NATURE'S WAY OF HEALING

Valerie Ross[1*], Abid Amir[2]

[1]*Faculty of Music*
Universiti Teknologi MARA Shah Alam

[2]*Faculty of Medicine*
Universiti Teknologi MARA Shah Alam

**Corresponding author: dr.valerie.ross@gmail.com*

Abstract

The sounds of nature evoke universal pleasure. Birds, flora and fauna create a symphonic band with wind and water resulting in perfect acoustic, temporal and spatial harmony that arouses a sense of calm and well-being, promoting health in humans. When the anxiety and stress of city-life takes a toll, medical intervention is sought. Nature's sonic healing powers are often forgotten. Recent scientific studies have ascertained the health benefits of nature sounds with growing interest among the medical fraternity regarding its use in intervention tools such as guided imagery, a technique which uses imagery in a positive and directed manner with an ultimate goal to bring about healthy changes in both the mind and the body. Applying an interdisciplinary practice-led methodology, this study created Bespoke Music and Narration for use as Guided Imagery to promote relaxation for pre-operative cardiac surgery patients. It extrapolates how images and sounds of nature from the Royal Belum State Park, reputed to house one of the oldest rainforest in the world dating back 130 million years were captured and transformed into a sonic-visual landscape embodying original images, narration and music in a creative artefact of research entitled 'Nature's Way of Healing'.

Keywords: Bespoke Music and Narration, Guided Imagery, Nature Sounds

Introduction

'Nature's Way of Healing' is an original work crafted for use as guided imagery in promoting relaxation for pre-operative cardiac surgery patients. Its objective is to evoke a state of relaxation or physiologic change by using bespoke music and narration created from nature sounds and gamelan instruments. Guided Imagery (GI) is a form of complementary therapy used to describe a host of techniques ranging from simple visualisation and imagery-based suggestion to storytelling and metaphor (Short, 2002). The concept is premised on the belief in the power of visualization and imagination and its effectiveness has been established in numerous scientific studies (Nguyen & Brymer, 2018; Casida & Lemanski, 2010; Apóstolo & Kolcaba, 2009). GI uses imagery in a positive and directed manner with an ultimate goal to bring about healthy changes in both the mind and the body. It advocates a conscious use of imagination that occurs naturally to create positive images. These images are conjured in the mind's eye. Several types of guided imagery are practised, depending on its aims, such as pleasant or peaceful imagery, physiologically-focused imagery, mental rehearsal, mental reframing or receptive imagery (Utay & Miller, 2006). The early procedures adopted in the therapeutic use of guided imagery, also referred to as guided affective imagery (GAI) was systematically developed into psychoanalytically oriented psychotherapy by German psychiatrist, Hanscarl Leuner (1919-1996). Its efficacy has been indicated through a large body

of research over decades in counselling and allied fields and has since been advocated as a research-based approach to efficacy. GI can be systematically produced by means of progressive relaxation techniques such as those of Edward Jacobson (Jacobson, 1938). Many examples of GI narrations are readily available on the internet. The scripts are narrated with some background music or accompanied by melodies often played on the piano. It is argued that while this approach appears to be popular, the creation of original music with pulse-based narration can be even more impactful especially when designed for a specific cohort of patients to reduce anxiety and to promote relaxation, in this instance, for pre-operative cardiac surgery patients.

According to the World Health Ranking (2018) coronary heart disease ranks as the number one cause of death in Malaysia and thirty-third globally. As such, surgery for coronary heart disea se such as a coronary artery bypass grafting surgery (CABG), is a fairly common procedure c arried out throughout the world. While, coronary artery bypass graft and cardiac valve surgery are generally successful, these operations are nevertheless, major surgical procedures. These procedures pose psychological and physiological repercussions on the patients during the peri operative period (Woldegerima et al., 2017; Krannich et al., 2007). Pre-operative anxiety has g reat influence on surgery outcomes. Patients with high levels of anxiety require higher doses o f anesthetic induction agents may experience problems such as cardiovascular disturbances, n ausea, hypertension, delay in wound healing and increased risk of infection (Bedaso & Ayale w, 2019; Kim et al., 2010; Rymaszewska et al., 2003). Therefore, it is crucial that the presence of anxiety in pre-operative patients is identified and managed accordingly to prevent further c omplications perioperatively. The use of pharmacological modalities prior to surgery such as p remedicant sedatives like midazolam and fentanyl, are currently the mainstay of management for pre-operative anxiety. However, new non-pharmacological complementary therapies such as the use of music, relaxation techniques, meditation and guided imagery using nature sound s are being used as cognitive-behavioural strategies for patients with heart failure (Kwekkebo om & Bratzke, 2016; Cutshall et al., 2011; Sendelbach et al., 2006).

