problems actively, not sparing themselves, was for me, and here I am also speaking on behalf of Ewold, a very special experience. The fact that with this project we have been able to contribute to alleviating a serious problem among music students fills me as a researcher with gratitude.

Peter Mak  
2010

<sup>1</sup> Smilde, R. (2009b). *Musicians as Lifelong Learners: 32 Biographies*. Delft: Eburon Academic Publishers.  
Zie ook: Smilde, R. (2009a). *Musicians as Lifelong Learners: Discovery through Biography*. Delft: Eburon Academic Publishers.



## Introduction

Stage fright occurs frequently in the professional practice of musicians and is often not treated effectively or even acknowledged. An important reason for this is that the subject is still surrounded by taboos. In collaboration with GGZ Heerenveen and Complete Coaching, an institute for coaching and psychotherapy, a research project was set up, commissioned by the Research Group Lifelong Learning in Music & the Arts, aimed at dealing with stress for students of the Prince Claus Conservatoire and the Royal Conservatoire. The pilot project that was set up as a result of this research took place at the Prince Claus Conservatoire, and started in 2009.

The Research Group is researching the usefulness of the HeartMath method especially for music students dealing with stress in musical performance situations. This method has already been tested in a sports environment, where it led to very positive results. American research into the effects of the HeartMath method among music students also shows positive results. The expectations concerning this method among students of the Prince Claus Conservatoire who took part in the pilot therefore are high.

This research report looks into the definition of the problem more closely, it indicates how the research is set up and carried out, research results are described and analysed, and the conclusions that can be drawn from this. Also recommendations are made for the implementation of this method in the curriculum at conservatoires.

The definition of the problem describes what stage fright is, and it is preceded by an elaborate literature study. The outcomes are summarized in a model for stage fright in which the components of stage fright are indicated, the way these components interact and the factors that lead to stage fright, and to maintaining and worsening of the situation. Furthermore, based on research into the effects, an overview is given of the strategies which help against stage fright. And arguments are given for why we chose the HeartMath method in this project.

The set up of the research describes what its objective is, what the research questions are and which method is used to collect data, how the data are described and analysed and how the project has been set in time.

In the second part of the report the research results are presented and recommendations are given for the implementation of the HeartMath training programme in the learning environment of the Prince Claus Conservatoire and the Royal Conservatoire.

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# Definition of the problem

# 1. Definition of the problem

Stage fright is a serious problem in the music practice. Research among professional musicians shows that 60% of the participating musicians suffer from stage fright, among whom 20% to a serious degree which hinders them in their professional career (Van Kemenade, Van Son & Van Heesch, 1998; Fehm, L. & Schmidt, K., 2006; see also Hart, 2007, chapter 4.2). Stage fright occurs at all levels, among beginners as well as conservatoire students and top musicians. Women appear to be somewhat more susceptible to stage fright than men, though it may also be that women are more open about it (Wilson, 1997). Generally, stage fright does not just go away; and a focused approach does lead to a reduction of the problem. Stage fright is not just an inconvenient side-effect of the profession, it can break or seriously hinder a musician's career. Also it is a hazard for the physical and mental wellbeing of the people it concerns (Salmon & Meyer, 1992).

Among students of the Prince Claus Conservatoire the phenomenon of stage fright occurs as well, especially among Classical Music students. The Research Group Lifelong Learning in Music & the Arts of the conservatoire took the initiative to deal with the problem. A project called Peak Performance & Reducing Stage Fright around this theme was set up in 2009. It started with extensive literature research into the complaints, causes and treatment methods for stage fright. The outcomes of this will be used to make an informed choice for a form of treatment, which will then be offered to a number of students who are dealing with stage fright.

## 1.1 What is stage fright?

The term stage fright has been defined in various ways. Two definitions that are used frequently are those of Salmon (1990) and Brodsky (1996):

The experience of persisting, distressful apprehension about and/or actual impairment of, performance skills in a public context, to a degree unwarranted given the individual's musical aptitude, training, and level of preparation (Salmon, 1990, p.3).

De angst voor of tijdens een uitvoering, de angst om niet opgewassen te zijn tegen de verhoogde spanning tijdens een uitvoering (Brodsky, 1996; in Van der Loo 2008). (*The fear before or during a performance, the fear of not being able to deal with the increased stress during a performance.*)

The definitions show that stage fright is a state of being, especially directed towards the future (Kenny et al. 2006). At the core, according to Barlow

(2000), is a feeling of a lack of control about future events which are important to the person. The thought of failing is very threatening to the self-image of the individual. Between the threats of possible dangers and the experienced fear, there is the following interchange, according to Kenny (2006):

Those perceiving most threat are likely to experience the greatest anxiety, and those who are most anxious are more likely to perceive performance conditions as more threatening (p. 96).

In situations like this people respond with the so-called fight or flight response: the physiological system makes us ready to fight or run away. Although a performance on stage does not present an immediate physical threat, the chance of failure can be so intimidating for the self-image of the performer that it brings about similar reactions as a life-threatening situation (Hart, 2007). Therefore stage fright is especially an imagined fear.

Stage fright consists of the following components (see Steptoe, 1989):

- | a physiological component:  
changes in our nerve system and hormonal system which amongst other things might lead to an increased heart rate or pulse, dry mouth, sweaty or trembling hands, nausea, shortness of breath and blurry eyesight; the physical excitement is a natural response to the situation and is related to the flight or fight response with which people have reacted to frightening situations as of old.
- | a cognitive component:  
among which: having trouble concentrating, experiencing a black-out, a heightened awareness (being too focused on oneself and not enough on the task), being too focused on how others perceive him or her, negative thoughts about own abilities and the performance, and a distorted perception (wrong notes are experienced as more disastrous than they really are to others – listeners).
- | an affective component:  
among which: experiencing fear, panic, insecurity, and feelings of inferiority.
- | a behavioural component:  
more trouble with moving naturally, more mistakes, less expressive playing (or too exaggerated), more rhythmic irregularities, odd tempi (too quickly or too slowly), more reading mistakes in playing from sheet music and more general behavioural changes, such as avoidance, irritation, use of medication, etc.).

These components influence each other mutually. Negative thoughts (cognitive) about the performance lead to heightened physical symptoms (physical), which increase the chance of making more playing mistakes (behavioural), with as a result an impaired self-image (emotional), which causes negative thoughts and physical reactions to be stronger during a next performance. The cognitive component, as is shown by research, is the most important factor in maintaining and increasing stage fright. According to the catastrophe-theory cognitive fear, accompanied by physical tension, leads to intensification of the stress reaction with as a consequence a drastic drop in performance levels. (Hardy, 1990; Hardy & Parfitt, 1991).

The degree to which people are able to deal with stress appears to be very subject bound (Post, 2003). Differences in stress patterns have been found between performers with not much stage fright and performers who suffered from it to a higher degree. Craske and Craig (1984) showed that for musicians who in general were less afraid (had a low trait anxiety) the experienced fear was limited to the physiological symptoms of fear. For musicians with a higher fear level the worry about the course of the performance (the quality) and the doubts about their own abilities were added to this.

Some athletes perform better at a low stress level, others under an average stress level and yet others under a high stress level. In music the degree to which the musician controls the material could be an explanatory factor (the effect of overtraining). As the musician is more experienced, has built up effective routines, the challenge becomes less great, and the performance then generates the tension that lifts it to a higher level. If these routines are absent, a low or average level of tension can lead to a decrease in performance.

Musicians have a dual relationship with their emotions. On the one hand they portray emotions, as an important part of their musical expression. On the other hand they have to control their emotions while playing in order to give the best possible performance. Or, as Joseph O'Connor puts it:

Movement is most natural and effective when it is carried out with minimum effort, and this principle applies regardless of the size of the movement (O'Connor, 1987, p.96).

The performance of a virtuoso musician always gives the impression of being effortless. And in fact, this is truly the case, as a result of a study of many years. Renown musicians are able to be expressive without showing the accompanying physical excitement. Research about pianist Maria Jao Pires has shown that when she plays the piano, she can decrease or allow

the flow of emotions to her body purely by willpower (Damasio, 2003, p. 59). Or, as Vladimir Horowitz answered a journalist's question about how he achieved his amazing technique: 'By doing less and less'. Creating a balance between involvement and distance while playing, both emotionally and physical, is one of the most important tasks for a performing musician. Renate Klöppel puts it as follows:

Den Ausdrucksgehalt der Musik aufzuspüren, ihn zu erleben und ihm gerecht zu werden ohne Übertreibung und mit einer kritischen Distanz, aber ohne zu erstarren in einer unangemessenen Sachlichkeit – das ist warscheinlich die höchste Kunst beim Musizieren überhaupt (Klöppel, 1993, p.142).

Wieke Karsten rightly says that emotional self-regulation should also be a point of attention in teaching music students, and in the students' practising.

Fluitspelen is niet altijd gemakkelijk en vaak spannend. Het reptielenbrein ziet ingespannen studeren en musiceren aan voor gevaar... We slaan de verkeerde weg in als we denken dat we beter presteren door teleurgesteld of boos te worden. (Playing the flute is not always easy and often causes anxiety. The reptile brain mistakes focused practising and making music for danger... We take the wrong path when we think we will play better when we are disappointed or angry).<sup>1</sup>

People who suffer from performance anxiety suffer especially from the fear of being observed and criticized (Beck, 1983). It occurs in people who want to impress others in a certain situation, but who lack the belief in their own capacities that allow them to meet these expectations (Hart, 2007). In prehistoric times individuals had a greater chance of survival when they were in a group rather than alone. The evolutionary advantage of performance anxiety (in a mild form) lies in the fact that, in order to impress others, fear stimulates the individual to prepare well, which increases the chance of a good result and therefore appreciation (acceptance) by others. (Hart, 2007). This also explains why stage fright is stronger during a solo performance than when people perform with a group. In the first case the pressure is greater because the individual is completely responsible for the achievement.

## 1.2 What causes stage fright?

Stage fright can be traced back to several causes which are related to the person, the task and the musical upbringing.

<sup>1</sup> Wieke Karsten (2010) in her column 'Fier Beest' (Proud Beast) which appeared in the journal 'Fluit' of the Dutch Flute Society

### The person

Personal traits related to stage fright are:

- | hypersensitivity: which can be traced back to a nerve system that reacts more strongly to external stimuli;
- | a perfectionist attitude: people who are often not easily satisfied about themselves; this may be caused also by the pressure the person feels from her or his environment: I cannot let them down (Mor et al., 1995). Kenny, Davis & Oates (2004) found that in experienced performers perfectionism strongly correlated with trait-anxiety.
- | an anxious person: introverted and neurotic people in general are more anxious (Kemp, 1996; Steptoe & Fidler, 1987);
- | social phobia: people who are preoccupied with thoughts about how others think about them;
- | pessimistic attitude to life: people who are more pessimistic and therefore more susceptible to fear and depression;
- | people with fewer (effective) coping strategies (knowing how to deal with fear) experience more feelings of powerlessness, which makes them anxious;
- | insufficient technique. Havas (1983) even states: *The root of most problems concerning stage fright lies in forced and faulty physical actions. The problems of the mental attitudes often arise merely as a result of physical distortions (p. 127);*

Anxiety as a personal trait is often reflected in a higher score on the trait anxiety scale which measures the degree of anxiety of people in general. Contributing to maintaining and worsening of anxiety (anxiety as a character trait) are especially negative experiences while performing before an audience in the past.

### The task

This encompasses playing pieces which are too difficult, insufficient preparation, the nature of the concert (varying from very informal to very formal, auditions, contests), the audience for which is performed (friends – experts), the number of people present, playing by heart or from a sheet, playing alone or together with others on stage, the ruling conventions (alone on stage playing or singing composed music before a quiet audience, or improvising in a bar).

An important cause of stress is also the context of the classical music practice. Performers are criticized for the mistakes they make. Competition is killing. Participating in contests these days is a must in order to build up your career. At these contests students are especially judged for how faultless and quickly they can play. Participants experience environments like this as highly stressful.

Working conditions also have an influence of experiencing stress. Important are the relation with the immediate colleagues, threats of employment and appreciation of the material that is played (for an overview see Hart, 2007, chapter 4.5).

As most important sources of stress music students name insecurity about finding work later (80%); competitiveness with fellow students (51%); hearing negative comments from other students behind their backs (42%) and irregular hours (20%) (Steptoe & Fidler, 1987). According to Brodsky (1996) the profession of musician is among the five most stressful.

### **The (musical) upbringing**

Research into the relations between factors in (musical) upbringing and experiencing stress among musicians is rare. It is also not easy to demonstrate these relationships based on research. However, there are at least a few indicators about possible relations between factors in upbringing and stress. An interesting issue is the relationship between parents' style of upbringing and the self-awareness of their children. Parents who emphasize discipline in their upbringing, who are demanding and have high expectations about their children, often have children with heightened self-awareness – children who strongly have to regulate their behaviour in order to meet the parents' expectations (Klonsky, Dutton & Liebel, 1990). Performers with a heightened self-awareness are more focused on their own behaviour and have a stronger experience of the interference of physical reactions of stress on their functioning (Leary & Kowalski, 1995). This kind of style of upbringing is an important predictor for the development of stage fright. Gilbert en Procter (2006) discovered a relation between stage fright and musical environment in which being criticized plays an important part. Music students who grew up in an encouraging and supportive environment were less worried about making and preventing mistakes. Barlow (2000) found that in young musicians who have a higher than average score on the trait anxiety scale, and who had parents with high expectations, the premature exposure to frequent criticism in a competitive environment was very damaging to their self-confidence.



## 1.3 Differences in stage fright among musicians

In general stress occurs more frequently among classical than among jazz musicians. This has a lot to do with the differences in musical practice of both groups of musicians. For jazz musicians the performance situation is generally more informal, although thoughts such as: 'Can I join in with the others; will they play the standards I know; can I keep up with their pace' can be sources of stress. Another factor is that in jazz the music is more flexible. Classical musicians are much more fixated on a 'correct' representation of the notes as they occur in the score. Jazz musicians rather strive for control of their instrument in order to give shape to their musical ideas (Court-Jackson, 2007) and were less worried about 'wrong notes'. Moreover in the jazz practice the difference between rehearsing and performing is not quite as big.

Female musicians and music students generally suffer more from cognitive anxiety than other groups of musicians (Miller & Chesky, 2004, see also Kenny, 2006). Craske en Graig (1984) found that among students with low disposition anxiety stage fright is more limited to physical reactions. Musicians with high disposition anxiety suffered more from negative thoughts and behavioural reactions during the performance. For experienced musicians the physical excitement during a public performance is less threatening; they experience this as a normal reaction under the circumstances (Salmon & Meyer, 1992). Experienced musicians feel the greatest stress *before* a performance, for musicians with less performing experience the stress is greatest *during* the performance.

Osborn, Kenny and Holsomback (2005) found in their research that gender and trait-anxiety (the degree to which one experiences anxiety in general) is the best predictor of musical performance anxiety, but that negative thoughts during a performance contributed considerably to the level of experienced anxiety.

Stage fright occurs not only in adults, but also in children and adolescents. Research shows that stage fright in children and adolescents is reflected by the same physical and mental symptoms as in adults and that stage fright is linked to a negative self-image (Ryan, 2004). Children appear to suffer much less from stage fright. The change occurs later, caused by the following factors, according to Kenny (2006):

This transition is due to a combination of factors, the most important of which are our innate temperament; the increasing cognitive capacity and self-reflective function that develops through childhood and adolescence; the type of parenting

and other interpersonal experiences that we have; our perception and interpretation of the world around us; technical skill and mastery, and specific performance experiences that may have positive or negative outcomes (p. 95).

Stress is always a warning signal for danger. For the individual it should lead to an examination of what causes the reaction. Is the piece I am performing not too difficult? Have I studied enough? Am I not too worried about what others think of me? Is the fear real or am I imagining it?

## 1.4 What can be done about stage fright?

There are different strategies, methods and therapies for dealing with stage fright:

- | Medication, with beta-blockers used most frequently; they decrease physiological symptoms, but not always the stress as it is felt; it can lead to 'flat' playing.
- | Relaxation techniques such as yoga, meditation, autogenous training. As yet there is insufficient research data of good quality to make definite statements about the effectiveness of these techniques.
- | Attitude and en mental therapies such as the Alexander therapy, Mensendieck etc. There are indications that the use of the Alexander technique leads to improvements in the musical and technical quality of the performance and a reduction of the experienced fear in stressful situations; however, concrete research data is lacking (Kenny, 2005).
- | Bio- and neuro feedback in the shape of self-regulation of the heartbeat or brain waves by breathing techniques, mental exercises and visual feedback of the heart rhythm pattern of the brain activities. Among these is the HeartMath method (Thurbe, 2006) and the alpha/theta training by Egner & Gruzelier (2003). Turbe found a significant reduction of stage fright in the group that was trained with the HeartMath method. Egner and Guzelier reported that the alpha/theta training especially led to a better performance result (see also Gruzelier & Egner, 2004). The integrated approach of Niemann, Pratt & Maughan (1993), bio feedback training, consisted of the development of breathing awareness, muscle relaxation and performance-coping imagery. This approach led to a significant decrease in Music Performance Anxiety. The techniques have an

immediate effect on reducing physical reactions and indirectly on the cognitive aspects of stress.

Hypnotherapy. Stanton (see Kenny, 2005) found a significant decrease in experienced anxiety among test subjects who received hypnotherapy. The research was based on self-evaluations, the students were not tested in a performance situation.

Acceptance of the stress, combined with positive self talk. Court-Jackson (2007) found a significant decrease in Music Performance Anxiety among test subjects who made use of 'self pep talk' right before and during the performance, compared to a similar group that did not do this.

Realistic thinking: not making the event too big; you do not fail as a person after a performance that went less well; letting go of delusions of grandeur; the audience is not your enemy; people will still like you even if you perform less for once. Much research has been done into the area of positive thinking. Many researchers conclude that especially the absence of negative thoughts prior to and during the performance is the explanatory factor for a decrease in anxiety (for an overview see Kenny, 2005). Considering that the cognitive component is the most important component in maintaining and worsening of stage fright, apparently the following strategies work well for musicians (Wilson, 2002): learning to accept that a certain measure of anxiety and making small mistakes during a public performance are normal; learning to enjoy the performance instead of wondering what the audience will think the whole time; and encouraging yourself and focusing on realistic task oriented thoughts.

