Child Anxiety Management by Musical Activity during Interaction with a Healthcare Provider in the Rural Area of the Neno District, Malawi, Africa

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ABSTRACT
Anxiety may arise as a normal psychological response to stress, however, it may also characterize a number of disorders that lead to a variety of pathological behaviors. Anxiety manifests itself without discrimination, regardless of age, race or cultural background, modifying the activities and the general state of being of the individual affected by it. Children are also subject to anxiety and anxiety disorders which in some circumstances can endanger their health, and a medical investigation is one of the many situations in which children, more often than not, experience a state of anxiety. As the anxiety of a child during an interaction with a healthcare provider is a well-documented fact, there are efforts made towards making such interactions as stress-free as possible. As a result, a wide range of prophylactic and treatment techniques have been suggested to anxious subjects alongside alternative or complementary activities. Music and musical activities have long been proven to have a calming and relaxing effect on human subjects. This is a pilot study tested one such technique in order to reduce the level of anxiety in children from Malawi, Africa, during their interaction with the healthcare providers, by using a musical activity.

Keywords
song, game, healthcare provider, anxiety, interaction

INTRODUCTION

Anxiety is an experience characterized by a general state of uneasiness, with a large majority of adults experiencing this condition in varying degrees of intensity. For instance, specific phobia is part of the psychological disorders and is probably the most specific form of anxiety. The main types of phobias have been classified as those of animals, environment, blood, height, infections or certain situations (Dunsmoor, 2011). These phobias can be contextualized to a specific location, such as the spider phobia expressed in locations where they are usually present, or can be generalized, the presence of phobia thus manifesting for example in the forest where the simple possibility of arachnid presence, without any real contact, may trigger an anxiety response.

At the basis of a phobia is the fear which involves several brain regions such as the insular lobe, the thalamus, the circumvolution of the corpus callossum and the striate cortex. The physical expression of the physiology of fear is correlated with the activity of the amygdala and the relationship between the amygdala and the extrastriate visual cortex (Dunsmoor, 2011).

As an example, the adult anxiety of death, Necrophobia or Thanatophobia, can lead through correlation to anxiety towards hospital or healthcare providers. Reading and/or fieldtrips are recommended as an alternative strategy to reducing negative thoughts about the theme of death (Wallace, 2017).

The reaction of a child to a simple case history interview or to the administration of a drug or vaccine can have various manifestations, predominantly emotions such as shame or fear as well as physical sensations such as increased heart rate, sweating, rapid breathing, nausea or muscle tension. Such reactions have the potential to distort the medical investigation and the subsequent investigation results, potentially leading not only to an erroneous diagnostic but also to inappropriate treatment, additional costs of healthcare, side effects and other complications. As a consequence, out of the desire to reassure the patient, the medical practitioner can use a more peaceful or playful tone of voice or may try out various alternatives to distract the children patients so their concerns are redirected to better feelings.

Anxiety is one of the most common mental disorders in children and adolescents, especially those from families with poor financial status which have a higher level of susceptibility to anxiety disorders. Children in the care of anxious adults have a major risk factor to develop an anxiety disorder through a phenomenon of psychological inheritance, as feelings can be easily transferred from parent to child (Aziz, 2014). As a result, parental anxiety is a significant risk factor in childhood anxiety. A study of children's reaction to various trigger agents, including a physician, may also offer alternative strategies to adult anxiety management that may have roots in childhood. Furthermore, there may be a possibility for reducing discomfort and anxiety in order to avoid the negative psychological or physical effects after surgery or to reduce pain and recovery time. Robert N. E. Carlsson investigated the pre-operative effect of reducing parental and child-related anxiety by visiting the surgery department, through a non-musical therapeutic game, as well as by explaining more thoroughly the technical information related to the procedure itself (Carlsson, 2017).

Pharmacological medication can be a way to minimize the child's psychological trauma related to hospital, doctor, injections and blood. In order to reduce anxiety, various child and parent activities were attempted such as audio-video information sessions (Berghmans, 2012; Zuwala & Barber, 2001), doctors disguised in clowns (Vagnoli, 2005), visiting the section before surgery (Finche, 2012), sedative medication (Kain, 2000) or a combination of these (Fincher et al., 2012; Vagnoli et al., 2005). Game activities were also found to reduce pre- and post-surgery anxiety in school children (Wiliam Li et al., 2007), as well as listening to music prior to surgery, with musical interventions being an alternative to sedatives and anti-anxiety drugs (Bradt, 2013). However, as far as the the anesthetic effect of music on children is concerned, it showed no significant difference from the control group (Kain, 2004). Instead, a

reduction in post-operative anxiety was obtained in children with cardiac surgery by means of game therapy (Coşkuntürk, 2018) or drawing prior to pediatric surgery (Bartik, 2018).