Nature facilitates psychological health and wellbeing. Spending time in natural surroundings is a pleasant experience. Natural sounds impact on one's emotions in different settings. Studies have found that listening to natural sounds after stress exposure facilitates sympathetic recovery, and listening to nature sounds before a major stress situation significantly reduces the subsequent cortisol response, implying that listening to natural sounds may be a simple and easily accessible intervention that is capable of positively affecting the major human stress systems (Ryan et al., 2010; Lawton, et al., 2017). Scientific studies have also found a link between feeling connected or 'a-tuned' to nature and lower levels of stress and anxiety (Capaldi et al., 2014; Nisbert et al. 2009; Kaplan, 1995). Being in natural surroundings can enhance vitality, mood, happiness and self-esteem. Nature has a (re)vitalising effect. Adopting nature-based solutions and natural surroundings in urban landscaping are common. The is a growing body of evidence in support of nature and its positive role in supporting psychological wellbeing (Martyn & Brymer, 2016). The 'connectedness' of one's relationship with nature and its effects on anxiety levels and happiness have been measured (Nisbet et al., 2009). The impact of looking at visual landscapes, benefits of seeing green spaces and even living by the coast have been subjects of study (Wheeler et al., 2012; Mayer & Frantz, 2004). Therefore, the intrinsic and extrinsic health benefits afforded by guided imagery, music and nature sounds in reducing anxiety, point to its unique translational powers in promoting well-being and healing. Taking such compelling literature into consideration a two-phase interdisciplinary study to foster relaxation among pre-operative cardiac surgery patients was designed. The first phase comprises the crafting of original music and narration. The clinical phase of the study will then follow. The main objective was to create Bespoke Music and Narration for use as Guided Imagery to promote relaxation for pre-operative cardiac surgery patients. This paper

extrapolates the first phase of the study. It elucidates how images and sounds of nature from the Royal Belum Rainforest, reputed to be one of the oldest rainforest in the world dating back 130 million years, were captured and transformed into a sonic-visual landscape embodying original images, narration and music as artefacts of research entitled 'Nature's Way of Healing'.

Methodology

This study engaged an interdisciplinary practice-led methodology. Interdisciplinary and translational research approaches enable the incorporation of creative practices and cognitive processes into the study, legitimising the knowledge unveiled (Ross, 2018). Practice- related research is an accepted methodology in medicine, design and engineering in relation to its participatory and field-based approach as opposed to laboratory testing (Skains, 2018; Reason & Bradbury, 2001). This study engages the multi-faceted considerations of cultural, musicological, methodological and interdisciplinary approach in data acquisition and analysis as embodied in the frameworks of interdisciplinary and translational music-science research (Ross & Amir, 2019; Ross, 2016). In 'Nature's Way of Healing', the authors have selected a series of images that were captured during fieldwork conducted at the Royal Belum State Park, Malaysia, a national heritage site (UNESCO, 2019). **Figure 1** is a map of the riverine route of the Royal Belum State Park also referred to here as Royal Belum Rainforest.

Figure 1 Riverine route of Royal Belum State Park

The data collected comprised of images and sounds. A selection of images captured from the Royal Belum Rainforest serve to conjure a sense of calm, serenity, peace and tranquility, thereby forming the basis of a narrative script. Nature sounds were collected from several riverine site of Sungai Kejar. The audio data was collated and the most suitable audio recordings were selected. Thereafter, an original guided imagery script was created by the researchers. The script was narrated and recorded with the nature sounds with selected gamelan instruments, thereby creating an audio-visual composition entitled, 'Nature's Way of Healing'. Images taken were also collected and the most inspiring ones were selected. These images formed the basis and inspiration upon which the GI script was crafted. Each image selected served to inspire the story-board upon which the script was premised bearing in mind its aim was to promote relaxation, thereby reducing anxiety for pre-operative cardiac surgery patients in the clinical phase of the study. The composition was twenty minutes in duration.