Practising: 'overlearning' (sometimes this works and sometimes it doesn't). Excessive practising can also increase anxiety. A better approach is the systematic variation of the performance conditions and gradually incorporating more conditions as in the concert situation. This is congruent with knowledge from kinetic research (building up flexible movement schemes; see Gellrich, 1998). A piece of music the musician practised is 'overlearned' when the performer can perform it during distracting conditions, such as interrupting noise, an audience and unpleasant feelings (such as stage fright). Therefore it is important to include conditions like this in the process of practising.

Visualisation, imagining the performance, often in combination with a relaxation technique. Objective is that the musician is able to imagine the performance without experiencing anxiety. This appears especially to reduce cognitive anxiety (see Thurbe, 2006).

- | Countering distracting/destructive thoughts by concentrating on the music, and seeing your role as performer and a mediator between the composer and the listener. Task concentration training (TCT), aimed at a better division of the attention between the performer, the performance and the environment is a technique which allows the musician to focus more on the task instead of on him or herself. Van der Loo (2008) found among music students who underwent this training a significant effect on experienced stage fright.
- | Psychotherapy: behavioural therapy (aimed at behavioural symptoms), cognitive therapy (explaining the problem, making it possible to talk about the problem), therapy that gives insight (for underlying problems in the personality structure). Many trainings for dealing with stage fright contain elements which are derived from behavioural therapy or cognitive therapy. Research into how insight-providing therapies work, into the deeper causes of stage fright, does not exist.
- | Musical improvisation: daring to take risks in a safe environment, in which making mistakes is seen as a learning curve (Montello, 1989). Improvisation in a safe environment brings musicians into contact with their inner creativity and takes away the pressure to meet expectations (Montello et al., 1990).
- | Insight into what drives you: wondering why it is you make music (Smilde, 2009; Green & Gallway, 1988). How do you want to function as a musician? What makes music special for you? What is your own individuality, without comparing your achievements (in part) to those of others. Aspects that have to do with self-image and musical identity.

Research into the effectiveness of the strategies mentioned above show a varying picture: sometimes effects are found and sometimes they are not. Comparing research results is not always possible because of the great differences in the research set up (control group or not, the quality of the measuring instruments, the number of people researched; see also Kenny, 2005). A factor that may also play a role is the aetiology of stage fright: stage fright may have different causes. For example, the fear may be traced back to aspects to do with the personality, a very responsive nervous system, a lack of self-confidence or an unreliable technique. In general it appears that an adequate preparation of the performance, both mentally and physically, has a decreasing effect on experiencing stage fright (Jackson-Court, 2007). Musicians who, prior to the performance, created more playing conditions related to the performance situation (imagining you are playing before an audience, playing the whole piece in one sitting, playing live in

front of your friends, etc.) suffered less from anxiety during the concert. Salmon & Meyer (1992) in their standard work in this field *Notes from the green room* say the following about this:

Effective performance preparation does not end with learning a piece of music. No matter how well a piece of music may be learned, its readiness for a performance should not be presumed (p. 97).

And also:

As much as possible, try to simulate in each practise performance the conditions of the actual performance. Of course, a dress rehearsal is intended to provide this type of simulation, but consider arranging other practise performances with the same care and planning (p 106).

The success of training beforehand depends on how closely the training situation meets the conditions of the performance situation before an audience. Think for example of the presence of listeners during the performance, the non-stop playing of the programme and the wearing of concert clothing (Lehmann et al, 2007).

The best way of learning how to deal with stage fright is self-examination and taking charge of the measures that best fit you to combat anxiety (Salmon & Meyer).

## 1.5 A model of stage fright

Research of literature shows that stage fright (music performance anxiety) consists of a combination of physiological, cognitive, emotional and behavioural components (see figure below).

The components influence each other mutually. Having negative thoughts, for example, influences all kinds of physiological and hormonal systems which decreases the chance at a satisfying musical achievement. A negative playing experience can then affect the musician's self-confidence. The reverse effect is also possible. By calming yourself (for example by breathing in and out quietly) you can regulate your thoughts, so you can concentrate on the music and the performance better, with as a result a better performance which increases your self-confidence. Each of these components can trigger anxiety and influence the other components: each component can be both stimulus and response. This also applies in the reverse sense: reducing anxiety.

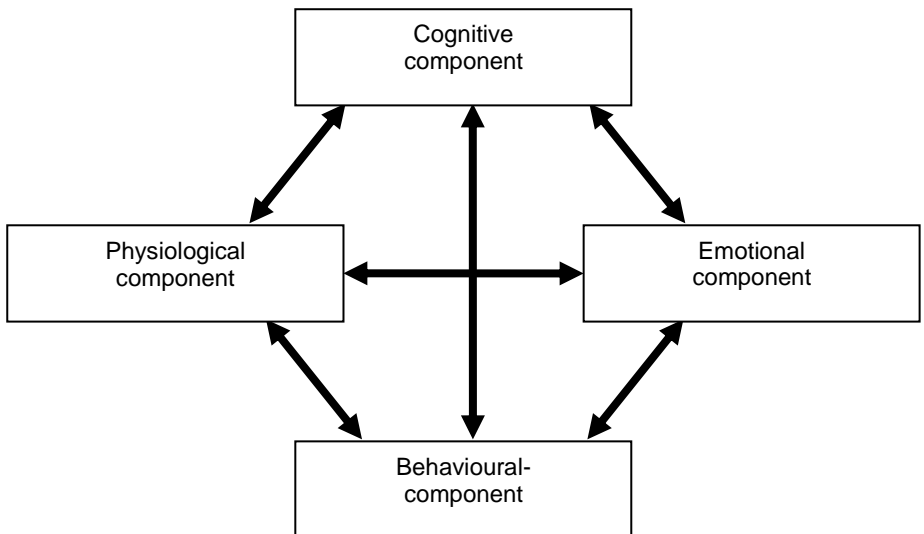
**Figure 1: A model of stage fright**

(Influencing factor)  
*The person*

- anxious/hypersensitive
- introverted/neurotic/narcissistic
- social phobia
- perfectionism
- ineffective coping strategies
- lack of technique
- musical identity

(Influencing factor)  
*The musical task*

- insufficient preparation
- much depends on it
- playing by heart
- routines of the performance practice
- size of the audience
- bad working conditions



(Influencing factor)  
*The (musical) upbringing*

- expectation parents/teacher
- learning environment with frequent criticism
- learning environment with strong focus on avoidance of mistakes and risks

Lehmann et al. (2007) formulates the interaction between the components of stage fright as follows:

*Clearly the physiological, behavioural and cognitive symptoms are interrelated. Musicians' worries (cognitive) going into a performance may cause them to tremble, sweat and tense up (physiological) on stage, resulting in performance mistakes and poor technique (behavioural), all of which increases their negative thinking (cognitive) (p. 149).*

### **Effects of arousal on cognitive functioning**

The heart rhythm has a direct influence of the brain. As the heart rhythm pattern becomes more incoherent (irregular), the ability to concentrate decreases and negative thoughts about own abilities also increase.

A highly increased activation of the central nerve system (leading to the phenomenon hyper-vigilance) makes the performer more aware of issues in her environment which normally remain unnoticed. Not only does the musician hear and see details she did not notice before, inner sensations of the body are also conveyed more strongly, and therefore feelings of anxiety are felt more strongly (Salmon & Meyer, 1992). The sense of time can also become distorted: sometimes time seems to crawl, which causes the musician to play faster, and in other situations time appears to go really fast, with as a result that the musician plays the music slower than usual.

Anxiety influences the cognitive system in two ways: (1) the individual falls back on strongly mechanized behavioural patterns (routines) learned earlier and (2) it limits the access to knowledge stored in the memory and the ability to concentrate (Salmon & Meyer, 1992). This effect is also called cortical inhibition. The concrete consequences of this can be: thought-blockage or black out (the memory fails), dissociation (the feeling of having no control over the things you do) and the phenomenon of hyper-vigilance or heightened awareness mentioned earlier (Vendereyken, Hoogduin en Emmelkamp, 2000).

According to Van der Loo (2008), based on the thought that stage fright is a kind of social phobia, people who suffer from stage fright underestimate the quality of their musical achievement and overestimate the degree to which their fear is visible to others. They see themselves as predominantly negative. Heightened self-awareness maintains stage fright in various ways (Van der Loo, 2008):

- | Not being able to take in information from the outside; you therefore base your ideas on information generated internally. (Dysfunctional notions once formed are not corrected based on new information).
- | A decline in performance because there is insufficient capacity left to do the job properly.
- | It intensifies emotions such as fear and makes people more aware of their physical reactions.
- | It leads to setting in motion of thoughts of self-evaluation, which are generally negative in people with a social phobia (stage fright).

### **Effects of arousal on emotions and self-esteem**

When you are stressed the negative emotions you are experiencing cause incoherent patterns in your heart rhythm. The cortical inhibition that arises limits the possibilities of the brain (the neocortex) to process information in a good way, which causes a diminishing in quality of processes such as decision-making, problem solving abilities and creativity. Your reactive power declines and your coordination weakens (De Maar, 2009).

There is an interaction between physical turmoil and emotional instability – they can provoke each other and strengthen each other, always with an effect on cognitive functioning. The fear which causes the individual to turn inwards often leads to a distortion of perception and thinking, in which shortcomings are made larger and things which go well disappear (Salmon & Meyer, 1992). Anxiety about the possible outcome of future events is not always lessened by experiences of success. On the contrary, anxiety can be increased, because there is the more solid conviction that next time it will be a disaster. Concentrating on the musical content while playing is a good way of taking away distracting thoughts (Green & Gallway, 1988). According to Hart (2007), who conducted an in-depth qualitative research among six professional musicians who suffered from stage fright, shame is the most important threat to self-esteem and the cause of anxiety. Feelings of shame in relation to the environmental conditions responsible for shame are stored in the amygdale (part of the limbic system). The feeling of shame very rapidly activates the correlated physical reactions (increased heartrate, trembling, sweating etc.) and cognitive reactions (negative thoughts about own functioning). The body has to be reprogrammed, as it were, to get rid of these mechanisms.



### Effects of arousal on musical performance

Strong physical excitement in general affects the quality of the musical performance. It increases the chance of playing wrong notes while playing or singing. Reading notes itself can also be influenced negatively (more reading mistakes). Musicians have problems with moving naturally (the flexibility of the loco-motor system diminishes) and/or the breathing (not enough breath). Loss of concentration and problems with coordination also contribute to a diminished quality of the performance (below someone's level). Stress can also lead a musician to revert to a step by step control over the performance process (so to a lower level of control) which can influence the quality of the musical performance negatively (Lehmann, 1969). What is more, by wanting to control everything the chance of making mistakes becomes even bigger. (Salmon & Meyer, 1992).

Distortions of the sense of time influence the timing of movements, with as a result more rhythmic irregularities and tempi that are too high (Lehmann et al., 2007). What can also be a result is that there is less expression in the performance or, the opposite, too much and exaggerated expression (not having control of yourself anymore). A consequence of these negative experiences can be that you try to avoid performances, become irritated right before a performance or start using all kinds of means in order to relieve the feelings of stress (medication, drinking, drugs).

Factors which influence the occurrence of stage fright can be traced back to the *personality* of the performer, the musical *task*, the conditions under which the music is being performed and the (*musical*) *upbringing* (see paragraph 1.2: what are the causes of stage fright).

### The person

The following characteristics are mentioned:

- | Hypersensitivity: can be traced back to a nervous system which reacts more strongly to external stimuli (increases physical arousal).
- | Perfectionist attitude: people who are not easily satisfied about themselves; this can also be caused by the pressure someone feels from her or his environment: I cannot disappoint them (Mor et al., 1995). Kenny, Davis & Oates (2004) found that with experienced performers perfectionism had a strong correlation with trait anxiety. This has a direct influence on the cognitive component of stage fright.

- | Anxious person: introverted and neurotic people in general are more frightened (Kemp, 1996; Steptoe & Fidler, 1987); this has a direct influence on the emotional component of stage fright (acceptance, appreciation).
- | Social phobia: people who are preoccupied with thoughts of how others feel about them; has an immediate effect on the emotional (self-image) and cognitive component (negative thoughts) of stage fright.
- | Pessimistic attitude to life: people who are more negative and therefore more susceptible to fear and depression; this especially affects the emotional component of stage fright.
- | People with less (effective) coping strategies experience more feelings of powerlessness which makes them anxious.
- | Faulty technique: especially affects the emotional component of stage fright (negative former experiences). Anxiety as a characteristic of the personality is often reflected in a higher score on the trait anxiety scale, which measures the degree of anxiety in people in general. Anxiety as a characteristic is also formed by negative experiences in performing before an audience in the past.

### **The task**

The following circumstances have an influence:

- | Pieces that are too difficult or insufficient preparation: of direct influence on the cognitive component of anxiety (negative thoughts about the expected quality of the concert) and the behavioural component (avoidance behaviour, over-practicing).
- | The nature of the concert: informal (for family and friends) – formal (important audition or important contest); has a direct effect on the cognitive and the emotional component of stage fright.
- | Playing by heart or from a sheet: playing by heart can cause worries about a possible black out (cognitive component).
- | Composed music or improvised music: research shows that jazz musicians suffer less from stage fright than classical musicians.
- | The number of people in the audience: has an immediate effect on the physical component (the more people stare at you, the greater the fear).

- | Working circumstances: the relation with the immediate colleagues, threats of (un)employment and appreciation for the repertoire to be played: has a direct effect on the emotional component (irritation, fear for the future).
- | Acceptable is also the fact that the experienced physical and mental pressure while practising the music has an effect on the experienced tension during the performance (Salmon & Meyer, 1992).

### **The (musical) upbringing**

Indicative are the following findings:

- | The relation between the parents' style of upbringing and the self-awareness of their children. Parents who emphasize discipline in their upbringing, who are demanding and have high expectations of their children often have children with a heightened self-awareness – children who have to strongly regulate their behaviour in order to meet the parents' needs. Musicians with a heightened awareness are more focused on their own behaviour and have a stronger sense of interference of the physical reactions of stress on the way they function (has a direct effect on the cognitive and the emotional component of stage fright).
- | The relation between stage fright and the musical environment in which criticism is a central point. Music students who grew up in an encouraging and supportive environment are less worried about making and preventing mistakes. Young musicians who have a higher average score on the trait anxiety scale came from families in which there was a high expectation about the achievements of the children, but little support (they were not able to offer this) to realise these achievements. A competitive environment and frequent criticism about the performance can have a negative impact on the self-confidence of the young musician.
- | It is accepted that factors such as parents and teachers who put an emphasis on achievement, long hours of self-study, being focused on avoiding mistakes and (consequently) being (made) dependent on the appreciation of the audience, cause introversion and perfectionism, two important sources for stage fright (Lehmann et al., 2007).

## 1.6 Choosing the HeartMath method

Although stage fright has different causes, either related to earlier events in life (musical and non-musical) or not, breaking the pattern of acquired stress reactions (the interactions between the various components of stage fright) is a first requirement before (possible) deeper causes can be found (Hart, 2007). Anxiety has different systems in the brain and one of them is a subconscious system (Sitskoorn, 2006, in Van der Loo, 2008). The amygdale is at the core of this system and is involved in forming fear-memories. As a result of negative performance experiences a conditioned reaction is formed: each following concert automatically triggers the conscious fear-system. Musicians with stage fright therefore have to deal with an acquired pattern because of which the body responds very directly and quickly to the musical performance situation. Just like with a phobia the individual has to deprogramme built up routines, replace them with adequate reactions. This is why insight into what stress is, is not enough, this is an activity of the neocortex. The automatic fear-response takes place in another layer of the brain (the limbic system in combination with autonomous reactions at the level of the brainstem) and therefore requires different measures for change.

Research shows that a combined approach, aimed at physical, emotional and cognitive self-regulation, has the greatest effect, also in the long run.

Reprogramming yourself (both cognitively and emotionally) combined with relaxation techniques has the greatest effect on reducing and preventing stage fright. Salmon & Meyer (1992) define the following steps in what they call cognitive restructuring:

1. *Become aware of thoughts and feelings, and more generally, your interpretations of going events.*
2. *Gather information related to these thoughts and attitudes (which are accurate and which are not).*
3. *Analyse the data you have obtained and determine how well it fits with how you view yourself.*
4. *Make changes in dysfunctional attitudes so that they fit more closely with the information that has been collected (p. 189).*

The reason we chose the HeartMath method for this project is that it affects all defined components of stage fright. The HeartMath method is a method which gives people better balance through self-structuring of thoughts, emotions and body signals (via biofeedback), which improves their

performances. The method is simple, effective and scientifically underpinned. Thurber (2006) researched how the HeartMath method worked among music students and found a significant reduction in experienced stage fright prior to the performance in the group that was trained using this method. The effects became visible after five hours of training during a period of three weeks.

### **Core of the HeartMath method**

Our heart plays a crucial role in the way we function. It is an organ which rhythmically pumps blood through the body and so provides tissues with oxygen and removes toxins. The heart rhythm has a profound effect on cognitive functions, such as clarity of thought, insight, taking strategic decisions and the way we communicate. The heart rhythm is influenced by the degree of physical exertion, by breathing and by emotions and thoughts. In an ideal situation the heart rhythm shows a variation (heart rhythm variability or HRV) in which there is a harmonious relation between breathing and heart frequency. At the inhalation the heartbeat quickens somewhat, at the exhalation it slows down. If inhaling and exhaling takes place with regularity the heart rhythm pattern is also regular. This phenomenon is called coherence. A coherent HRV signal makes it easier for the brain to process information. This is what we call 'cortical facilitation'. This means that the cerebral cortex, the part of the brain which allows us to think, analyse, deliberate and slow down impulses, functions better (De Maar, 2009).

Clinical studies show that there is a connection between HRV and health, cognitive functioning and physical performance. It is possible to influence the heart rhythm and so bring about positive effects on a physical, emotional and mental level. The HeartMath method consists of a number of simple techniques which allow you to learn this. Underlying principle of the training is that the participant learns to take control of her own (physical, cognitive and emotional) reactions.