Relaxation techniques, such as breathing exercises, the use of warm cervical compresses, laughter, listening to soothing music, as well as exercising have been used or proposed to treat stress, phobias, anxiety, neurosis or psychosomatic disorders.

The therapeutic interventions of music have undergone a wide development since the mid-twentieth century, counted among the complementary therapies to various specialties such as oncology, geriatrics, maternity, palliative or surgery.

Music may modulate the psychological state of an individual regardless of sex, age, training or background, to what is conventionally deemed as a normal state of health, offering also an alternative to negative stimulation such as stress, anxiety, irritability and neural hyper-reactivity. A mentally-healthy individual is able to cope with daily stress, can contribute to the community it belongs to, is aware of their own abilities and can work in different contexts, being able to adapt to whatever requirements (Galderisi, 2015).

Among the effects of music on the human body let us mention the decrease in blood pressure, cardiac rhythm, respiratory rate and the frequency of pain occurrence in chronic diseases such as rheumatoid arthritis or polyarthritis. The use of meditation music or classical music resulted in reduced adult anxiety by supporting patient relaxation both in the hospital as well as in residential care units. Anxiety reduction may also be based on the subject's access to his or her favorite music or repertoire, local or otherwise. Children are selective with regard to sharing cultural information, which is a potentially determining factor in their social preference to choosing songs known to their culture instead of foreign songs.

Important research conducted so far on psychiatric disorders in subjects from Malawi, assessed the presence of depression during pregnancy in women from the Blantyre district (Chorwe-Sungani, 2017), possibly triggering subsequent psychiatric diseases, namely anxiety.

MATERIALS AND METHODS

This pilot study aimed to test the anxiety level reduction in children during medical investigations by using a musical activity. The functional purpose was obtaining physical and mental relaxation of subjects in order to obtain relevant levels of accuracy during medical tests. As a consequence, prior to the medical examination, the testing subjects had the opportunity to sing/learn either an English song from the international repertoire of children or a song proposed by the subjects in their local language, belonging to the specific traditional repertoire of the area.

A notebook was used to write down observations and subject answers. The medical attire was a white gown, mask, cap and a stethoscope. An English-Chichewa local translator was used for communication. The translator had no prior contact with the children or the research staff.

There was no medical staff interaction with the subjects prior to testing as they spontaneously chose to present themselves to the health care camp. Thus, the subjects

followed their regular schedule of sleep, food intake and labor, however, not being tired at the time of their arrival at the medical settlement.

The medical camp was set in an area with difficult access, open air environment, without devices requiring specialized transportation. Medical activity took place daily, during a 9 to 16 schedule, without breaks. The healthcare personnel were organized by the Prolife Education Association of Bucharest, Romania.

Demographical Information

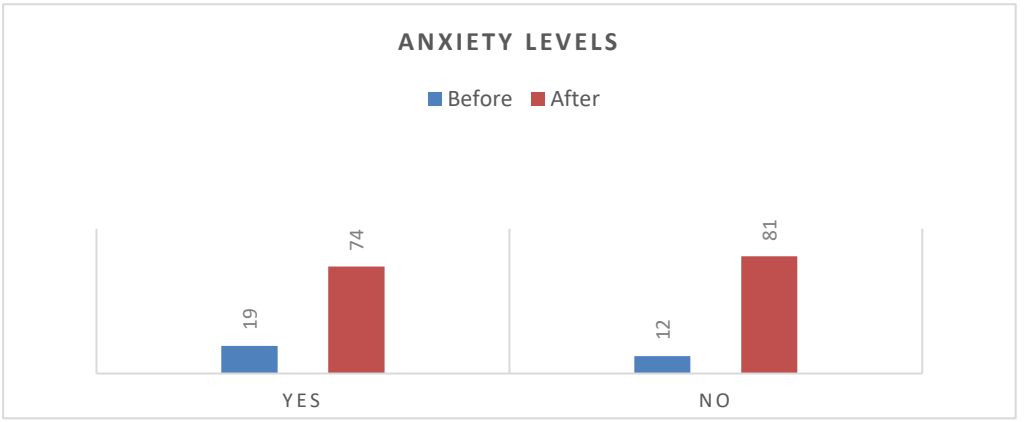
The subjects in this study were a group of 93 children from the Neno district, a rural area of Malawi. 40 subjects were girls and 53 were boys, with ages ranging from 4 to 15, the vast majority of participants being between 7 to 12 years old (70%). No significant difference of anxiety levels were observed between girls and boys. Prevalent diseases were in the spheres of pneumology (cough, bronchitis or pneumonia), dermatology (eczema or cutaneous infections) and gastroenterology (diarrhea or food poisoning). All individuals who undertook the test were not subject to inflammation or other pyrogenic agents which resulted in a conscious mental status, unaffected by fever or other neurological conditions.