'Nature's Way of Healing': A Culmination of Creative Outputs as Artefacts of Research

To summarise, phase one of the study produced four creative outputs. The first is a Design Concept that illustrates the manner in which guided imagery using bespoke music and narration has been crafted. The second output is a series of documentary photographs or images taken during fieldwork at the Royal Belum Rainforest, four of which are illustrated in this paper. The

images are significant in that they provided visual and metaphoric inspiration in writing the story-board of 'Nature's Way of Healing' based on GI. The third output is the creation of an original nature-based Guided Imagery script to promote relaxation for use by pre-operative cardiac surgery patients. An excerpt of the script is included. The fourth output is an audio-visual recording of 'Nature's Way of Healing' of which the snapshot of its spectral analysis using Raven–Pro of the first two minutes is illustrated. The audio file is twenty-minutes in duration. The images have been incorporated in an audio-visual version of GI where pre-operative patients will have an option to listen to the narration with or without visuals.
The design illustrates four structural layers of context and content. At the centre of the picture is the patient who will experience the guided imagery complementary therapy. What the patient will hear is a narrated script about the soothing qualities of the rainforest amid nature sounds and sounds of selected gamelan instruments playing intermittently with its overtones.

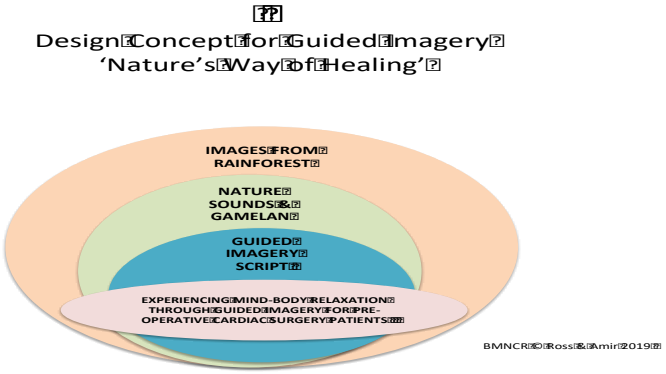

Figure 2 Design Concept of 'Nature's Way of Healing'

The river route that runs through the Royal Belum State Park represents one of the most ecologically significant sites in rainforest research as it houses one of the most important and significant natural ecosystems and undisturbed habitats for *in situ* conservation in Malaysia and in the world (UNESCO, 2019). Studying a specific region via its river route enables deeper insights into its ecological system as afforded by penetration deeper into the rainforest terrain normally not accessible by land. As a result, the decision to collect data from the riverine sites of Sungei Kejar was worthwhile, enabling the acquisition of authentic, unique and rich audio data of nature sounds. It also enabled the photography of splendid scenery much of it from secluded sites along the riverine route accessed by a small motorboat. The following are four images to illustrate the magnificent natural landscape that nature has evolved. Documentary photography plays an impotant role in upfront discovery research in illuminating time-based imaging and spatial-temporal significance particularly in rich sonic environments research site such as the Royal Belum Rainforest. In this instance photography was engaged as a research tool. Leveraging images as an illustrative element in communicating ideas and concepts which directly impact the research output affords valuable insights into the creative process and how is shapes the resultant product.

Figure 3 Inspirational images captured at the Royal Belum Rainforest

Script writing for guided imagery is an art in itself. The grouping in the stressing of words and in music affects cognition (Fabb & Halle, 2012). In creating an original script to support guided imagery, the authors considered the demands poetic nuance, clarity of form, style and a deep understanding of the purpose of the visualisation supported by literature and research developments in the field. Visualization relaxation is an effective way to calm the mind and the body. By imaging or picturing a relaxing scene, in this case it is a rainforest, relaxation will trigger tense muscles of different parts of the body to relax. It is written as an intimate dialogue between the narrator and the listener. The script is intended to be narrated over a duration of fourteen minutes accompanied by nature sounds and music followed by six minutes of nature sounds and music alone. The following is a short except of the nature-based guided imagery script for 'Nature's Way of Healing' written by the researchers as part of the study.

Imagine you are in a beautiful, peaceful rainforest
See the trees, rising into the sky
See the water, deep and soothing
Listen to the birds, crickets and the gentle sounds of nature
You feel calm and tranquil
Take a slow, deep breath, inhale and exhale
Continue to breath in and out, take your time
Feel the cool air of the forest, come gently in through your nose and all the way down to your belly.
Feel your belly move up and down as you breathe deeply
Let your mind be free
Listen to the sounds, breath with the sounds
Feel the tension in your shoulders, your arms, your feet
Gradually relaxing, one by one *(Ross & Amir, 2019)*