Heart coherence or psycho-physiological coherence is a situation in which the individual performs at their best. Thurber describes what happens if people become coherent: *In the 'coherent' state, the emotions, perceptions and heart-brain communication are synchronized in a joint time/frequency domain (Thurber 2006, p. 23).*

Psycho-physiological coherence is the same as experiencing 'flow', also called peak experience. This experience can be described as feelings of calm, clarity, full attention and ease. Musicians indicate that they feel at one with the music, the instrument and the space (including the audience) where

they make music. Heart coherence is the opposite of stage fright. A condition like this is only brought about if the musician is challenged enough on the one hand and is involved in what she does with her whole being, and is able to handle the task on the other hand. Lehmann et al. (2007) describe flow as follows:

*A person feels flow when she or he approaches the performance with focused goals in mind and applies great concentration to them while performing. Some describe it as being 'totally absorbed' or 'lost' in the music (p. 160).*

In order to work with the HeartMath method you have to purchase software and an ear sensor. This is necessary for showing the heart rate and variables within this. Through breathing and imagination, linked to pleasant experiences, the heart rate variability can be made coherent. The participant learns to hold on to this pleasant experience, also in stressful circumstances (or depictions of this). Through a series of exercises the participant gains insight into her own physical reactions, thoughts and emotions while making music, and how to change these.

### **Brief description of the HeartMath training programme**

For the students of the Prince Claus Conservatoire a special training programme was put together for learning the HeartMath techniques. The programme consists of five sessions. In the workbook which is part of the training (De Maar, 2009) the sessions have been summarized as follows:

*In session 1 we identify your sources of stress, your reactions to them and the way you try or have tried to deal with stress. You determine what you want to achieve with this training. You learn what the connection is between stress and emotions. You are introduced to your own emotional landscape and what the effects of emotions are on your body (p. 6).*

*In session 2 you learn two techniques: the Neutral and the Quick Coherence®, which will help you break the vicious circle of stress and calm yourself. You learn what the influence is of stress on your heart rhythm, what heart rhythm variability is and what we mean by coherence. You also learn how healthy positive and pleasant feelings are and how you can use them in dealing with stress (p. 12).*

*In session 3 you learn the Heart Lock-in®, a technique which helps you profit from the many positive effects of a prolonged coherent heart rhythm on your wellbeing, health and performance level (p. 18).*

*In session 4 you learn three framing techniques, Re-framing, the Freeze Frame technique® and Pre-framing which allow you to deal constructively with situations you experience as problematic, have experienced as problematic in the past or experience as problematic in the future. By approaching the problem from coherence you are able to come to better solutions and you will be able to change your experiences of situations from the past or in the future in a positive way (p. 24).*

*In session 5 we look back on the coaching trajectory you took and the development you went through. You draw up a plan in which you state how in future you will practise the things you learned.*



2



## Research set up



## **2. Research set up**

### **2.1 Objective of the research**

Making recommendations about the usefulness of the HeartMath method training programme for students of the Prince Claus Conservatoire to deal better with the stress of performing before an audience. The research is aimed at the effectiveness of the method and the way this is offered.

### **2.2 Research questions**

1. To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience?
2. Which adjustments of the training programme are necessary to make it more suitable for performing music students?

### **2.3 Nature of the research**

Implementation research: research into the effectiveness and usefulness of the HeartMath training programme.

Multiple case design. The HeartMath training is used for six music students who are tracked individually. We look into what the effects of the HeartMath training are on an individual level. Research into the effects of the method has to answer the following sub-questions:

- | To what extent does the HeartMath training lead to a reduction of experienced stress in performance situations among students?
- | To which degree does the student realize her personal goals with this training?

Research into usefulness is aimed at the training (the meetings, the contents, the trainer), the accompanying workbook and the degree to which the techniques provided by the training allow themselves to be integrated in the performance practice of the student.

Concerning the training we will research whether the number of meetings, the time between the meetings and the trainer's instruction are sufficient.

We will research the workbook that accompanies the training for clarity of the text, how appealing the text is and the relevance of the exercises for the target group (relation with the performance practice of the student).

In assessing the question whether the provided techniques allow themselves to be integrated with the performance practice it is important to know whether the techniques can be applied during performance situations.

The outcomes per case can be considered as independent research. The outcomes compared to each other give an indication about the general nature of the findings. A total of six cases will be described. The comparison applies to the outcomes of six researches.

## 2.4 Research instruments

### Research question 1

*To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience?*

#### **State Trait Anxiety Inventory**

In order to measure stage fright the State Trait Anxiety Inventory (STAI, Spielberger, 1983) is used. The STAI is the questionnaire most frequently used in research into Musical Performance Anxiety. The STAI comprises two scales:

- | 1-State Anxiety (condition of anxiety: STAI-S) refers to the state of anxiety which is experienced during the moment the questionnaire is completed.
- | 2-Trait Anxiety (disposition anxiety: STAI-T) measures the general state of anxiety of the individual.
- | Both the STAI-T and the STAI-S meet the reliability and validity requirements for tests. They have been standardized among various groups, among which are college students. Research among 481 female students shows that the average score (anxiety level) among this group is 40,40 for the STAI-T and 38,76 for the STAI-S. A person is more anxious than average when the score is one standard deviation above average.<sup>1</sup>

<sup>1</sup> The standard deviation is an indicator for the division of the numbers around the average. It also gives an indication for the normal division of a variable. A rule of thumb is that in the interval, which is determined by the average plus one standard deviation upwards and downwards, should contain about 69% of all values. With plus or minus twice the standard deviation this is 95%.

For the **STAI-T** it concerns scores > **50,55** and for the STAI-S scores > **50,75** (Spielberger, 1983).

The STAI-T has been taken once, preceding the training, in order to determine how anxious the student is in general. Is the anxiety strongly situation related (playing before an audience) or is it also related to non-musical situations?

The STAI-S was taken twice: immediately before a performance – prior to the beginning of the training (as zero measurement) and also prior to the performance – after the training ended (as effect measurement).

### ***Personal objectives student***

The student's motivation for participating in this project is recorded, amongst others, in a motivational letter. In addition, during the first individual session the student's personal sources of stress were discussed and how she deals with these. The personal targets people have set for themselves (see workbook page 8) and the degree to which these targets are realized aided by the training are an important measure to determine the effect of the HeartMath training.

### ***Personal experience performances for an audience***

The personal experience of the concert is measured on the basis of three premises/statements which the student is asked to grade with a mark. 1 is a strong denial and 10 is a strong agreement. The premises concern the satisfaction about the performance, the experienced control about the course of the concert and the degree to which the concert was experienced as pleasant. A zero measurement and effect measurement is used here as well.

### ***Notes Researchers about the student's performance***

The researcher and the trainer give their impressions of how the student's performance came across. They looked at the performance and at how the student presented herself.

### ***Log researcher and trainer***

The log contains notes made based on reactions and remarks made by the students during the training, with additional notes about personal impressions by the researcher and the trainer.

### ***Evaluation form training programme***

At the end of the last (individual) session the student completed an evaluation form with statements about the contents of the training, the material, the usefulness of acquired techniques and the relevance of the

training. The student had to grade each statement according to five alternative answers, ranging from 'positively agree' to 'positively disagree'. The student was also asked to indicate which aspects of the training she found most relevant, give a grade for the whole training and what concrete ideas or tips she had for improvement.

### ***Final evaluation with the student***

After the research data had been described and provisionally analysed there was a final evaluation between student and research leader. During this conversation the student also used the log she had been asked to keep. The conversations were individual and were intended to check whether the student's observations had been reported or interpreted correctly, and whether the impressions of the trainer and researcher were correct. In addition, possible obscurities in the research data were clarified by the student. The final evaluation was a kind of follow up measurement, during which the student was asked what her findings were with the HeartMath method after 10 December 2009 (the evaluation talks took place in February 2010). The student was asked whether she used the acquired techniques and in which circumstances, and if she didn't what the reasons were for this, to what extent she had realized her personal targets, whether she would recommend the method to fellow students, and which suggestions she had for improvement of the training. At the beginning of the evaluation the student was told the researcher had no personal interest in the method whatsoever. The student was asked to give honest answers to the questions. The researcher's interest, giving a valid assessment of the usefulness of the HeartMath training, was best served by this.

The different measurements answer the question whether the training contributes to a decrease in experienced stage fright. Therefore there is triangulation of methods and persons.

### **Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

### ***Assignments workbook***

The workbook contains assignments which are made during the sessions or at home. Weekly, during the period in which the sessions took place, the homework was sent to the researcher. Where the contents gave cause for a consultation with the trainer, this also happened. At the end of the meetings the completed workbooks were copied and analysed concerning research questions.

### ***Homework reports student***

How did the students experience the training (and the trainer): what struck them, what did they like and what did they not like, which suggestions did they have for improvement. How did they experience the sessions (what were eye openers and what worked less well), including the exercises the students had to do.

### ***Log researcher and trainer***

Notes by the researcher about the course of the training: how did the students come across, what went well, which problems arose, which solutions were found, reports about group meetings, outcomes intermediate evaluations with Ewold.

### ***Evaluation form training programme***

At the end of the last (individual) session the student had completed an evaluation form with statements about the content of the training, the material, the usefulness of the acquired techniques and the relevance of the training. Each statement gave the student the opportunity to choose from five alternative answers, ranging from 'positively agree' to 'positively disagree'. The student was also asked to indicate which aspects of the training she had felt were the most relevant, give a grade to the whole training and give concrete ideas or tips for improvement.

### ***Final evaluation***

After the research data had been described and provisionally analysed, there was a final evaluation between the student and the research leader. The student used the log she had been asked to keep during this conversation. The conversations were individual and intended to check whether student's observations had been reported or interpreted correctly, and whether the impressions of the trainer and researcher were correct. In addition, possible obscurities in the research data were clarified by the student. The final evaluation was a kind of follow up measurement, during which the student was asked what her findings were with the HeartMath method after 10 December 2009 (the evaluation talks took place in February 2010). The student was asked whether she used the acquired techniques and in which circumstances, and if she didn't what the reasons were for this, to what extent she had realized her personal targets, whether she would recommend the method to fellow students, and which suggestions she had for improvement of the training.

### ***Final evaluation trainer Ewold de Maar***

What were his findings concerning the training compared to experiences he had earlier with this kind of training for other groups. What would he do different next time?

The question to which extent the usefulness of the HeartMath training can be improved is answered from the perspectives of the various people involved: the students, the trainer and the researcher.

## 2.5 Description and analysis of research data

The outcomes on the de STAI-S (pre and post measurement) give an indication to which extent the method contributed to decreasing stage fright among the students. The outcomes were compared to the grades given for the statements (concerning both performances), the outcomes of questions 9 and 10 on the evaluation form, the students' findings in their (homework) reports and the answers to the questions in the final evaluation talk. Triangulation of quantitative and qualitative research data (Flick, 2007) gives a more valid and reliable picture of the usefulness of the HeartMath method and the aspects that influence this.

*Per casus* (student) the course of the training was evaluated: did it work, what worked and what worked less well, which provisional adjustments were made to the training programme, which suggestions for improvement did the student give, did the student indicate the intention to proceed with this method. For the analysis data was used which was obtained with various research methods (the student's homework reports, the researcher and the trainer's logs, outcomes of the assignments in the student's workbook, outcomes final evaluation forms and outcomes final evaluation talk).

*Per casus* this provided a picture of what worked well and what worked less well for the student involved. In order to secure the validity of the research data the results were submitted to the student involved with the request to correct inaccuracies or imperfections.

*Overall.* Objective of the qualitative analysis was structuring the large amount of data which was obtained with the aid of the various research methods used. The answers to the research questions were leading in the analysis of the data. The outcomes per case were compared for similarities and differences (triangulation of data). Categories were established under which the information could be arranged. Effects and bottlenecks which all students experienced reinforce the general conclusions; individual remarks complement this picture. The conclusions drawn from the research will have an effect on the training programme (number of meetings, contents meetings, contents workbook). The next step will be the adjustment of the training programme (including workbook), which will improve the usefulness of the HeartMath method for conservatoire students.

## 2.6 Procedure

25 May 2009	September	October/ November	December	January 2010
<p>Informative meeting</p>	<p>STAI-T test and questionnaires Soffos (sent out 03-09-09 Received back 07-09-09).</p> <p><b>Session 1 (individual) 07 and 08-09-09</b> <u>Zero measurement:</u> STAI-S test taken right before public performance and grading of statements personal experience concert, prior to individual sessions.</p> <p>Provisional processing of evaluation data (09-09-09).</p> <p><b>Session 2 (group) 15-09-09</b> Provisional processing of evaluation data 17-09-09.</p> <p><b>Session 3 (group) 22-09-09</b> Provisional processing evaluation data 24-09-09.</p> <p><b>Session 4 (group) 29-09-09</b> Provisional processing of evaluation data 31-09-09.</p>	<p><b>Session 5 (individual) 12/15-10-09</b> Provisional processing evaluation data 15-10-09.</p> <p>Provisional processing evaluation data 30-10-09.</p> <p>Students work with the provided techniques on the realisation of the targets in their Personal Action plan, drawn up during the last session.</p>	<p><b>10-12-09 Concert Measurement of effects:</b> - STAI-S test right before public performance - grading of statements personal experience concert. - completing questionnaires Soffos (via website); should be sent back before 18-12-09.</p> <p>Analysis research outcomes so far.</p>	<p>Follow up analysis research outcomes and reporting of the research.</p> <p><u>February</u> <b>Final evaluation talks with students (individual).</b></p> <p>Processing outcomes talks with students.</p> <p>Follow up analysis research outcomes and reporting of the research.</p> <hr/> <p><u>March/April</u></p> <p>Presentation research report.</p> <p>Adjustment workbook.</p>

## 2.7 Participating students

A total number of six Classical Music students took part in the training as well as the research. One of the students was an alumnus of the Prince Claus Conservatoire, who graduated in 2007. The youngest participant was 21 years old at the beginning of the training, the oldest was 27. Two of the students study singing, two play a brass instrument, one student plays a woodwind instrument and one student a string instrument.

Taking part in the project was possible by writing a motivation letter in which the students indicated why they wanted to take part in the training. The invitation for this was given at the end of the presentation of the project, which was held on May 25, 2008. During this presentation the trainer and the researcher explained the objective and the contents of the project and what was required of the participating students.

Seven students were present during this presentation; six of them signed up by means of a personal motivation letter. All six candidates were accepted for the training.







**3**



**Research outcomes**

## **3. Research outcomes**

In this chapter the research outcomes are discussed first per case in the form of individual student portraits. Each portrait describes the personal motivation of the student to participate in this project, consequently the results of the questionnaire are compared (zero measurement – effect measurement) and finally we describe how the student experienced the training and which suggestions she has for improvement. In order to protect the student's privacy each case has been given a letter (A – F). Only the researcher and the trainer know which letter represents which student. The student only knows under which letter her case has been described.

We then compared the outcomes of the individual cases in order to be able to draw more general conclusions about the effects and usefulness of the training (see 3.7). In chapter 4 we make recommendations based on this for improving the training (including the workbook) and the imbedding of this activity in the curriculum of the Prince Claus Conservatoire.

### **3.1 Portrait student A**

#### **Motivation for participation**

A wrote an extensive letter in which she indicated what her motives were for participation. She says she loves playing her instrument very much, but that playing before an audience is not easy, is not a pleasant experience for her, especially where it concerns pieces which are technically demanding. Even if things have been going a little bit better lately, she feels it could be a lot better. She has little control over the fear once it is there. The cause of this, she thinks, is in her perfectionist attitude: she does not want to make mistakes and she wants to impress others with her playing. In order to combat anxiety she intends to enjoy her playing, tries to encourage herself and tries to breathe more slowly and deeper. All this has helped a little bit, but not enough. A would like to have more control about herself, be able to focus more on what she does and be able to enjoy her playing (during public performances). She would like to participate in the HeartMath project, also because she found enough evidence on the internet for the effectiveness of this method.

In her workbook (page 20) A says that the fact she is so demanding and such a perfectionist cause her to be upset when things do not go the way she wants. She is very strict, both for herself and for others. A would like to be more contented about herself.

Personal targets A has set for herself (page 8 of the workbook that accompanies the training):

1. Experience control about my own emotional and physical reactions.
2. Obtain a 8,5 on my control on stage.

**Research question 1**

*To which extent does the HeartMath training lead to a decrease of stage fright in performance situations before an audience in student A?*

**Results student A on the State Trait Anxiety Inventory**

STAI-T	STAI-S	
	Zero measurement	Effect measurement
40	37	24

For her age category and educational background (college student – female; Spielberger, 1983) A has a low disposition anxiety (Stai-T). On the Stai-T zero measuring her score is even one standard deviation below average for her reference group (female college students). The same applies for her disposition anxiety (Stai-S). The effect measuring shows a decrease in state anxiety.

**Grading (mark) for the performance by student A**

Premise	zero measurement	effect measurement
I am satisfied with my own performance	6	7
I had sufficient control of myself during the playing/ singing	5	7
I enjoyed the performance	7	7

The effect measuring shows a higher grading on average for the performance, especially concerning the aspects of having sufficient control of oneself during the playing / singing and satisfaction about the performance.

**Notes Researchers about A's performance**

<b>Performance 07-09-09</b>	<b>Performance 10-12-09</b>
A's playing sounds a bit strained, with a particularly strong tone and little variation in the expression. There were many notes of which the structure was not always clear. There was little harmony between her movements and attitude and the music she played.	The same piece, now with more tone colours and more expressive movements, linked to a better articulation of the musical structure.

These notes show that her playing and presentation have improved. It is harder to indicate to which extent this is a result of A being more sure of herself as a result of the training or whether she is more familiar with the piece she played as a result of practicing.

**Workbook HeartMath lesson 5: Looking back and Personal Action plan (pages 29 and 30)**

<b>Questions</b>	<b>Answers A</b>
What progress have you booked lately?	I feel less stressed inside.
What benefits have you had from the training?	I think I am on my way to feeling more comfortable in performance situations because I am more relaxed in the daily things I do.
To which extent did you achieve your own personal target(s)?	I think that first of all I want to achieve the target of feeling more in control on stage and then I can realise my goals as a musician, at the moment I am working on achieving both targets.
Which challenges do you see in the future that you would like to approach with the HeartMath method?	When I do the emwave-exercises I can think about what my targets are and shape an image of what I want, which can be a way of also letting this happen.