Investigation Procedure

Due to the environmental variables of the medical settlement, the study took place in four different outdoor locations. Prior to arriving at the medical investigation area, the testing subjects had the choice to visit the area where the study took place. Each participant, at the time of arrival at the study location, was interviewed about age and anxiety levels by answering to the question “Are you afraid of the doctor?” The answers were recorded with *yes* or *no*. After the interview, the subjects were invited to sing a capella a song, either pertaining to the local repertoire and proposed by the subjects or suggested by the interviewer. If the subject did not remember a song, then a song was taught to the subject and sang together afterwards. The length of the song was approximately 5 minutes, meaning the length of a verse. Immediately after singing, the subject was asked again about the anxiety levels and the response was recorded. Afterwards, the subject was directed to the medical observation center in order to undertake standard medical otolaryngology and pneumology investigations without invasive procedures.

RESULTS

Out of the total of 93 subjects, 19 answered “yes” and 74 “no” to the initial question about the fear of the physician. After the musical activity, 12 subjects responded “yes” and and 81 “no” to the same question.



The decrease in fear response to the medical examination represents the difference in the post-test answer of 7 subjects. No other method was used to verify the duration of the remission in fear and consequently provide a predictive testing based on the collected data.

CONCLUSIONS

This study found that the testing subjects demonstrated a low rate of initial anxiety regarding the interaction with a medical caregiver. The difference between pre- and post-musical activity anxiety response is positive, although minimal in comparison with the total number of 93 participants, all the while being significant in comparison to the number of 19 participants which expressed fear at the beginning of the study (36.8%). Involvement of a person with knowledge of the subjects' native culture may shed light on the reason behind the apparently low level of anxiety prior to the experiment, as display of fear may not be culturally acceptable. Individual testing as opposed to group testing may also clarify the group's influence on test answers and courage to express opinion.

FURTHER RESEARCH

Further research may consider historical and contextual knowledge regarding prior testing subject interactions with medical professionals as it can have a direct influence on the response pattern of the subjects to the presence of medical staff. Moreover, future research may consider differentiating between testing groups such as those having contact with a medical setting for the first time and others already accustomed to this type of interaction. Another possible group differentiation would be by the type of musical activity where a first group uses a capella musical activity, a second group uses instruments and a third group may use both. The musical instruments can be chosen according to a desired goal, timbre or difficulty level. Another criterion for the classification of subjects would be by disease type, as the effect of a musical activity may have greater potential for a positive outcome in cardiac subjects, cancer subjects or other pathologies, including psychiatric.

Music affects every person in a unique, personal way, regardless of the type of interaction, by its ability to modulate different mental states through the participation

of the hippocampus. Significant consideration may be given to the environmental variable which, in the context of this study, has been affected by various factors such as noise or natural element interference. An exact time-measuring device or pre-recorded musical instructions (Popean, 2017) may add another dimension to the data collected.

Another significant variable is the level of the subjects' education as, in the case of this study, a sample of subjects did not have any school education at all (85%). They also did not have any prior involvement in unusual activities such as interaction with the medical staff or education with staff from abroad.

However, learning by song and musical play are components of the local culture, although learning a repertoire in a foreign language can result in different reactions from a negative one such as anxiety to a positive one such as pleasure and curiosity. Children appear to prefer being around people who speak the same language as they do, who speak in a vernacular adapted to their age and who know the same songs as they do. While music may come as close as possible to being a universal language due to employing dedicated cerebral subcomponents specifically wired for it, musical taste can be heavily influenced by specific cultural bias since childhood, possibly leading to heightened sensitivity for the music of one's own particular culture.

IMPLICATIONS FOR MUSIC EDUCATION

The results of this study could be of interest for pediatric specialists and teachers in Malawi. Given that anxiety can lead to psychiatric pathologies, it is notable that less than 10% of the mentally ill people receive adequate psychiatric treatment in Malawi hospitals and only 1.5% are treated for a period of one year (MOH, 2001). However, the use of mental health services is affected by multiple factors such as individuality, accessibility and cultural practices (Saunders & Browersox, 2007). Despite the aforementioned limitations, this study was a field trial which has the potential to form the premises for future research in various cultural environments in order to compare the influence of culture, music education and music on reducing patient anxiety levels for routine or specialized medical investigation.

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