Music is made up of organized sounds and it can reduce stress and anxiety among cardiac patients (Bradt et al., 2013). Sounds are made up of a complicated mixture of vibrations. Sounds possess acoustical features that can be analysed and depicted as sound spectrums, representing what 'sound' looks like visually and scientifically. Usually a short sample of sound is extracted to demonstrate some of its spectral features. Figure 4 illustrates a snapshot of the sonic spectrum of the first two-minutes (0-120") of 'Nature's Way of Healing' using Raven-Pro, a state-of-the-art sound analysis software created by Cornell Lab of Ornithology (2019) for the acquisition, visualization, measurement and analysis of sounds. The frequency (Hertz/Hz) is displayed at the vertical axis while the time (sec) is shown on the horizontal axis. The volume/power (decibel/dB) is represented by the colour gradient as illustrated at the bottom of the spectrogram in the form of a colour bar. A spectrum of cool to hot colours (blue to red) are used illustrate the intensity of the sound in terms of volume (dB). In 'Nature's Way of Healing', more cool colours are captured in the spectrum, portraying the soporific and soothing effect of the nature sounds and narration. Three dominant acoustical features are highlighted in the snapshot, namely, the vertical lines of the voice narration indicating its intervallic regularity and homogeneity, the rhythmic patterns of sound made by the crickets and the layer of nature sounds that rise above the ambience sounds. Most significantly, the arrows indicate the regularity and evenness of the narration rising and peaking rhythmically above the music, thus achieving a steady and calm 'pulse-based' quality of the narration that effectively conveyed the guided imagery narration. To sum up, these spectral features offer valuable acoustical, visual and artistic insights into the compositional techniques that were adopted in creating the desired music and narration for guided imagery therapy to be used in the clinical phase of the study. This novel approach in crafting specially composed music and narration combined with unique nature sounds. It supports increasing interest in the engagement of complementary therapies in addressing anxiety among cardiac surgery patients (Short et al., 2013; Yeh et al., 2006; Hui et al., 2006; Wood et al., 2003).

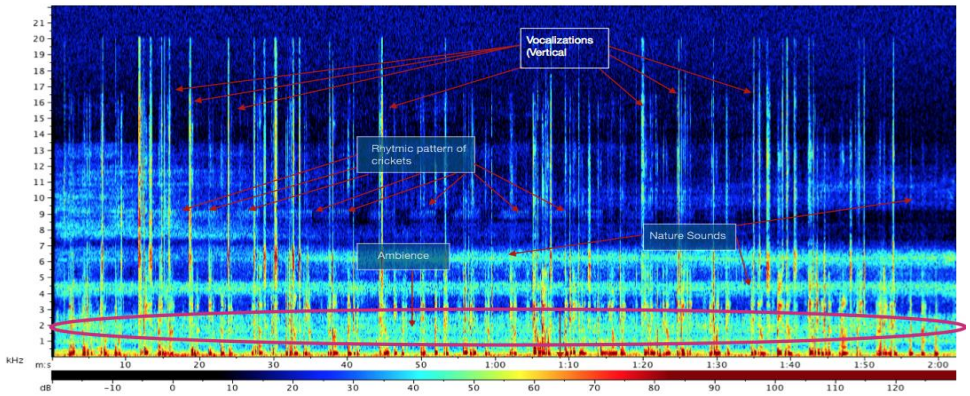

Figure 4 Spectral Analysis of Nature's Way of Healing

Conclusion

The sounds of nature evoke universal pleasure and comfort. Its acoustical, spatial and temporal qualities are naturally 'mixed and mastered'. It is nature's natural symphonic orchestra, harmonizing with distinct ease, rigour and perfection. Nature has its own way of healing. Research has evidenced the significance of sound and the use of complementary therapy in the healing process both before and after major stressful events such as open heart surgery. This

study supports the growing attention to the greater use of non-pharmacological approaches to treat foundational emotions such as anxiety which are more readily manipulated through imag ery as both imagery and real experience facilitate perceptual experience which influences the emotional neural systems. It looks to contemporary literature in designing a novel approach i n addressing the debilitating effects of pain and anxiety by using original music, nature sound s and narration as intervention tools in crafting guided imagery for pre-operative cardiac surge ry patients. To this end, the study illuminated four creative outputs in the form of a conceptual design of the intervention tool, a set of images captured from field studies at a tropical rainfor est, a guided imagery script , culminating in the creation of an audio-visual intervention tool c alled 'Nature's Way of Healing' for pre-operative cardiac surgery patients. This work further a dds to a Soundbank of Bespoke Music and Narration for Cardiac Rehabilitation established by the authors for use in clinical trials. 'Nature's Way of Healing' builds on an armament of inter vention tools using original music and narration for the different phases of pre-operative and p ostoperative cardiac rehabilitation through co-creational collaboration between experts in the f ield of music and translational medicine.

Acknowledgement

The authors would like to thank Universiti Teknologi MARA and Pulau Banding Foundation for their support of this study.

Conflict of Interest

The authors declare that they know of no conflict of interest in the conduct of this study.

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