A has started to feel more easy about the daily things she does. There have not been performances before an audience, but she thinks that she can apply this relaxed attitude also in these circumstances.

**Log researcher and trainer**

	<b>First meeting</b>	<b>Last meeting</b>
Position emotional landscape	20% unpleasant emotions 80% pleasant emotions	10% unpleasant emotions 90% pleasant emotions
Dealing with stress	6	8

On both aspects measured there is progress. A indicates that she recognizes her stress better now, and so can also respond to it more quickly. She clearly feels a lot freer and happier than in the beginning of the training.

**A's evaluation of the training**

<b>Grade</b>	<b>Aspects of the training felt to be the most relevant</b>
9,5	Learning techniques for controlling stress. Integrating this technique with the study strategies you use (making clear the study targets you work towards). The support of a professional in learning these techniques.

**Outcomes final evaluation with A (17-02-10)**

<b>Questions</b>	<b>Answers</b>
1.a Did the method bring you what you expected of it?	Yes. Not that I have achieved my final target already, but I believe now that this is something you do for the rest of your life. Sometimes you need it more than at other times.
1.b Have the stress related complaints diminished (in which situations)?	Yes they have, they are not nearly as strong. But: sometimes I feel more stress before a performance than at other moments (for me it is not always possible to trace where it comes from).

1.c To which extent did you realise your personal targets?	I am very clearly in a process to achieve these targets. I am more aware now of the sensations of stress and how I can control these.
2.a Do you apply the HeartMath method at the moment and in what kind of situations?	Yes, when I am tense when getting up, in order to clarify my practising objectives for the day (how it has to sound, how it has to feel, etc.) and when going to sleep (in evaluating the study process of the day). It's not as if I do this every day. I apply the techniques especially when I think they will benefit me.
2.b If not, then what are the reasons?	-
2.c From which techniques did you benefit most?	The Neutral, I also apply this in different situations in which I am stressed or feel stress coming up. I use the neutral to be able to focus better and concentrate on what I am going to do. The Pre-Frame technique I use especially for clarifying my study objectives (see 2a).
3. Would you recommend the HeartMath training to your fellow students?	Yes! It is important for every student to gain more insight into how to control your physical reactions.

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

**Comments from A about the course of the training**

Session 1 On 14-09-09 A writes in her homework notes that she is beginning to feel the results of the training. 'I just need to be more patient'. On September 16 she indicates that it has been a long time since she felt so relaxed. A number of times A says she is very energetic, but also feels relaxed and calm.

Session 2 In the notebook on page 14 A writes that she uses the Neutral prior to practising. Based on lesson 2 she says that she learned from this

lesson to control her heartbeat (lower) with the Quick Coherence technique. A also sees benefits from this technique in daily situations which are stressful, and as a way to relax.

Session 3 Based on lesson 3, in which the Heart Lock-in techniques and Attitude Breathing were treated, A says that the most important thing she learned from this lesson was: 'I see this technique as a form of meditation combined with thinking about the positive attitude I want to project. These can improve me as a whole.' As benefits of the Heart Lock-in technique A says she feels relaxed and peaceful.

Session 4 Based on lesson 4, learning the Freeze Frame technique, A says that the most important thing she learned from this lesson was that she is able to use all her imagination and fantasy in this technique to realize her personal targets. A says she wants to integrate the Freeze Frame technique into her daily routines, prior to practising and playing before an audience. Concerning the use of the emwave A notes that when she adjusts the emwave to a higher level than practice level 2, it becomes more difficult to achieve higher coherence (green – optimal), even if she feels relaxed.

#### ***Notes about A in the researcher and the trainer's log***

Session 1 Both the trainer and the researcher have the impression that A sometimes has trouble with the Dutch text of the workbook. In the individual sessions (the first one and the last one) this is not a great problem because these are done in English with her. But concerning certain expressions in the workbook, she asks for English translations. During the group lessons the researcher helps A with translating the Dutch words she does not understand.

Session 2 A is less in the foreground during the group lessons, especially the first two, but she is very active. Her coherence is quite good, there is also a marked and visible improvement when she uses the HeartMath techniques. She also very faithfully does her homework assignments and hands them in on time.

Session 3 During the third meeting A says she uses the emwave while she studies at home and in other situations when she felt it was necessary. A had trouble with homework assignment 2 of lesson 2 (see page 17 of the workbook). The problem was not selecting a day to do the Quick Coherence or the Neutral, but the assignment to do one of these techniques every hour. This is often not possible because of lessons.

The explanation of the term 'attitude breathing' in the workbook causes trouble. This does not only have to do with the Dutch language in which it is



stated, but also with the way it is being explained. Thinking and feeling have to be brought into harmony with each other, in order to be able to translate the attitude to concrete behaviour.

Practicing the Attitude Breathing technique with accompanying music is not done successfully at once. The new age music in the background bothers her, Mozart does not. The two hours that were planned for meeting 3 appear to be too short, the meeting is extended with 45 minutes, the last two pages of assignments (21 and 22 of the workbook) have to be completed further at home.

Session 4 A indicates she has not yet integrated the Attitude Breathing techniques into her (daily) musical activities, for this she needs more practising. In trying the Freeze Frame technique for the first time A managed to imagine she was playing on stage.

Session 5 During the last individual session A gives an important place in her Personal Action Plan to the Neutral as breathing exercise during her performance and to Pre-framing in order to prepare her performances better.

### ***A's evaluation of the training***

Concerning all aspects of evaluation – content, lessons, trainer, usefulness and relevance – A gives the highest marks (positively agree).

As point of improvement she says that the workbook should be translated into English for English speaking students.

### ***Outcomes final evaluation with A (17-02-10)***

4. Which aspects of the training should be adjusted?	
Period in which the training is offered	Excellent.
Number of meetings and spreading	Both are ok.
Amount of treated material per meeting	Good.
Explanation	Everything is explained well.
Assignments	Sometimes too many.
Workbook	Would like to have this in English. Had to look up many Dutch words in English dictionary.

<p>Integration material from lessons into practice</p>	<p>The techniques are easy to integrate, also with your practising techniques. Breathing is not just important to relax your body, breathing, and awareness about this is also important in order to be able to phrase well and achieve targets in the area of musical expression.</p>
<p>Other</p>	<p>I would like to give more attention to techniques you can use to get more self-confidence. The training now focuses very strongly on breathing, the awareness of emotions and eliminating irrelevant thoughts.</p>

## 3.2 Portrait student B

### Motivation for participation

B says she has suffered from stage fright from a young age. When she went to the conservatoire it only became worse. Because of the stress she has not been able to show on stage what she is capable of. For a long time B has tried to avoid public performances in order to avoid negative stage experiences. B already discussed her problem with her study supervisor and she was very happy that the Prince Claus Conservatoire started this project. In 2010 she hopes to graduate and she would like to be confident enough in herself, without the fear of being overwhelmed by stress ('which causes unnecessary things to go wrong', a literal quote from her letter). She wants to participate in the project in order to see whether this kind of stress control can help her perform better on stage.

In her workbook (on page 20) B writes that the following convictions she has about herself have a negative impact on her: I am not good enough, others are better, I never function the way I want to on stage. This leads to the fact that B often has a negative approach towards things, is often pessimistic and never finds performances a success, regardless of the reactions of others.

Personal targets B has set for herself (page 8 of the workbook that accompanies the training):

1. Feeling control or emotional behavioural patterns: from a 6 to an 8.

**Commentary researcher**

B took the training sessions and during the fifth she indicated that the HeartMath method did not have any results for her yet. After this she looked for help with a social worker. This person advised her not to continue with the method. A Personal Action Plan which describes which exercises she will use in which situation does not exist about B. Nor did she participate in the final concert that was held on 10 December 2009, and therefore the effect measurements are missing also. Although her experiences are interesting for the research, concerning the final assessment of the effectiveness of the method, we are dealing with a dropout, because B did not participate in the project after the fifth session.

**Research question 1**

*To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience in student B?*

**Results student B of the State Trait Anxiety Inventory**

STAI-T	STAI-S	
	Zero measurement	Effect measurement
43	41	-

For her age category and educational background (college student – female; Spielberger, 1983) B has an average degree of disposition anxiety (Stai-T). On the STAI-S B's scores are average as well.

**Grading (mark) for the performances of student B**

Premises	Zero measurement	Effect measurement
I am satisfied about my performance	7	-
I had sufficient control of myself during the playing/singing	7	-
I enjoyed the performance	6	-

**Notes Researchers about B's performances**

Performance 07-09-09	Performance 10-12-09
B plays two duets together with D. B plays accurate, has good technique and pays attention to musical expression.	-

**Workbook HeartMath lesson 5: Looking back and Personal Action Plan**  
(pages 29 and 30)

Questions	Answers
What progress have you booked lately?	Hardly any progress.
What benefits have you had from the training?	So far nothing concrete, at most possibilities that might work.
To which extent did you achieve your personal target(s)?	Not.
What challenges do you see in the future that you would like to approach with the HeartMath method?	Really none, the method does not seem to work for me.

**Log researcher and trainer**

	First meeting	Last meeting
Position emotional landscape	Pleasant emotions	pleasant emotions
Dealing with stress	60% unpleasant emotions 40% pleasant emotions	- -

***B's evaluation of the training***

<b>Mark</b>	<b>Aspects of the training experienced as most relevant</b>
4	Really none, the method did not really work in practice.

***Outcomes final evaluation talk***

Did not take place.

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

***Comments from B about the course of the training***

B did not hand in homework reports, despite repeated requests. The remarks below come from B's workbook.

Session 2 On page 14 B says she is going to use the Neutral while practising and in situations which are stressful for her. In using the Quick Coherence B says that for her this has the effect that many thoughts come up, that she starts thinking too much. As essence of what she learned from this lesson (lesson 2) B says that relaxing and balance in breathing can be achieved by focusing on your heart breathing. With assignment 2 of this lesson B writes that on this day (the day she practised the Neutral or the Quick Coherence every hour) she had little effect of the application of it, neither emotional nor physical.

Session 3 While applying the Heart Lock-in B experiences primarily calm and relaxation. In general B has no problem getting into the green zone of the emwave quickly (becoming coherent).

Session 4 Practicing the Freeze Frame steps has the following effects on B: physical – trembling and breathing high; emotional – a feeling of 'not being able to'.

As most essential learning moment of this lesson B writes that overwriting thoughts (Re Framing) might possibly help her.

***Notes about B in the researcher and the trainer's log***

Session 1 In the individual talk B showed much openness. Looking for effects of stress on her functioning, and not just in music, went well.

Session 2 B can achieve a very high coherence. After two days she's already practicing at level 3, which does not happen often. The question whether she may be hyper sensitive makes her think.

Session 3 B says that her ear sensor does not work properly. B says she does not feel stressed in daily life. She is very busy, because she is taking two studies, but does not experience this as stressful (a matter of good planning). While practicing the Attitude Breathing technique B says she does not feel resistance towards the accompanying new age music, but Mozart is more difficult for her. B says this exercise does not really help her: it is too vague and she has difficulty in calling up the other attitude. Remarks by the trainer and a fellow student help B to find links for calling up the right attitude in a stressful situation.

Session 4 For B this is an individual repeat session. At the beginning of the session she indicates that the training has not given her great benefits (yet). She suffers from stress especially right before and during her performance and this is something that is not dealt with sufficiently according to her. I (the trainer) tell her that this was especially dealt with during the group session she missed and suggest that she pay attention to this now and then do the evaluation later. She agrees. In the talk that follows we treat the Re-, Pre- and Freeze Framing. A lot of old emotional issues still play a part for B. A number of performances still bring up violent emotions when she thinks about them. Also thinking ahead to the first performance to come (an audition) late October worries her already. I explain the principle of negative and positive Pre-Framing and we agree that she will start Re-Framing daily (about what happened) or Pre-Framing (about the coming audition).

Session 5 The trainer has an individual talk with B on October 29, 2009. The session that was first planned was cancelled because B had not done her homework and assignments. On my request we made a second appointment with the understanding that B would still do her assignments. While doing this she focussed on an important performance which would take place in the autumn. In the talk that did eventually take place, again B has done practically nothing about her homework and says she is somewhat disappointed that the training did not bring her what she expected. Real causes for this she cannot give. When I confront her with the fact she has not done much about her homework or her exercises she says that with her two studies she has been too busy. She also says she does not like the atmosphere at the conservatoire and that this bothers her. 'People are especially focussed on themselves and there is very little real attention for each other.'

In contrast to the first talk I had with her she is more guarded now and gives cautious and sometimes evasive answers, although the atmosphere of the conversation is not unpleasant. The picture this conversation conjures up in my mind is that of a student who is really doing her best, but has no grip on the world around her and looks for reasons everywhere why things are not

working out. I do not succeed in engaging her in a conversation about reasons inside herself. We close with the agreement that she will meet her obligations (completing evaluation forms, questionnaires etc.).

### ***B's evaluation of the training***

About the contents, the usefulness and the relevance of the training B is quite negative (disagree). About whether the trainer was able to teach her the techniques B has no opinion (don't know). About the material for the lessons, the explanations the trainer gave and the space the trainer created for asking questions and making remarks B is positive (agree).

As tip for improvement B indicates that more real stress moments should be created before (the first performance), afterwards (the final presentation) and in between. The performances were not really stressful, practicing in real situations in the time in between to learn where you stand was lacking.

### ***Outcomes final evaluation***

This conversation did not take place.

## **3.3 Portrait student C**

### **Motivation for participation**

C says she suffers from stage fright in formal situations (playing during demonstration evenings at the Prince Claus Conservatoire, exams) which does not get any better as she is doing it more often. During informal performances (hospital, old people's home, primary school) she suffers from it less. She says the fear comes up in situations where she has to prove herself on her instrument to people who know about music. Her teacher taught her more about physical reactions of stress. She also succeeded in reducing physical tension before a concert by means of yoga. During the performance she has little control over her fingers and breathing. She wonders why she is doing this to herself and sometimes thinks about quitting her studies. She has tried many things, except taking medication because she is afraid this will make her play like a robot. C chooses this training because she wants to get rid of her fears and because she feels that during a performance her heartrate goes up quite a lot. She hopes that by means of this training she will have more control of herself on stage.

In her workbook (page 20) C says that the following convictions she has about herself have a negative impact on her performance: I cannot concentrate; I am not focused enough on my instrument; I am chaotic; and I am not very good at the technical control of my instrument. She would like to be more convinced that she is doing good work with her instrument.

Personal targets C sets for herself (page 8 of the workbook that accompanies the training):

1. Have faith in myself and enjoy myself on stage.
2. Go from a 4 to a 7.
3. Have more inner peace.

**Research question 1**

*To what extent does the HeartMath training lead to a reduction of stage fright in a performance situation before an audience in student C?*

**Results student C op de State Trait Anxiety Inventory**

STAI-T	STAI-S	
	Zero measurement	Effect measurement
43	41	43

For her age category and educational background (college student – female; Spielberger, 1983) C has an average degree of disposition anxiety (Stai-T). On the Stai-S zero measurement the value is just below a standard deviation above average. The effect measurement shows no change in score compared to the zero measurement. It should be noted, however, that the performance circumstances during the effect measurement were much more stressful (a performance before an unknown audience in the Martini Church than during the zero measurement (playing for students who also participate in the training in a classroom of the Prince Claus Conservatoire).

**Grading (mark) of the performance by student C**

Premises	zero measurement	effect measurement
I am very satisfied about my performance	6	6
I had sufficient control of myself during the playing/singing	5	6
I enjoyed the performance	7	5

Concerning the zero measurement C remarks that prior to the performance she was not nervous. It was only when she was standing there that her heart began to beat fast and her hands became limp. The effect measurement does not show a higher average value of the performance



compared to the value of the performance during the zero measurement, not a higher, but also not a lower value. The performance circumstances were much more stressful during the effect measurement (see last paragraph). C also indicates she suffered from the cold in the church, because of which she did not have complete control of her playing.

**Notes Researchers about C's performances**

Performance 08-09-09	Performance 23-12-09
C has a good presence, her movements are in harmony with what she expresses musically, her playing is sufficiently expressive. It looked as if C enjoyed her playing. It also looked relaxed.	23-12-09: Concert by C, accompanied by harp, in the Martini Church. The concert takes place for the fundraiser Serious Request of radio 3FM for combating malaria. The atmosphere in the church is chilly: there are hardly any people and it's very cold. C plays well, I do not detect stress either before, during or after the concert. She does seem a little cramped sometimes, but this may be caused by the cold.

These notes do not show very clearly that her playing and presentation have improved. She does indicate herself that she suffered from the cold.

**Workbook HeartMath lesson 5: Looking back and Personal Action Plan (pages 29 and 30)**

Questions	Answers
What progress have you booked lately?	I am more patient with myself during practising. When I feel stressed I can make myself feel calmer.
What benefits have you had from the training?	I have more control of my emotional reaction.
To which extent did you achieve your personal target(s)?	I am working on realising my personal targets.
What challenges do you see in the future that you would like to approach with the HeartMath method?	Use of the method on stage. Being able to bring more structure in my weekly activities.

C has more control of her emotions. Performance situations before an audience have not taken place until this moment (lesson 5).

**Log researcher and trainer**

	First meeting	Last meeting
Position emotional landscape	30% unpleasant emotions 70% pleasant emotions	30% unpleasant emotions 70% pleasant emotions
Dealing with stress	4	6

C's grades concerning the target and the emotional landscape have not changed as such. She does say she experiences more inner peace and is more aware of her emotions and the effects they have on body and mind.

**C's evaluation of the training**

Mark	Aspects of the training felt to be the most relevant
8	I have learned how to make myself feel calm; coherence. That I should not look at things too negatively, because then this comes true. That when I think it is going to be ok, that this is often also the case.

C gives the contents and the trainer the highest grades (positively agree). Lessons, usefulness and relevance are valued as slightly less (agree).

**Outcomes final evaluation with C (12-02-10)**

Questions	Answers
1.a Did the method bring you what you expected of it?	I am positive about this training. Beforehand my expectations were not too high, only the realisation that I had to do something about it.
1.b Have the stress related complaints diminished (in which situations)?	Yes, especially in the preparation for the concerts.
1.c To which extent did you realise your personal targets?	I am on my way.

2.a Do you apply the HeartMath method at the moment and in what kind of situations?	Yes.
2.b If not, what are the reasons?	
2.c From which techniques did you benefit most?	The Neutral before the concerts when I feel nervous (for example an hour before the concert). The Pre-Frame technique right before the performance.
3. Would you recommend the HeartMath training to your fellow students?	Yes. Many fellow students suffer to a higher or lesser degree from stage fright.

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

**Comments from C about the course of the training**

Session 1 This individual session, in which the most important sources of stress were identified and the way in which C deals with stress, caused quite a reaction in C. In her report (linked to her homework) she says that she came to realise her stress reactions are caused especially by the fear of failing before a group and from not meeting others' expectations. The source of this fear C relates to the onset of puberty (end primary school, beginning secondary school), during which she was very insecure and dissatisfied about herself. This discovery is a very emotional experience for her. She is happy she gained this insight because now she can look at her stress related problems more objectively and deal with them.

Session 2 In relation to this session in which the Neutral and Quick Coherence techniques are introduced C makes the following note in her homework: 'So far I have only used the Neutral and not the Quick Coherence, because it really takes a lot of trouble for me to start doing this. Once I start doing it, it does work really well. When I am stressed I have trouble to really take the time to use the Neutral. When I use the Neutral it does work immediately. After using the Neutral I am more realistic. I did notice that 15 minutes after using this technique, I can be stressed again. I am most stressed when I am practising, because I find it hard to concentrate. The Neutral also works in stressful situations in my private life. Sometimes the ear sensor does not work! Right now I enjoy the Neutral

more than the Quick Coherence, because it is good to feel neutral for a little while.

I enjoy practicing without a machine (the emwave) more because it allows me to feel more.' As most important learning point of this session C indicates that you can influence the way you feel with physical focus and breathing (workbook page 16).

Session 3 Based on this session C writes in her homework report that the Attitude Breathing technique gives her energy and the Neutral gives her peace. C notes that while she is doing this exercise in the session she is distracted by the pianist in the next classroom. Before and during practising C prefers the Neutral. She writes (in her workbook) that this prevents frustration and anger (if things do not go the way she wants). She did not really do the homework assignment in which she was asked to do the Neutral or the Quick Coherence every hour during one day. C tried three times, but every time she forgot halfway during the day to do it every hour.

Session 4 Based on this session C notes that the Neutral works well for her to become quieter: 'I become more clear-headed, am able to tone it down and think more clearly. The Quick Coherence works well when I am really frustrated or in a panic: by thinking of the river Aa in the province of Drenthe I become calm and peaceful. If I do the Attitude Breathing a few times in the morning, I feel better, more fit and more positive all day.' Concerning the Heart Lock-in: 'Oddly enough I feel wonderful when I listen to sad music, then I am completely coherent. I have also come to the strange conclusion that I am not coherent (or become coherent with more difficulty) when I listen to music in which my instrument is the central focus. I did not get around to Re- and Pre-Framing. I first want to understand the basics before I continue. Also, I keep finding it difficult to practise regularly. Perhaps it was because of my chaotic schedule of this week, I don't know.' In the workbook C says that the most important thing she learned in this session (lesson 4) is that she has to be able to control the exercises of the preceding lessons (Neutral, Quick Coherence, Heart Lock-in and Attitude Breathing) before she can begin with the new ones (Pre-Frame and Re-Frame Steps).

### ***Notes about C in the researcher and trainer's log***

Session 1 The trainer notes, based on the first individual session with C, that the insight that her stress reaction is related to her insecurity during puberty (being afraid of not being accepted by the other kids) made her very emotional and gave her a new perspective of the problems.

Session 2 As early as during the first exercise with the emwave C practises becoming coherent on level 3. During session 3 C finds that it is more

difficult to achieve coherence at home. She indicates that, after she has reached coherence, she also becomes stressed quite easily. The Neutral helps her especially to practise more effectively. C says the ear sensor sometimes doesn't work. C indicates she has trouble doing homework assignment 2 with lesson 2 (workbook page 17). Choosing a day is not a problem, however repeating the exercise every hour is. C feels when she is coherent and does not need the emwave for this. She does note that when she uses it during the principle subject, that the emwave turns red (she became incoherent) when the teacher came closer. The trainer notes that C is very active in asking questions and in giving relevant examples. The explanation of the term attitude (page 20 of the workbook) gives problems. Especially the emotional aspect of the attitude is hard to imagine (how does this translate to concrete behaviour).

Session 3 While practicing Attitude Breathing C says that she manages to bring about a positive feeling best by thinking about something positive from her childhood, more than by listening to music. Session 3 lasted 45 minutes too long; the students were asked to complete the assignments on pages 21 and 22 at home. Based on her practicing the Attitude Breathing technique C says she needs more time to learn to control this technique. The trainer says that this technique is an 'energizing tool'. Students have to discover for themselves which technique benefits them most. C says this technique works especially well while getting up.

Session 4 Based on practicing the Re-Frame Steps C says she has trouble with remembering stressful events from the past. She notes that she is often impatient while practicing new exercises. While exercising the Pre-Frame Steps C says she has trouble doing this if she does not know all the details of the situation she has to imagine (if she imagines an audition she has to know which piece she will play, how the audition will go, etc).

Session 5 She names as a positive result of the training so far that she smokes less, that she practises regularly and experiences the effects of this, but that she still falls back on old patterns (but is more aware of this now). C indicates she needs more time to practise the techniques she learned earlier in the training.

### ***C's evaluation of the training***

In the final evaluation C rates the material of the lessons (contents) and the trainer highest (positively agree) and the material of the lessons, the usefulness and the relevance of the training with 'agree'. As point for improvement she says the training went very fast. At the end of the training she had trouble following the exercises and applying them at home. The training could be spread over more weeks/meetings.

**Outcomes final evaluation with C (12-02-10)**

4. Which aspects of the training should be changed?	
Period in which the training is offered	Should be offered especially to first year students in the second semester (then they've already had some experience in performing in a conservatoire environment).
Number of meetings and spreading	Spreading is good. The number of meetings too few, would like 3 more.
Amount of material treated per meeting	Less material per meeting (see above).
Explanation	Clear and transparent.
Assignments	Too many.
Workbook	Excellent.
Integration of material with practice	The techniques can be fitted very well into my musical activities.
Other	Compliments for Ewold!

## 3.4 Portrait student D

### Motivation for participation

D says she has been suffering from stage fright for years. Considering the fact that this fear undermined her pleasure in making music, she tried various solutions for the problem. The most drastic and effective was taking beta-blockers. This helped in gaining back her self-confidence. A course in this area for students of the Hanze University proved to be too unspecific for her problems. A year before the training began she had a number of talks with a psychologist which she felt were useful. She also started meditating. These things helped her to make her head more quiet. Her heart still races during a performance before an audience. D came to the conclusion that it is especially her body, specifically her heart, which needs training. That is why she would like to participate in this training.

In her workbook (on page 20) D says that the following convictions she has about herself have a negative effect on her performance: that she feels insecure and is overly sensitive (easily hurt, tired and over-stimulated). She

wants to feel more secure, be less easily hurt/upset, feel more stable and be better able to deal with negative emotions.

Personal targets D sets for herself (in the Workbook that accompanies the training page 8):

1. Getting control of physical and emotional behavioural patterns, so I can perform more relaxed and have more fun.

**Research question 1**

*To what extent does the HeartMath training lead to a decrease of stage fright in performance situations before an audience for student D?*

**Results student D on the State Trait Anxiety Inventory**

STAI-T	STAI-S	
	zero measurement	effect measurement
54	47	-

D has a degree of disposition fear (Stai-T) which is a standard deviation above average for her reference group (college student – female; Spielberger, 1983). On the Stai-S zero measurement the values are right beneath a standard deviation above average. No effect measurement was done because D could not play on account of an injury. With a physiotherapist she is working on changing her embouchure.

**Grading (mark) of performances by student D**

Premises	zero measurement	effect measurement
I am happy with my performance	6	-
I had sufficient control of myself during playing/singing	6	-
I enjoyed the performance	5	-

D gives an additional comment about the fact she left out a duet of the performance, this because she lacked the confidence to do it at that moment.

**Notes researchers about D's performances**

Performance 07-09-09	Performance 10-12-09
D plays duets with B. She has audible problems with tone production and her playing is flat and expressionless. Her attitude showed that she was assuming things would not go right.	

Besides the stress during performances before an audience D is also dealing with an injury related to playing. For this last issue she is looking into a solution for changing her playing technique with the help of a physiotherapist.

**Workbook HeartMath lesson 5: Looking back and Personal Action Plan (pages 29 and 30)**

Questions	Answers
What progress have you booked lately?	Eye openers: that nerves and coherence can go together very well; became more aware of situations in which I can use the coherence exercises.
What benefits have you had from the training?	That you can change certain things by being aware of your negative attitudes and that you can change these into positive ones.
To which extent did you achieve your personal target(s)?	I have become more stable: from a 6 to a 7.
Which challenges do you see in the future that you would like to approach with the HeartMath method?	Applying the HeartMath techniques while giving concerts.

Through the training D has become more aware of her mental functioning and of the possibilities of changing undesirable behaviour.



**Log researcher and trainer**

	<b>First meeting</b>	<b>Last meeting</b>
Position emotional landscape	40% unpleasant emotions 60% pleasant emotions	25% unpleasant emotions 75% pleasant emotions
Dealing with stress	6	7

The changes in these measurements of D show a shift in the right direction.

<b>Grade</b>	<b>Aspects of the training felt to be the most relevant</b>
9	Explanation about the relation between the heart and the brain. Exercises: especially the Neutral and Pre-Framing.

Contents, material for lessons, the trainer and relevance all get the highest score from D (positively agree), techniques as taught by the trainer and usefulness of the training for the study/work scored a little less (agree).

In her email of 10 December 2009 to the research leader D indicates to have reaped the benefits of the training during the practical part of her driving test. During a previous test she was very nervous. Now she did coherence exercises beforehand, which made her very calm during the test. 'I did not pass, but that was not due to nerves,' D says. 'I am really happy with this course.'

During meeting 3, when students had to remember a stressful situation from the past D remarked: 'if only I had known then about the Neutral and the Quick Coherence!'

**Outcomes final evaluation with D (05-02-10)**

<b>Questions</b>	<b>Answers</b>
1.a Did the method bring you what you expected of it?	In the beginning I saw it as a miracle cure; it did not turn out to be that. However, I did experience that you can work on controlling stress.
1.b Have your stress related complaints diminished (in which situations)?	The stress is still there, but my emotions are not all over the place anymore. By regulating my breathing I can reduce the stress related complaints.

1.c To which extent did you realise your personal goals?	I find that I am more in control of myself.
2.a Do you apply the HeartMath Method at the moment and in which situations?	Yes.
2.b If not, what are the reasons?	
2.c From which techniques did you benefit most?	Especially the Neutral when I am stressed or get stressed. The Freeze Frame steps I use especially to calm myself, to regain control. When I think about the week: how did I feel, what were the stress moments. Often I become more aware when I acted too late to reduce the stress.
3. Would you recommend the HeartMath training to fellow students?	Yes! Every music student should have a degree of knowledge of this. It is good for your personal development to get to know yourself.

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for the professional music student?*

**Remarks by D about the course of the training**

Session 1 In her homework report based on this session D notes that concentration with a research aim makes her more relaxed and able to come out of the negative emotion more quickly. In thinking about a positive emotional reaction in a (imagined) stressful situation D says that the positive memory during the rehearsal with this for the first time was not strong enough to stop the negative reaction or to decrease this. She benefits more from becoming aware of the emotion and where she is in the emotional landscape, which causes a reduction. As a point of success D writes that she is more aware of her emotional landscape. A point of attention is that she remains so, and she will do this by paying attention to it every day. She describes 'mapping the emotional landscape' as a kind of GPS system: only when you know where you are, can you plan your route. D thinks she can

integrate the Neutral in her studies (as preparation to) and preceding meetings she is anxious about.

Session 2 In her homework report based on session 2 D writes that while observing her emotional landscape she often felt tired, but that there were also moments in which she felt 'super'. On the day she chose to do the Neutral or the Quick Coherence every hour, she hardly had any stress. In her success diary D writes that at level 2 she becomes coherent quite quickly. When she practises at level 3 she often stays in the blue zone and sometimes in the green one (before going to sleep). 'Positive memories work best for me when they are multi-modal in nature (sounds, images, smells, etc.).' D says she can integrate the Quick Coherence into her daily life when she is irritated, to become calm again. D thinks the essence of this lesson is that she learned that your mind is of great influence on your heartbeat.

Session 3 In her homework report based on this session D notes that moving the attention to the area around your heart works much better under stress, because then it's easier to feel the beat of your heart. She further notes that the more she practises, the quicker she becomes coherent. Now she still has to do this by breathing in 5 seconds and breathing out 5 seconds. She thinks that later she can do this on her 'regular' breathing or by thinking about a pleasant emotional occurrence without paying attention to her breathing. In her success diary D writes that she can be coherent and remain so under stress. 'Without stress I can jump to red just like that (low coherent) and when I am nervous it is very steadily green.' As advantage of the Heart Lock-in D indicates that she is more aware of her successes and that she really experiences them. She says she uses the Heart Lock-in when things are not going her way and to get back into a positive mood, so she becomes more productive and creative. In her Personal Action Plan D writes as experience with the Heart Lock-in that this technique also helps against depression. In her homework report, based on practicing with the Heart Lock-in technique, she has the following comments:

- | Becoming coherent is more difficult after an acupuncture treatment.
- | Even if you have been coherent for longer, you can still become incoherent and the emwave jumps to red at a certain point. After this I cannot manage to become coherent; I turn off the equipment and try again a little later.
- | Staying green is becoming more easy; I especially practise a longer Neutral, so with an empty head, in order to be coherent for longer.

Essence of this lesson: by being aware of your negative attitudes you can change them into positive ones (Attitude Breathing).

Session 4 After practicing the Freeze Frame Steps D writes: 'In order to shorten the stress moment afterwards you can do the Neutral or the Quick Coherence; if the stress comes back you can do the coherence exercise again.' The most essential thing D learned from this lesson, are the techniques she has been handed (Pre- and Re-framing) in order to change ingrained habits and to prepare for stressful situations.

***Notes about D in the researcher and trainer's log***

Session 1 Based on the first individual session with D the trainer made the following notes. Searching for the effects of stress on the way she functions (in music as well as in daily life) led to an increased awareness of what emotions do to you. D says she is often sombre and stressed where it concerns 'music'. Sometimes she uses beta-blockers in order to alleviate the stress around the performance.

Session 2 During the first group meeting D quickly reached a high coherence. Based on practicing the Quick Coherence D noted that only bringing about a pleasant feeling, without paying attention to breathing, is enough for her to reach a high coherence.

Session 3 In the third session D reported that after her acupuncture it was difficult to become coherent at home. She only managed to become coherent by breathing in steadily for 5 seconds and breathing out for 5 seconds. She later managed by calling up a pleasant memory. D had trouble with homework assignment 2 of lesson 2: choosing a day in which to practise every hour with the Neutral or the Quick Coherence. For D the problem was the fact that she forgot the assignment halfway during the day and by interference of her acupuncture treatment. D also had trouble with the Attitude Breathing technique. Understanding it and how to translate it into concrete behaviour was not immediately clear. At the end of this lesson D says she does not want to change everything about herself which at first seems less positive. She calls her own imbalance something that feels familiar, is part of her and that she does not want to lose. She wants to remain imbalanced to a certain degree, but feel more sure of herself in performance situations.

Session 4 In the fourth session D says she practised the Neutral especially, she noticed a lot of effect from this. While practicing the Attitude Breathing technique she says that the way a good feeling works decreases: as she uses the example for this more and more, the feeling becomes less. The use of music with the exercises at home sometimes made her nervous.

Session 5 In her Personal Action Plan D indicates that with the help of Pre-Framing she is going to focus on auditions and performances in the future. With the Quick Coherence and the Heart Lock-in she will treat a possible 'depression' in the winter. D has an active and constructive input in the meetings. Her workbook is full of notes and personal reflections on the lessons and the practicing of the techniques. She learns the material by integrating this with her personal experience and with the daily things she does.

***D's evaluation of the training***

In the final evaluation D rates the relevance of the training, the material used and the trainer at the highest level (positively agree) and the explanations of the trainer and the usefulness of the lessons in her study as 'agree'.

As point for improvement she gives that more time could be taken for treating all material for the lessons. 'As soon as I had learned an exercise, the next one was already coming.'

***Outcomes final evaluation with D (05-02-10)***

4. Which aspects of the training should be changed?	
Period in which the training is offered	Do not have an opinion about this.
Number of meetings and spreading	I plead for 10 meetings of 1 to 1 ½ hours each, with more room for practicing. I myself benefited most from the individual sessions. Therefore I would like to have another individual session in the middle of the training.
Amount of material treated per meeting	If it concerns 10 meetings, the material per meeting could be halved. Now it really is too much what is offered per meeting.
Explanation	Very good! I would like to see that the slides of the PowerPoint presentation are handed out as well (not just shown).
Assignments	Half the assignments and more space to practise and after a week exchanging experiences with the other students and receiving feedback on this from the trainer.

Workbook	A bit messy concerning lay-out. More should be indicated with headings, like on page 2. Also a clearer visual demarcation between theory and practice parts.
Integration material lessons with practice	Yes, that is very well possible. Because of a long term playing injury my playing is now very limited. I also use the technique in other situations. For example, I recently passed my driving test. By using the Neutral I stayed calm during the exam.
Other	I think that the HeartMath method deserves to be wider known at the Prince Claus Conservatoire. Teachers should be offered a workshop as well in order to be aware of this. The HeartMath method is a welcome addition for everyone.

## 3.5 Portrait student E

### Motivation for participation

E says she would like to participate in order to get rid of the feeling she has before a performance: 'why am I doing this to myself?' In the course of the years her stress has diminished by the (non-musical) presentations she gives and with which she has good experiences. These experiences did not help her at her entrance examination. The fear had a negative effect on her performance. Even today her good experiences during the presentations do not help her with her musical performances. E is still nervous before a performance and often feels: 'if only it was over'. She also knows that many students at the Prince Claus Conservatoire suffer from stage fright. At the Prince Claus Conservatoire not much attention is being paid to this. She would like to take part in the research, not only for herself, but also for her fellow students: 'Making music should also be fun as a professional, not just at home behind closed doors.'

In her workbook (page 20) E says she has the following convictions about herself which have a negative effect on her performance: ‘I cannot do too many things at the same time; I am not a good singer; I will never make it; I can only do a little of everything; all others are better than me; I make high demands on myself.’

Personal targets E has set for herself (in the workbook with the training page 8):

1. Have fun on stage: go from a 3 to an 8 or 9.

**Research question 1**

*To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience with student E?*

**Outcomes student E on the State Trait Anxiety Inventory**

STAI-T	STAI-S	
	zero measurement	effect measurement
38	51	49

For her reference group (college student – female; Spielberg, 1983) E has an average degree of disposition fear (Stai-T), even somewhat below average. On the Stai-S zero measurement the value is still a standard deviation above average, so in the situation measured E is extremely anxious. The effect measurement does not really show a reduction of state anxiety.

**Grade (mark) for the performance by student E**

Premises	zero measurement	effect measurement
I am happy about my performance	6	7
I had sufficient control of myself during the playing/singing	4	8
I enjoyed the performance	3	7

The effect measurement shows a considerably higher rating of the performance, especially concerning the aspects of having sufficient control

of herself during the playing/singing and enjoying the performance. For E the second time was less stressful because she knew what to expect.

**Notes Researchers about E's performances**

<b>Performance 08-09-09</b>	<b>Performance 10-12-09</b>
E's performance is rather static, her body appears to be locked. She does not make contact with the audience while she's singing. She does not appear to be very happy with the performance. She sings especially from strength and there is very little expression in her presentation.	E makes a much less stressed impression than during her last performance. There is more communication with the audience now. Her body now resonates along with the music she performs. We now hear surprisingly beautiful nuances in her voice.

These notes show that her singing and presentation have improved. On 12 December she sings a different repertoire than during the performance on 8 September (2009).

**Workbook HeartMath lesson 5: Looking back and Personal Action Plan (pages 29 and 30)**

<b>Questions</b>	<b>Answers</b>
What progress have you booked lately?	I generally feel more balanced. I have become more aware of my feelings (in stress situations). I am starting to become coherent with my singing; I am starting to become coherent much more quickly.
What benefits have you had from the training?	Not counting exceptions, I respond more loosely to problems.
To which extent did you achieve your personal target(s)?	From a 3 to a 7. Using the Neutral technique on stage and becoming coherent in advance (before the singing) gives more peace. Awareness of when I am locked in my own world.



What challenges do you see for the future that you would like to approach with the HeartMath method?	Using the techniques in situations of extreme stress.
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E has become more aware of her feelings and how to influence these.

**Log researcher and trainer**

	First meeting	Last meeting
Position emotional landscape	40% unpleasant emotions 60% pleasant emotions	30% unpleasant emotions 70% pleasant emotions
Dealing with stress	2	6,5

In dealing with stress E has gone through a considerable change. E has become more aware of her emotional state of being and what this means for her performance (in a wide sense). She has also become more aware of what other people bring about in her.

**E's evaluation of the training**

Grade	Aspects of the training felt to be the most relevant
10	Awareness. Emotional landscape. Tools (techniques): Neutral, Heart Lock-in and Pre-framing

On all measured aspects E gives the highest score (positively agree).

**Outcomes final evaluation with E (04-02-10)**

Questions	Answers
1a Did the method bring you what you expected of it?	I did not have very high expectations, but I am very positive about this method.
1b Have your stress related complaints diminished (in which situations)?	I can now calm myself in stressful situations. I have had not many musical performances, but I have experienced that I feel less nervous.

1c To which extent did you realize your personal targets?	I have gained more insight into feelings of stress.
2a Do you use the HeartMath method at the moment and in what kind of situations?	Now only for performances.
2b If not, what are the reasons?	
2c From which techniques did you benefit most?	The Heart Lock-in is my favourite technique, this works best for me. I use it especially at home as preparation for practising. Steps 4 and 5 are still too hard for me because my thoughts are distracted easily. The Neutral I use especially right before a performance, to calm myself.
3. Would you recommend the HeartMath training to your fellow students	Roundly: yes!

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

**Remarks E about the course of the training**

Session 1 Based on this session E notes that the personal conversation with the trainer did her good. Concerning homework assignment 2 of lesson 1 E says that she does not judge her own emotions too quickly. Concerning homework assignment 3 – think about an occurrence which gave you a positive emotional reaction – E writes the following: ‘It is hard to find a positive occurrence that gives a positive emotional reaction, because nearly everything has two sides, positive and less positive. Moreover it is hard for me as yet to hold on to a positive feeling. If I manage to do this (as with the open fireplace metaphor) then I feel less pressure on my throat. But this is also hard to maintain. Besides this I have thoughts like: strange to manipulate yourself? Do I still take my emotions seriously? Do you not suppress them with this? Should you not sometimes give in, in order to avoid stacking up?’

Session 2 In the homework report based on lesson 2 E notes that doing the exercise (Neutral/Quick Coherence) is more difficult at home, possibly because you are distracted more easily. 'There is much distraction at home and if you have not really experienced the benefits of the Neutral it is harder to give it preference over something that is useful anyway. As day for doing the Neutral every hour I chose the Monday (22-09-09). During the exercises I managed to become coherent and for a while I did not suffer from stress. The effect was 1 or 2 minutes of peace and after this body and mind went on with their daily routine. A problem was also that during the exercises I was thinking about what I wanted to do after. The effects of it on the whole day I did not notice. Doing the exercise every hour for me felt like 'having to'. What I did like was doing the exercise right before practising. After this I was able to concentrate a little bit better on practising.' In her success diary she writes about this week (after lesson 2): 'In general I find that I become better at doing the exercises (read: become coherent more quickly). Although it goes slower than in the training I become 'green' ever quicker. I am also beginning to discover what does en what doesn't work. For example, when I sink down to red from blue instead of going to green and find that then I am thinking too much about what I am going to do after the exercise and that the best thing to do is concentrate on breathing in and out according to the dots. If you follow these there is not much room for other things anymore.' E writes in her workbook (page 14) that she can integrate the Neutral into her daily life when she feels stress coming up and while practising. The same applies for the use of the Quick Coherence. As essence of what she learned from this lesson E says that breathing has more effect than she thought.

Session 3 With practicing the steps for the Heart Lock-in E says that the steps 1 and 2 are going well. Step 3 (calling up a feeling of appreciation or affection for someone or something in your life) only works for a little while. Therefore she did not get around to steps 4 and 5. 'By breathing to the rhythm of the music I did end up more coherent'. Based on practicing the Attitude Breathing E notes that her body rises up, that she feels more proud (she feels strong and self-confident). As most important thing she learned from this lesson E says: 'Positive thinking really does have an effect. I don't think this works when it stays general, but when it concerns something specific. Breathe this in and out.'

In her homework report based on lesson 3 E writes the following: 'My emotional landscape has shifted to B and C. I notice especially that I have become more aware of my mood because of the training. This also makes me realize that I have a choice to stay in a certain mood or to do something about it. And sometimes this works, when I feel that I am becoming melancholic, to change my mood by thinking about positive things. The

Heart Lock-in is my favourite exercise. With me it always takes some time before I become coherent, and if you then take some time to stay coherent, this calms you better and longer than a short Neutral or doing the Quick Coherence technique.'

'I did the Attitude Breathing technique thinking: I am a very good singer. Other attitudes I have not adopted yet, because this is the most relevant one and also the one that bothers me most. I find this has a positive effect on me when I do it before practising. The effect is not lasting yet, but it may be something I have to get used to.' In her success diary for this week she makes the following notes:

Wednesday: 'During work I thought of the Neutral and tried this. It is difficult to do this, but it is possible. It was good to relax during work.'

Thursday: 'This was a very stressful day, still I became coherent.'

Lesson 4, workbook page 27: as most important thing she learned from the lesson E says you can pre-rehearse performances while being coherent. E says she intends to use the Pre-Frame technique especially as preparation for the exams, which she dreads. E also writes that she now has much more control of herself, more as a result of the mentality change (thinking differently about yourself) than because of the techniques but the programme (the training) makes you aware and helps (the techniques) you to relax in between.

### ***Notes about E in the researcher and trainer's log***

Session 1 Based on the first individual session the trainer reports the following: E has had a difficult time in her private life. As the conversation between them progresses E becomes more and more open. She is determined to work on her problems with stress.

Session 2 Practicing the Neutral technique brings about feelings of tiredness in E. She indicates that she has been thinking a lot about what was discussed in the individual talk. She mentions that what bothered her was that during the Quick Coherence many thoughts cross her mind, which influence her coherence negatively. If she does the same exercise a little later, but this time with the assignment to observe the thoughts and allow them, things go much better.

Session 3 Concerning homework assignment 2 of lesson 2 – choosing a day where you practise the Neutral or the Quick Coherence every hour – E notes that she did the Neutral technique about six times. She does not as yet notice any effect on her daily doings, but she does find the interruption pleasant (relaxing). E discovered during the past week that she thought she

was coherent, but that the emwave indicated differently. She says she is especially a thinker and that she has trouble recognizing her feelings. The Heart Lock-in exercise does allow her to feel what it is like if she is performing 'in the best version of herself'. She describes this as a breakthrough, which she would like to work on. At the end of the lesson she comes to thank me for everything this is giving her (log trainer). The upward spiral to more relaxation and coherence is continued in this session. Practicing the Attitude Breathing technique while listening to new age music causes resistance in E.

Session 4 Looking back on the past week: the Attitude Breathing technique works very well for her, it gives her more energy. The connection with making music she makes by imagining she is a good singer. The more she practises, the longer she stays coherent. E does say she needs more time to learn the various techniques. E indicates how she brings about the right attitude (step 5 of the Attitude Breathing technique). She imagines a very well known singer and then imitates her behaviour. This may serve as an example for others who have trouble learning this step of the technique. E experiences stress right now because she still does not have a new principal subject teacher. She wonders if there's something she can do about this. The trainer gives her several options for dealing with this: either ask the management about it, or let it go. From the trainer's log: 'Again it becomes clear that E is a real 'thinker' and often tries to change the way she feels by thinking differently. This continuous thinking about what she does, for example 'Am I doing it right?' results in a diminishing of coherence. The good thing is that she does have insight into this. What works very well for her are the imagination exercises. She really likes seeing herself in a very good version of herself. And I think that in the group she also appears different, more expressive.

Session 5 E says she recently applied the techniques in a conversation at school about a subject that has been bothering her. The result of this was that she was less nervous and that it cost her less energy. Important point to work on remains for her: applying the techniques with sudden, violent stress.

### ***E's evaluation of the training***

On all points of the evaluation – contents, material for the lessons, trainer, usefulness and relevance – E gives the highest grade (positively agree). As a suggestion E indicates that an evaluative/encouraging meeting be organized in three months' time.

**Outcomes final evaluation with E (04-02-10)**

4. Which aspects of the training should be changed?	
Period in which the training is offered	Makes no difference, would be nice at the beginning of the academic year.
Number of meetings and spreading	Once a week would be ideal, this also keeps the pressure on practicing regularly. The size of the group was ideal: 6 students. I think 8 students would be a maximum.
Amount of material treated per meeting	The amount of material per meeting was often too much. I would like to have more meetings: 10 instead of 5. The material could be spread better then. There would also be more space to share experiences, you can learn a lot from your fellow students. Moreover, Ewold would be able to give more feedback on the practicing itself (am I doing it right). An individual meeting at the beginning and the end I think is a very good idea. I also plead for after-meetings, about once a month, in which students can exchange experiences.
Explanation	The trainer was very good! If there is more space in the training (more meetings) I would like to see that the offered material is repeated more.
Assignments	The assignments per lesson are too much. Take for example lesson 4, if you want to do all assignments it would take you more than 1 ½ hours.
Workbook	Could be clearer concerning lay-out. If you want to look something up, this is not easy. Theory and practice assignments could be separated more clearly in the lay-out. This also applies for the homework. The language is clear.
Integration material lesson with practice	The techniques are easy to integrate into my musical activities (practising, performing, preparing the performance).
Other	The possibility to borrow the emwave sometimes after the training.

## 3.6 Portrait student F

### Motivation for participation

F gives her motivation to participate as follows: ‘I want to enjoy my own concerts more and not just be full of nerves, continually thinking about what others might think and then perform badly, such as forgetting your lines, not being able to breathe and not be able to stand on my legs calmly. I want to be aware of what I am doing instead of performing my concerts in a haze of nerves and then not be able to remember it. I want to start enjoying my performances before an audience!’ In order to deal with the stress of the performances F sometimes uses a beta-blocker.

In her workbook (page 20) F says that the following convictions she has about herself affect her performances negatively: ‘I am not a strict disciplinarian; I want to stay friends with everyone; I am a little weak.’

Personal targets F sets for herself (in the Workbook that accompanies the training page 8):

1. That I can be on stage with self-confidence and enjoy myself: from a 2,5 to a 7,5.

### Research question 1

*To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience in student F?*

### Results student F on the State Trait Anxiety Inventory

STAI-T	STAI-S	
	zero measurement	effect measurement
52	61	52

For her age and educational background (college student – female; Spielberger, 1983) F has a higher than average degree of disposition anxiety (Stai-T), more than a standard deviation above the average of this group. The Stai-S, as well as the zero measurement and the effect measurement show scores that are above the average plus twice the standard deviation on the zero measurement. It is true that the effect measurement shows a reduction compared to the zero measurement, but the score on the effect measurement is still one standard deviation above average.

**Grading (mark) of the performances by student F**

Premises	zero measurement	effect measurement
I am happy with my performance	4	6
I had sufficient control of myself during playing/singing	5	6
I enjoyed the performance	3	6

The effect measurement shows an average rating of the performance that is higher, especially concerning aspects such as satisfaction about the performance and enjoyment of the performance. F is satisfied but not much more than that.

**Notes researchers about F's performances**

Performance 14-09-09	Performance 10-12-09
F begins by remarking: 'It will probably not go well.' And this is the attitude she projects during the performance. It seems as if she has very little faith in her own abilities. She has a beautiful voice, but sings with little expression and over the heads of the audience.	F is singing in a much more relaxed way now and uses a little bit more expression in her voice. The communication with the audience is still limited.

These notes show that her playing and presentation have improved somewhat.

**Workbook HeartMath lesson 5: Looking back and Personal Action Plan (pages 29 and 30)**

Questions	Answers
What progress have you booked lately?	I have become more aware of what happens in me when I am stressed (breathing, heartbeat, emotions, thoughts). Turning negative thoughts into positive ones.



## Peak Performance & Reducing Stage Fright

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What benefits have you had from the training?	Approaching stress from a different angle and anticipating it. More insight into myself: considering yourself a friend.
To which extent did you obtain your personal target(s)?	Becoming calm in a frightening situation and not reacting emotionally.
What challenges do you see for the future that you would like to approach with the HeartMath method?	Feeling that I am a wonderful singer prior to a performance and also during the performance.

For F the training also contributed to becoming more aware of the stress and how to respond to this.

### *Log researcher and trainer*

	<b>First meeting</b>	<b>Last meeting</b>
Position emotional landscape	-	30% unpleasant emotions 70% pleasant emotions
Dealing with stress	2,5	5,5

As a result of the training E has improved her way of dealing with stress. What she learned especially during this training is self-reflection. She has become more aware of her feelings and the possibilities of changing her emotional state of being. The difference between positive and negative attention has become much more clear and the effect of this on self-coaching. She now sees more clearly how she can prepare herself mentally and emotionally for performances.

### *F's evaluation of the training*

<b>Mark</b>	<b>Aspects of the training she felt were most relevant</b>
8,5	Creating another view of yourself. Turning negative thoughts into positive ones. Being able to go to sleep calmly.

On all measured aspects F gives the highest score (positively agree), the usefulness of the material used in the lessons gets a slightly lower score (agree).

**Outcomes final evaluation with F (10-02-10)**

Questions	Answers
1.a Did the method bring you what you expected of it?	Yes. Beforehand I did not have a very clear picture of what would happen. My expectations were not very high. I learned more of it than I would have expected. I also learned that stress has a lot to do with how you look at things as a person.
1.b Have your stress related complaints been diminished (in which situations)?	I have not had much opportunity yet to apply what I learned in scary situations, because these have not yet presented themselves.
1.c To which extent did you realise your personal target(s)?	I am on my way. Because of the techniques I learned I am better able to think about myself and stress.
2.a Are you applying the HeartMath method now, and in what kind of situations?	Yes, only when I am calm, if I am able to concentrate well.
2.b If not, what are the reasons for this?	So not yet in stressful situations (they do have to occur).
2.c From which techniques did you benefit most?	Neutral and Quick Coherence. I find that in situations which are stressful that I tend not to do it.
3. Would you recommend the HeartMath training to your fellow students?	Yes! What is especially valuable is that you have to begin with yourself first in order to deal with the stress.

**Research question 2**

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

**Remarks F about the course of the training**

Session 1 In her homework report F notes the following: 'I found it hard to bring about a positive emotional reaction, and when I had it for a moment, it

was gone quite soon' (09-09-09). On 10 September, in relation to a concert: 'Because someone said beforehand that they had a very beautiful recording of my solo (sung by me), I was able to think about this every now and again during the concert when I became very nervous. This made me feel more positive and the nerves disappeared every now and again. Friday was a day during which I had to organize many things, so I was in the stress zone again. Again feelings of insecurity, powerlessness and dissatisfaction. I tried to think, today is now and tomorrow is tomorrow, so what happens tomorrow I cannot know yet. Eventually this made me calmer and gave me control of myself. It does give me the confidence that I can perhaps try this in the weekend.' Saturday 12 September: 'Again my fear of the new which is about to come. Because I am so worried about this, I have not been able to think that I might change it into positive thoughts. Once I was among people, I did not feel so conspicuous and things went better. This made me calm and afterwards I was not able to think negatively anymore. Because the attention was not really directed towards me I felt much more at ease. I was quite satisfied about this. What was a pity however was, when I was in the stress zone, I could not bring myself to bring back what I felt during the past week. And right now that would have been very handy.' Monday 12 September: 'Ringing people up is always a high stress factor for me. I always postpone it as long as possible, which causes the stress to increase. I now try to think that people would like to receive my telephone call. But actually calling I postpone until I feel more secure.'

Session 2 On page 14 of the workbook F says she can use the Neutral in her daily life by taking a moment to think about her breathing when she notices too many thoughts pass by and against stress at work. In practicing the Quick Coherence during this session F says she thinks of many things at the same time. 'I cannot focus enough on a pleasant thought.' As most essential thing she learned F writes: 'To apply this the right way in a quiet atmosphere and not fall into the trap (when I am restless I think of too many things)'. In her homework report after session 2 F makes the following observations. Wednesday 16 September: 'The heart focus went well, but I can only do this when I sit still and do not listen to music or watch TV. But when I am close to the moment of a rehearsal or a concert, I find it hard to concentrate on this, like today. So at the end of the day it was not much use to me, but before I could go to sleep and the rehearsal had ended I was able to apply it again. This makes me calm and did not allow me to think too much about how the rehearsal went. I did not yet have fewer feelings of stress before the rehearsal, but I did afterwards.' Thursday 17 September: 'Then the stress really kicked in. I did not even stop to consider using the equipment (the emwave). I think I was really overwhelmed by tension so I could not come up with many positive thoughts. Only when the day was over, right before going to sleep, I was able to breathe more quietly and to

bring about pleasant thoughts. It was not a great success, but it did certainly help. Physically you notice that your heart is racing less and that this relaxes your body. You lie there quietly and do not have to turn constantly. In the mornings I still find it hard to apply the exercises because when I wake up, I immediately have to do the things I set myself to doing.’ Friday 18 September: ‘This was the day of the recording, so my stress levels were high. I consciously thought about the fact of having to apply it, but because I wanted to rehearse one more time (singing) I did not get around to it. It gives me no peace when I know there is still so much to do and then I spend my time on breathing quietly and doing nothing. I know it is wrong, but I cannot give it peace yet. After the event (the recording) I became quieter and was able to apply it again. I do think it is a pity that I don’t do it before I have to do something stressful. In the evening, at the concert, I was surrounded by nice people to talk to. That is really a comfort. On stage I was able to bring this with me and this made me breathe more quietly.’ Saturday 19 September: ‘In the evening I had another concert, but because I sing with someone who really thinks it’s great that I am joining in, this gives a lot less stress, but unfortunately I was singing in an environment I know well and this gave me quite a lot of stress. Eventually, while I was waiting to go on stage, I went very deep ‘inside’ and told myself that I had to give myself time. That I had to allow that there also had to be time for moments of rest. Before I went onstage I found I was much calmer than I had expected. Because of this I can say that I had fewer feelings of stress. That I also felt this physically. I felt less ‘floaty’ and really connected with the ground. I think that this has been very important as well.’ Sunday 20 September: ‘Today I had decided to do the Quick Coherence all day. Today was the day the clip was going to be shot. I have to say that it felt good for me to take a pause every now and again and think about the fact that if I became nervous, I started thinking about why I should be nervous. I only had to playback my lines before the camera and that was it. That should not be so special, surely? And this worked exceptionally well, with the heart breathing as exercise. The heart feeling still has to find its way with me, because once I have a pleasant thought, all kinds of other roads open up where my thoughts run to. The day went reasonably well. Also, people were enthusiastic at the concert, so actually I was quite happy with my findings. And now all I have to do is try to hold on to it.’ Monday 21 September: ‘Because this clip was recorded outside all day long, and of course you don’t wear a coat when you are filmed, I had become ill today. This gives me great stress instead of being able to hang around on the couch. I am afraid that I will be running behind when I get better (will be insufficiently practised). And because I have such a terrible cold I only got irritated when I started breathing deeply.’

Session 3 While applying the Heart Lock-in in this session F writes in her workbook that her thoughts go elsewhere quite soon. She sees this technique as a possibility to create a good feeling inside. She says she does the Heart Lock-in during the quiet moments. When the Attitude Breathing technique is treated, F says she would like to have the following convictions about herself: 'Be persistent and be strong and be able to accept compliments.' As most important thing she learned in this lesson F says that what you say to yourself you are eventually going to believe. In her homework report in the week after session 3 F makes the following notes.

Friday 25 September: 'I think I always start out negatively with everything. I would also start my text now with: Because I knew I only had a few days to see results, it immediately oppressed me. Actually I should think about this very calmly and sort it out for myself. But still it brings a lot of questions for me this week. To send myself the feeling of appreciation? Because do I even know the difference between my conscious and my subconscious? Actually I don't really know how I mean this, to be brief: I find it hard to establish at that moment what I think or feel. When I had a session on Friday (a special individual catch-up session organized for F) I was only concerned with thinking about how to replace my attitude problems. I really do believe in the fact that how you think about yourself can also make you like that. That is why on this day I was especially busy with coming up with opposed attitude aspects.' Saturday 26 September: 'Today I had a very busy day and I knew it was going to be hard to find time. When I realized this, I immediately thought: this is what he (the trainer) means. Already in advance I have an assessment of how this day is probably going to go. So I put it out of my head and just looked per hour what I could do. I had a rehearsal with the choir today and before this an hour of training. This is a kind of Pilatus (certain form of yoga). I immediately started using this as a means for my exercises. Because you are already so concentrated you can do the exercises very well without thinking about the movements too much. The heart breathing went well. Good thoughts quickly jumped to very different things, but I managed to allow these. The next step for me was very much out of reach. I still find it very hard to think of how to send it to myself. Actually I got stuck at doing the heart breathing, a good thought and allowing the rest and trying to turn negative things into positive ones. Perhaps it takes a little while before I understand how to do it. It did make the rehearsal calmer, though. And I was more in control.' Sunday 27 September: 'Only just before I went to sleep I tried to do the exercise (Heart Lock-in?), but because I did so much this day this all went through my head. It felt like I had no room for other thoughts. With the other exercises I do calm myself and for now that is enough for me.' Monday 28 September: 'I think I have to know once more how I have to approach this. Sending it to myself still seems so remote. Today I did a lot of heart breathing. This

makes me feel so much better, and actually quite satisfied. This week is not so busy, so I'm a lot calmer to start with and things go much easier.'

Session 4 F says she is insecure about her future as a singer. As a short term result of her singing F says she would feel much more secure if the people she knows and her relatives would enjoy her music and think she has made progress. What she learned especially from this lesson is that you can imagine a future (stressful) event and make this proceed in a positive way (in your mind), so that the event will also go positively in the actual moment.

***Notes about F in the researcher and trainer's log***

Session 1 Based on the first (individual) session the trainer writes that he has the impression that F leans a lot on others and therefore is very sensitive to what others think of her.

Session 2 Practicing the Neutral brings about quite neutral feelings in F. While practicing F becomes coherent. It seems as if she is slightly disappointed that her coherence is less high than that of the girl next to her.

Session 3 F does not always remember her exercises because of business and stress, but she does do an exercise before she goes to sleep and finds that she falls asleep calmly. F acknowledges that she often gives herself negative messages, such as: 'It won't work anyway.' Would like to change this into positive messages. The Heart Lock-in technique she does during this session goes well. While practicing Attitude Breathing she says that breathing in goes well, but that she would like to hold on to it and not breathe out. F enjoys the session, but doubts that she can learn everything the way it is described.

Session 4 F says she has trouble holding on to a good feeling (based on practicing at home with the Heart Lock-in technique). She does not always manage to send feelings of appreciation and affection, and when she does it is only for a short period. F indicates she needs more time to learn to control the Attitude Breathing technique. After performing the Freeze Frame steps F says that nothing happened with her (mental, emotional, physical or behavioural). She says she has trouble holding on to the first image (calling up a situation or event which will take place in the future). Also changing negative convictions (into positive ones) she finds hard. F says she needs more time to learn to control the techniques she was given earlier.

Session 5 What F learned especially from this training is self-reflection. She is more aware of feelings and the possibilities of changing the way she feels. Also the difference between positive and negative thoughts has

become much more clear to her and the effect this has on self-coaching. She sees more clearly now how she can prepare herself mentally and emotionally for performances.

**F's evaluation of the training**

For the trainer, the contents and the relevance of the training F gives the highest score (positively agree). The way the material is structured, being able to follow what is taught and the usefulness of the material scores slightly less (agree). As a point for improvement F says that more lessons are needed.

**Outcomes final evaluation with F (10-02-10)**

4. Which aspects of the training should be changed?	
Period in which the training is offered	Beginning of the school year is excellent, you can profit from it for the rest of the year this way.
Number of meetings and spreading	Would like to have 3 or 4 more individual meetings, on top of the meetings which are offered now. The group meetings are certainly also useful, but I myself benefited more from the individual meetings.
Amount of material treated per meeting	Fine. There should be enough time for discussions, however.
Explanation	Clear.
Assignments	Sufficient and clear.
Workbook	The assignment forms in the back of the book could also be given to the students digitally. I think of the Personal Action Plan, the StressTracker, the Practical log and the Success diary. Now (in the paper version) there is not enough space to write things down.
Integration material of the lessons in practice	Good. You do have to know clearly what you can do (which steps you control and which you don't ). A point of attention is self-discipline. You have to be consistent in applying the techniques.
Other	None.



4



# Discussion



## 4. Discussion

### Concerning research question 1

*To what extent does the HeartMath training lead to a reduction of stage fright in performance situations before an audience?*

First I will discuss the outcomes of this question per casus (student), and after this what the six portraits together say about this question.

#### **Student A**

For A the training has been effective. All effect measurements are positive for A. In the final evaluation (17-02-10) she indicates that she experiences less stress on stage and has more control of the way she functions. Her stress related complaints are not nearly as intense. The outcomes of the STAI-S effect measurement are lower than on the measurement beforehand. A says she is on the way to realizing her personal targets. She says she has not yet achieved her personal final targets, but also understands that dealing with stress is something you have to work on for the rest of your life. Sometimes it is not there, but it can suddenly surface. As an important gain of the training A indicates she has more insight in what stress is and what you can do about reducing it. She has also integrated her practising strategies with the HeartMath technique, which allows her to get more effect from her practising activities (by making a clear mental picture of what she wants to achieve – Pre-Framing; with the aid of the Neutral she is able to focus/concentrate better on what she does). A uses the HeartMath techniques when she thinks she needs them.

#### **Student B**

B made clear that the training (the HeartMath method) did not work for her. At the same time she indicates she hardly had the opportunity to apply the techniques in performance situations before an audience. After the fifth meeting she stopped using the method. B did not make homework reports, and explained to the trainer during the last session that she did not get around to making the assignments (lesson 4). She cannot indicate the reason why the training did not work for her. Considering the fact that research data are virtually completely missing, it is not very well possible for the researcher to discover why the training did not work for her. Meanwhile B has looked elsewhere for help for her problems.

**Student C**

Student C says the training helped her gain more control of herself during playing. The premise concerning experience of control during playing shows an improvement on the effect measurement, even if it should be noted that the performance situations during the effect measurement were less favourable than those during the zero measurement. The outcomes on the STAI-S show no difference on the measurement beforehand and the effect measurement. C has an average STAI-value for her reference group, so is not extraordinarily anxious right before a performance. C does note however that for her the feelings of anxiety only surfaced during the first concert (zero measurement) the moment she started playing, so *after* she completed the STAI-S questionnaire for the first time. C is clearly on her way to achieving her personal targets. In dealing with stress she went from a 4 to a 6. She says she feels more inner peace, is more aware of her emotions and the effects they have on body and mind, and is better able to control her emotions. As other important issue she gained C says that she has to think less negatively, because otherwise these thoughts will come about for real. C also used the given techniques for practising, which allowed her to be more patient with herself. In the final evaluation (more than two months after the training) C says she uses the Neutral prior to the concerts, if she feels nervous. The Pre-Frame she uses right before a concert.

**Student D**

D was dealing with a playing injury during the training, for which she was undergoing long-term treatment. For this reason it was not possible to do an effect measurement. The above average value on the STAI-T indicates a anxiety disposition above average for her reference group. D says she benefited from the training. By regulating her breathing she can reduce her stress related complaints. She says she is more in control of herself. She learned that you can work on stress by means of regulating your breathing and by turning negative attitudes and thoughts into positive ones. She feels herself to be more stable, is able to let pleasant emotions take the forefront during stressful situations and indicates that in dealing with stress she went from a 6 to a 7. D also says she is on her way. In two emails to the researcher D says she experienced the positive effects from the training during the practice-part for her driving test. By doing coherence exercises she remained calm during the exam. Two months after the training D says she still uses the Neutral (when she is nervous) and the Freeze Frame steps (when she thinks about stressful events of the past week).

**Student E**

From various data sources the image emerges that the stress related complaints linked to musical performances have reduced for E as a result of

the training. E has become more aware of her feelings (emotional state of being) in stress situations and how to influence these feelings. The STAI-S effect measurement does not really show an improvement compared to the zero measurement. The zero measurement shows a value just above one standard deviation above the average; the value of the effect measurement is within one standard deviation above the average. E indicates that she feels generally more balanced. In realizing her personal target – enjoying herself on stage – she went from a 3 to a 7. E made very good progress in dealing with stress, but wants to go to an 8/9. Surprising was her performance at the end of the training, during which we heard nuances in her voice we did not hear during the first performance. In the final evaluation E says she uses the Neutral right before a performance to calm herself. Her favourite technique is the Heart Lock-in. E gives the training the mark of 10.

### ***Student F***

Performances before an audience are always accompanied by a lot of anxiety for F. The value on the STAI-S questionnaire effect measurement show a decline compared to the zero measurement. What she especially learned from the training is self-reflection: she has become more aware of her feelings during stress and how to deal with these, especially with the role negative feelings have in this. Her negative self-image especially is affecting her. F has not yet been able to really apply the techniques she learned in the training in performance situations before an audience, because these have hardly presented themselves yet (until 10-02-10). The training helped F to take a first step towards controlling her stress reactions during musical performances before an audience. The image that surfaces is that F is on her way to realizing her personal targets, but still has some steps to go. In dealing with stress she went from a 2,5 to a 5,5. The performance at the end of the training she grades with an average of 6; the average grade for her performance prior to the training is a 4. She says in the final evaluation that she uses especially the Neutral and the Quick Coherence, but she also says she tends not to use the techniques she learned in situations which are stressful for her. F gives the training the mark of 8,5.

### **Overall findings**

#### ***Effectiveness***

In four of the six students the training led to a reduction of stress in musical performance situations before an audience, so various data sources show. Student B stopped before the end of the training. She indicated that the method did not work for her and that she looked elsewhere for help for her problems. Why the training had no effect for her is impossible to determine

because there are no homework and log records. She was not able to explain it herself either. There is no information for a post-measurement for student D, because she was not available for a long time because of a playing injury. However, the techniques she learned did help her pass the practice-part of her driving test.

The students indicate that they have not had many performances yet, but that they did experience positive effects from the training. Mentioned are: experienced less stress prior to and during the performance, being more balanced during the performance, being better able to reduce stress. These effects were mentioned during the last meeting as well as two months later, during the final evaluation. The effectiveness of the training is emphasized by the high grading the students give the training and the trainer: an average of 4,8 on a five point scale. All five students who completed the training would recommend it to their fellow students.

### ***Active ingredients***

More insight into stress (what are the components of stress), where does it come from for me (sources of stress, causes of stress) and how can you change the stress reactions you learned, change them into more positive behaviour, is the most important result of this training. But also the role of positive thinking and feeling, that you can do something about it, have more control of yourself.

More insight alone is not the only thing that makes this training relevant. Learning techniques to deal with stress is an important added value of this training. Applying the techniques allows the students to experience that they can change the stress reactions they have learned and control these. Students also indicate clearly which techniques they used for which ends. The Neutral is used especially to reduce stress levels. The Pre-Frame is used for preparation for a concert. Student E uses the Heart Lock-in for this as well. Re-Framing is used to evaluate the events that have presented themselves.

### ***Application range of the techniques***

The research shows that the application range of the techniques is wider than reduction of stress prior to or during concerts. The techniques appear also to have an effect on practising more effectively. Use of the Neutral increases calmness and the concentration necessary for practising. This technique allows students to focus more on their practising activities. The Pre-Frame technique appears to work for thinking about objectives and approach of practise for the coming day/period. Student A is most explicit in this. She makes a mental image of her targets in terms of how it has to sound, what it should look like and how it should feel. During the

Re-Framing an evaluation can be made of to which extent the intended objectives have been achieved and whether the practise activities used were effective.

Other effects of the training which were mentioned are: feeling more balanced, feeling freer, feeling more cheerful, being more patient with oneself, being able to structure weekly activities better, being able to react to problems more loosely, being more aware of what other people bring about in you, having more self-reflection, looking at yourself differently (more positive) (self-image), being more aware of old (wrong) patterns of behaviour, falling asleep more easily, smoking less and feeling less depressed. Not quite clear is whether it concerns effects which can be linked to the training directly or whether it concerns effects which are an indirect result of it. For example, it has been said that feelings of depression decrease because people have more control of themselves, or that you learn to look more positively at yourself as an indirect result of applying the techniques. D is aware of the fact that taking a moment to consider your own successes (as part of the Heart Lock-in technique) changes your mood.

### ***Individual differences***

Everyone is clearly well on their way in dealing with stress on stage. The HeartMath method is not a panacea which makes problems with stress disappear like magic. Deep-seated stress reactions are turned around into positive stress reactions. Insight alone (an activity of the neocortex) is not enough to change this behaviour (an activity of the limbic system, linked to autonomous reactions of the brainstem). This requires practise. The HeartMath method appeals to all brain systems, and with this to all components of stress (see also 1.5). The students indicate that practicing (the regular and frequent application of the techniques) helps to control stress. They also realize that continuity is an important factor in realizing their targets in this area. One of the students says she undoubtedly expects she will use the techniques later on in her career, when the situation demands it.

It appears that certain students have progressed more than others. A, D and E seem to be further advanced in realizing their personal targets in dealing with stress than C and F. C indicates more than once that impatience sometimes holds her back in (not) applying the techniques. F says that she strongly tends to not apply the techniques in performance situations, because she cannot find the peace of mind to do so. In her homework notes she writes that this is wrong and that her old behaviour pattern is in the way. The question is also whether both students have had the time to learn to control the techniques sufficiently. F clearly indicates that she would like to have more individual sessions.

## Concerning research student question 2

*Which adjustments of the training programme are necessary to make it more suitable for professional music students?*

### **Evaluation Training**

	<b>Contents lessons</b>	<b>trainer</b>	<b>usefulness</b>	<b>relevance</b>
Student A	5	5	5	5
Student B	2	3,5	2	2
Student C	4,5	5	4	4
Student D	5	4,8	4,5	5
Student E	5	5	5	5
Student F	4,5	5	4,5	5
Average	4,3	4,7	4,1	4,3
<b>Average without B</b>	<b>4,8</b>	<b>4,9</b>	<b>4,6</b>	<b>4,8</b>

Students were asked to grade the training through a number of premises concerning the effectiveness of the training on a five point scale. The grades show that the training was valued highly. The somewhat lower marks for usefulness (does it work) are also connected to the fact that this evaluation took place at the end of the fifth session. The six weeks of practise until the second performance and the final evaluation after three months were yet to come.

### **Period in which the training was offered**

Three of the six students found the period in which the training was offered (September-December) fine. One student has no opinion and another student would like to see the training offered to first year students in the second semester. After the first semester it is clear who benefits from the training. This person will then be helped as soon as possible by offering the training at the beginning of the second semester. One student notes that because of the period in which the training was offered she missed a number of really exciting performances before an audience, which caused her not to be able to 'really' test what she learned.

Offering the training to first year students who are eligible for it, seems like a good idea. The sooner you learn how to deal with stress, the better. The second semester would be a good time to start. In the first semester the student experiences what it is like to play in a competitive environment, which the conservatoire is by its nature, and they receive information within

the framework of study counselling about stress and what can be done about it. The student is made aware of a special trajectory if problems with playing before an audience demand this. Study councillors and principal subject teachers also have a role in detecting students with stress related problems. For referral an intake procedure is required.

### **Number of meetings and spreading**

Only student A is happy about the number of meetings, five in all. A plea is made for a total of eight to ten meetings. Generally the HeartMath method is offered individually in six meetings of one hour or in four 4-hour meetings to groups. It was decided to take the average of this for the Prince Claus Conservatoire: 2 individual meetings of 1,5 hours and 3 group meetings of 3 hours. Looking back this was perhaps unfortunate. Meeting three ran forty-five minutes late and the assignments that accompanied this lesson (lesson 3) could not be completed. The students were asked to do this at home, and this resulted in confusion about what they were expected to do exactly. The spreading of the meetings, with time in between of about a week, was felt to be ideal. More meetings would be a good thing, so there is more time to master the techniques. This would also allow more room for feedback: am I doing it right? The group meetings are seen as valuable for sharing experiences and giving each other tips, about how you can improve applying the techniques, or how you can integrate them with practise techniques. Student E makes an appeal for one or more after-meetings, once a month or a meeting a number of months after the training has ended as encouragement and as a kind of check (am I doing it right?). Both the individual meetings at the beginning and those at the end are very much appreciated. The individual meeting at the beginning makes it possible to be more attuned to the individual student, especially concerning making them aware of sources of stress and the reasons behind this. This not only gives the student insight into what stress is, but also in what causes stress for her. The personal approach is also preferable when the student discusses her Personal Action Plan during the last meeting with the trainer. Student D would have liked to have another individual session in the middle of the training. Student F indicated that which benefited her most were the individual sessions. The findings of the students concerning this point concur with the final evaluation of the trainer: 'In order to reap the full benefits from the training it is necessary that it is spread out over a longer period of time, with more and perhaps longer group meetings so the students can practise more. Another consideration is offering the training one to one.'

### **Explanation**

The way the trainer explains the method is felt to be quite clear. Problems are only experienced with the explanation of the Attitude Breathing technique. Students have trouble with the assignment to imagine taking on a positive attitude. The passages in the workbook (pages 20-22) offer little support, nor does the oral explanation during the session in which this technique is treated. The difficulty lies especially in translating the new attitude into concrete behaviour. A solution for this is introducing a role play in which the student can practise how to turn the new convictions about herself into concrete behaviour. Student E, for whom this technique was a breakthrough in her dealing with stress, gave a clue for this by taking the behaviour of a well known singer as an example and imitating this: link the desired attitude to concrete behaviour. Use of music during this exercise leads to various experiences. Especially the new age music is felt to be irritating; for most students the music of Mozart (middle part piano concert in C) has more effect. Student C says that calling up positive childhood memories has more effect for her than listening to music. The use of music (and which music) in calling up a positive emotion, part of the Attitude Breathing technique, or the use of other means for this, could be left as a choice for the student. This way students can find out for themselves which music has the desired effect for them.

### **Learning and applying the techniques**

The research shows that the techniques follow each other too quickly. The students need more time to learn to control the steps of the techniques. There is a logical sequencing between the steps, the Neutral is part of the Quick Coherence, the Heart Lock-in is continued in the Quick Coherence, etc., but it does prove to be too much in too short a period of time. During the period the training took place, most students did not get around to Pre- and Re-Framing (the last two techniques which were offered.)

Becoming coherent is no problem for the students, even if one claims to be coherent faster than the other. D and E indicate that practicing helps: you become coherent quicker and you stay coherent for longer as you practise more frequently and more intensively. C noted quite quickly that she does not need the emwave to determine whether she is coherent or not. For her having a good feeling is good enough. E cannot rely on her feelings for this, she needs the emwave in order to check whether she really is coherent. Almost all students indicate that it is more difficult to become coherent at home. According to the trainer this is because at home there are more distracting factors. Student D notes that becoming coherent after acupuncture did not succeed as well. D became coherent by consistently



breathing in for five seconds and breathing out for five seconds. Later she said she could become coherent by calling up a positive feeling. C said it was more difficult for her to become coherent when she was listening to music in which her own instrument took a central place. In the workbook and the training there should be greater attention for the various ways that lead to Rome (coherence) and the circumstances which obstruct becoming coherent. The effect of practicing in order to achieve coherence should be emphasized more as well.

An important aspect in learning and applying the techniques is calling up a positive feeling or memory. The problems with this in the beginning were: holding on to the good feeling (thoughts tend to jump here and there) and the given that to certain positive memories (for example concerning a person or an event) often less positive sides are attached as well, which can cause the feeling to change in the course of time. The students indicated that practicing with this also works and that achieving inner peace (by means of the HeartFocus and HeartBreathing) is an important condition for allowing positive feelings to surface and holding on to them. Focusing is also facilitated by allowing distracting (negative) thoughts and observing these. Not allowing them causes them to disappear less easily and therefore interfere more strongly. Another remark which was made concerning the visualization of a positive feeling linked to an image has to do with the contents of this image. The visualization works best if it is multi-modal in nature, which is to say, if the visualization contains visual, auditory, tactile etc. components. This complements findings about memory research that memories can be activated more quickly if they are multi-modal. D notes that the effect of certain visualizations wears off when they are used frequently. In this case another image can be used.

Two students said they tended not to use the techniques in stressful circumstances, because of impatience or because it would be better to occupy yourself with musical affairs. Both also said that it concerned old, 'wrong' thinking patterns. The techniques are intended precisely to break through these patterns. Experiencing the way they work is the best guarantee that the techniques will actually be applied in situations in which the students experience stress.

### **Assignments**

Four of the five students indicated that the homework assignments that accompanied the lessons were too much. This was the reason they started making choices, what to do and what not to do. As a result not all techniques were mastered equally well. The students got stuck with the techniques which benefited each particular student most at a particular

moment. This problem can be avoided by increasing the number of meetings and limiting the material dealt with per meeting. There should be more time during the meetings for discussing the experiences with the techniques at home, which the students learned during the previous meeting. It is important for the students to receive more feedback on the way they apply the techniques.

The students had great difficulties in doing homework assignment 2 with lesson 2, practicing the Quick Coherence technique every hour for one day. Problems mentioned were that it was not always possible because it interfered with other (school) activities of the day, and that sometimes they forgot to do it. The aim of this assignment is securing the application of the techniques in the daily pattern of activities (forming of habits) and experiencing the added value of them by frequent application. Two students said they did not experience the use or added value of this assignment.

### **Workbook**

The English-speaking student made an appeal for an English version of the workbook. Two students would like a better layout of the text. The students requested headings in the text, as were used in the introduction and the opening of the book. A better demarcation could be made between theoretic and practical parts. The students recommend that the homework assignments and the worksheets in the back of the workbook (the Personal Action Plan; the StressTracker; the Heart Lock-in practical log and the Success diary) be made available digitally to the participants of the training. In the printed version there is often not enough space to write down all your notes. The students also requested that the trainer make the slides he used in his presentation available to the group, because these were often very appealing to them.

### **Integration HeartMath method techniques with the musical practice of the student**

It is very well possible to integrate the techniques with the students' musical activities. The Neutral appears to be effective to reduce tension right before a performance. Pre-Framing is an important means for the student to prepare for a concert in the home situation. Students indicate how they integrated the techniques of the HeartMath method with their practise activities. Using the Neutral prior to practising makes the student better able to concentrate on her activities, become calmer. Becoming aware of your breathing and controlling this can be used for making music. Regulating breathing is not only important to make your body more relaxed, it is also important for phrasing well and achieving your targets concerning musical

expression. Pre-Framing can be part of making your practise objectives apparent and clear. What do I want to achieve, how should it sound, feel, look, and how am I going to realize this? Re-Framing can be integrated with the evaluation of practise activities: did they lead to results, what should I change? Integrating the techniques of the HeartMath method with the practise activities should be looked into further. This also applies to dealing with stress and stressful situations in general.

### **Integration HeartMath method techniques with other methods**

Another important question is to which extent the HeartMath method allows itself to be integrated with techniques from other strategies for reducing stress. The question is relevant when we look at the specific problems the students encounter. A has a clear wish to strengthen her self-confidence. The HeartMath method strengthens the confidence of the person who uses it indirectly by successful experiences. It should be researched to which extent techniques such as giving yourself a pep-talk can be used additionally in order to deal with this problem more directly (see Court Jackson, 2007). C's problem is especially that she deals with a heightened self-awareness, which makes it difficult for her to concentrate on her task. Elements of task concentration training could be implemented in the HeartMath method. Useful suggestions for this offers Van der Loo's research (2008), who measured the effects of task concentration on stage fright in conservatoire students. Further research is also required into the integration of techniques in the field of meditation, relaxation and movement. To which extent can integrations such as these, linked to the stress profile of the individual student, be made to strengthen the effectiveness of the HeartMath method?

### **Other observations**

- | A soundproof room is necessary for the meetings. Audible music in a neighbouring room interferes with the training. When the rooms for the training meetings are booked it should be taken into account that there will be no noisy activities in the rooms next door.
- | For students who would like to, there should be a possibility for them to make use of the emwave every now and again after the training.
- | The HeartMath method deserves to be wider known within the Prince Claus Conservatoire, not only among students, but among teachers as well. Students can be informed about this method by working on dealing with stress in the first semester of the first year. Students who would like to take it further, will then know about the continuation of

the training. Teachers should certainly be informed about the HeartMath method. For those who are interested it should be explored whether a workshop would be a good continuation of the training.

### **Stipulation concerning the research**

#### ***Participating students***

The usefulness of the HeartMath training programme was tested with only six students, in fact only five, because one of them dropped out early. All students are female and from the Classical Music course. Because of this the outcomes of the research cannot simply be generalized concerning other student populations: male and non-classical music students. Research has shown that female musicians generally suffer more from distracting, negative thoughts prior to and during a public performance. Among the students who participated in this research we saw that the stress levels, measured with the State-Trait Anxiety Inventory, in four out of six students were no higher than average. This could mean that among male musicians, whose anxiety levels are generally a little lower (concurring with the values which were measured in four of our female students) this method could be expected to be effective as well. The fact that the research concerns classical music students is not really a problem, because stress related complaints are especially found in this group.

#### ***Performances before an audience***

The performances preceding the first session and six weeks after the last session were intended to measure the state anxiety: how stressed are the students right before a performance. The outcomes on the State Trait Anxiety Inventory were an indication for measuring the effect of the training. The expectation was that the effect measurement would lead to lower scores than the zero measurement. Both measurements could be completed for only four out of the six students. For two of them the results concurred with the expectation; for the two others no clear effect was visible. Three students indicated that they did not experience the performance (playing for each other) as stressful. Only in two students do we see outcomes on the zero measurement which are higher than one standard deviation above average. The STAI is a standardized test and the outcomes of it are a measure which can be used to determine to which extent the training had an effect for the student. Should this tool be used in the future, this implies that the concert conditions should be made more realistic.

#### ***Limits to the usefulness***

The research has not made clear for which student the HeartMath method would not be a useful solution. Only one student dropped out because of other problems and her therapist's advice to quit. It is not known what the

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problems were and what kind of help she looked for. It goes without saying that where psychological problems are concerned, either linked to the stress related complaints or not, there should be a reassessment of whether treatment of the stress related complaints, separated from the other problems, is useful. Research shows that musicians (compared to non-musicians) have more neurotic and narcissistic traits and identity problems (Wippoo & Citroen, 1998).



# 5



## Recommendations

## 5. Recommendations

1. The HeartMath training programme is effective and useful for students of the Prince Claus Conservatoire. Considering the serious nature of the problems, the frequency in which stage fright manifests itself and the consequences of it for musical and personal functioning of the student, it is recommended that students be informed as early as possible of what stage fright is, and what can be done about it. In the first year this could be done by dealing with it during the lessons study counselling. Especially important is that the problem should be discussed openly and that symptoms are recognized. In addition to this students should be able to choose a continuation of the training in the shape of a workshop HeartMath. Students whose problems are really serious can then be referred to the individual training (see point 3). Recommended is that students who suffer from stage fright to such a degree that their musical and personal functioning is affected, should be referred to this method of treatment.
2. The insights the HeartMath method is based on and the techniques that go along with it are also relevant for students who do not suffer from serious types of stage fright who want to improve their performance by learning how to make music more freely and so be better able to realise their musical intentions. They complement the continuum of the inner state of being of which 'peak performance' and 'stage fright' make up both ends. From this viewpoint information about the HeartMath method is relevant for all performing students of the Prince Claus Conservatoire.
3. The trainer who gave the lessons during this pilot is extremely skilled to give the HeartMath training to students who suffer from stage fright. He is a qualified Heartmath trainer with a great track record, who has given this training to various groups of people. As a registered therapeutic social worker he also has the clinical view and the knowledge to recognize the issues behind the problems the students may have and discuss these openly, within the framework of the HeartMath training. The trainer and his partner (registered psychiatrist) together have a bureau for psychotherapeutic aid. This makes it possible for their treatments to be refundable by health insurance. Therefore the student only needs a referral from her GP. The fact that a psychiatrist is present in the background also offers the opportunity for possible additional psychological problems to be recognized quickly. In some cases, depending on the insurance company and the nature of the insurance policy, a small financial contribution is asked from the student.

4. It is recommended that a teacher of the Prince Claus Conservatoire and/or the Royal Conservatoire be trained as a HeartMath workshop leader. This teacher will then be able to provide information about the method to students and teachers of both conservatoires. HeartMath Benelux gives workshop leader trainings. Considering the fact that Ewold de Maar is training director of the European branch of HeartMath, after consultation it can be determined how information to students can be provided. The path to possible referrals has then also been set up.
5. It is recommended that students who suffer from stage fright and who have a referral from their General Practitioner for this, be allowed to do the standard programme HeartMath training (adapted for musicians). This training consists of eight individual sessions of 1 hour. More sessions are possible if this should be necessary. Group sessions are not part of the package. The advantage of the individual sessions is that working with the student can be much more focussed and efficient. The interaction in a group also slows progress and the treatment of the techniques. Possible additional research can make clear what the added value is of one or more group meetings compared to only individual sessions. The group meetings, however, are not reimbursed.
6. A public performance prior to the training and a similar performance a few weeks after the last session are an important criterion for determining the effect of the training. It is recommended that this is made part of the training programme. The concert situation should be sufficiently realistic in order to be able to measure any effects.
7. The following aspects of the programme should be reassessed:
  - | The explanation of the Attitude Breathing technique.
  - | The role of music while practicing the techniques.
  - | Emphasizing that the frequency and the intensity with which the techniques are practised has an influence on the reduction of stress.
  - | More attention for learning the techniques: the problems you can encounter and the tips that might be of help.
  - | The individual choices of the student in using the techniques: choosing the technique which is most effective for the student at that moment.
  - | Revision of assignment 2 with lesson 2 (choosing a day during which the Neutral or the Quick Coherence is practised every hour).



8. Adjustments of the workbook:
  - | Publishing an English version of the workbook.
  - | Adding headings in the text.
  - | Better demarcation between theory and practice.
  - | Assignments in which the student is asked to write down information over the course of several days/weeks should be made available digitally.
  
9. Integration of the HeartMath method in practise techniques should be looked into further. The research shows that some students are already doing this. The expectation is that this will increase the use and the effect of the HeartMath techniques.
  
10. Integration of the HeartMath method with other forms of treatment, for example for improving self-confidence, or for being able to focus better, is less desirable. The HeartMath method is a self-contained programme aimed at stress reduction. It would be much better, at the end of the training, to establish per student in which area a continuation of treatment would be necessary. The trainer can discuss this with the student in her Personal Action Plan.
  
11. Teachers of the conservatoire should also be informed about what exactly the HeartMath method is and what it aims to do. The best way to do this is by offering them a workshop, which will allow them to experience at firsthand what happens during a training.

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## Peak Performance & Reducing Stage Fright

Stage fright amongst musicians is a well-known phenomenon and often not acknowledged, nor dealt with effectively. The research group Lifelong Learning in Music & the Arts has investigated the possibilities of using HeartMath training in dealing with stage fright. A pilot project at the Prince Claus Conservatoire in Groningen with HeartMath training, especially adjusted for music students, was part of this research. The results show that the programme can have significant effects when adapted to the specific situation of musicians.

## Research Group Lifelong Learning in Music & the Arts

The aim of the Research Group Lifelong Learning in Music & the Arts is to examine the relationship between musicians, artists and society. Research is conducted into the personal, artistic and professional development of artists. The central question is what are the implications for the roles of musicians and artists as they engage with new audiences. Artistic identity and passion underpin an approach where musicians and artists come to understand the different social and cultural contexts to which they have to respond in a flexible and adaptive way. The Research group Lifelong Learning in Music & the Arts is a joint initiative of the Hanze University of Applied Sciences Groningen (Prince Claus Conservatoire) and the University of the Arts, The Hague (Royal Conservatoire).

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