PREDICTING LISTENER'S MOOD BASED ON MUSIC GENRE: AN ADAPTED REPRODUCED MODEL OF RUSSELL AND THAYER

Worlu Chijioke

School of Computing,
University Utara Malaysia (UUM)

worluchijioke@gmail.com

Abstract

Individual "mood" has presently received growing consideration as a useful technique for organizing and accessing music. Stress which changes person attitude is a major physical and psychological problem of individuals today. Many types of research have been carried out based on this study of mood, particularly in the U.S.A, Canada, Europe, and some part of Asia. However, while these studies are relevant, and help to solve the problem of mood change, still, researchers were not able to look into this important aspect in one of the 25 rapid growth markets in the world-Malaysia. The used music genre as an influence mechanism to predict mood individual and again identifies the classified music genre that predicts personal mood. The study adapts a model of Russell and Thayer to categorize selected attitudes in the study. The study uses quantitative survey method, and questionnaire form was designed and used as an instrument for data collection. Data were collected from 245 respondents from University Utara Malaysia (UUM) students and were analyzed using SPSS version 20. Results were presented in words, bar chart and table form. The study has found that the uses' of music to predict individual mood is positively related to the aim and problem of the investigation. Result in part A of the study indicates that music can be used to influence particular mood. Meanwhile, findings in part B shows that the classified music genre was helpful to predict individual mood.

Keywords: music, mood, perceive, psychological emotion, classification

1.0 Introduction

Music has been one of the most ultimate sources of enjoyment by many people in their leisure time (Lu, Liu, & Hong-Jiang, 2006). *Music* is important to our day to day life (Y. H. Yang et al., 2006). The impact of music turns out to be more significant as we step into the digital world (Ei & Myint, 2010). As a fact, music is not merely a type of entertainment but rather additionally the most straight-forward method for communicating ideas between individuals, an instrument to measure mood and a spot to store feelings and memories (Kanters, 2009).

As long as individual communicate with one other, music becomes indispensable and therefore has existed. As stated by (Laukka, 2007), "there is no doubt that the birth of music extends back into the Paleolithic, many tens of thousands of years into the past." Origin of music is known as vocal sounds made to communicate with each other (Laukka, 2007).

The motive of paying attention and *listening* to music is called to today one of the most standout leisure entertainments for many individuals (Shin et al., 2014). Prior studies have started to untwist the purposes behind the massive call of music and putting together clarification is that music listening in a way may fulfill different mental points, for example, see (Shin et al., 2014). Various researches have displayed that music has essential results for the human body and brain, for occurrence, changes to a circulatory system, circulatory strain, and heart rate (Deng & Leung, 2015).

The study categorized ten (10) moods adapted from Russell's and Thayer's study and twenty (20) classified music changed from (Hampiholi, 2012). The considered moods in this study are listed below, for example, "Happy", "calm", "relaxed", peaceful", "excited", "Sad" "stressed", "frustrated", "depressed", and "angry." The music genres that were used to identify or predict the listed moods in this study are listed below. Namely, Hip-hop, Reggae, Jazz, Blues, Rock, Disco, Electronic, R&B, Gospel, Pop, J-pop, Dance, Holiday, Classical, Country, Metal, Karaoke, K-pop, Beats, World. However, as mention previously that stress is a major problem that individuals are worried about (Lee et al., 2012), and that, there is no study of music mood prediction conducted in Malaysia. Therefore, the researcher sees this as a problem to investigate on this current study. The study used a questionnaire as an approach to gathering data from 245 respondents, and SPSS performed the analysis.

1.1 Problem Statement

In this world of ours, the word stress was declared in the previous study as a major problem that individuals are worried about today (Lee, Hill, & Work, 2012). A motivated objective of understanding of how an average person responds to stress is a general action that should look into today (Lee et al., 2012). Recently *mood* has gotten expanding consideration as a fascinating methodology for sorting out and approaching music (Lu et al., 2006). Many studies were conducted to understand and predict the mood of peoples, particularly in the United States of America (Y. H. Yang et al., 2006), Canada (Vempala & Russo, 2012), Europe - United Kingdom, Netherland, Denmark and Finland (Saari et al., 2015). Other studies were undertaken in Asia such as Korea (Baniya, Hong, & Lee, 2015), China (Xiao Hu & Yang, 2016), India (Hampiholi, 2012). However, while these studies are necessary, and help us to understand and predict the mood of music listeners, still, researchers were unable to look into this important aspect in Malaysia.

1.2 Objectives of the Study

This study aimed to predict the mood of student's from University Utara Malaysia (UUM). The specific objectives were drawn as following:

- To identifies how music can be used to influence the mood of the listeners
- To determine the kind of classified musical genre that changes the individual mood on listeners'.
- To reproduce a mood model to predict the mood of listeners based on the classified music genre and evaluate their reactions.

1.3 Research Questions

In other to achieve the target of this study, the following survey's questions were designed and listed below:

1) How can mood be influenced by music genre?

2)   What are the kinds of classified music genre that may affect a particular mood of the listener's?

3)   How positive can the reproduced model and the specific music genre help in evaluating the individual mood?

2.0   Literature Review

An individual mood is critical to pay attention to in every ramification. A mood is defined as a relatively long lasting emotional state (Hampiholi, 2012). "*Moods*" vary from emotions in a way that makes them less accurate, less intense, and less likely to be triggered by a particular stimulus or event (Hampiholi, 2012). A few research studies have recommended that the most well-known objective of music experience is to impact mood. It occurs that individuals utilize music to differentiate mood, discharge mood, match their present mood, appreciate or comfort themselves, and to release "*stress*, " e.g., Behne, Juslin, Laukka, Sloboda, O'Neill, Zillman, Gan (Juslin & Västfjäll, 2008). Because of the inherent subjectivity of music discernment, there are no generally accepted acknowledged standard mood classifications.

Music psychologists have made a full range of mood models, yet these have done scrutinized for missing the social setting of music listening (Juslin & Laukka, 2004). Recently, music mood has gotten and expanding consideration in the music information retrieval literature. Hence, several musical information retrievals (MIR) scholars have explored music mood on lyrics (Ziv & Lidor, 2011), social tags (Juslin & Laukka, 2004), and collaborative game, (Lee et al., 2012). Furthermore, some past researchers have mentioned that music mood offers a fascinating open door for a significant association and entrance of music collections, and also, creating a recommendation to listeners (Lee et al., 2012).

However, it has continued argued that the listeners do not only pay attention positively to music but that they are rather actively using the music as a resource to serve certain mood function (Matthews, 2012). The *classification* of music mood has in this manner been attractive and attracting researcher's attention in the most recent decade. Numerous current classification frameworks are exclusively in light of information extracted from the sound recordings of music and have accomplished problematic exhibitions or came to a "discriminatory limitation" of execution (Y. H. Yang et al., 2006). As mentioned by the past studies based on the dimension mood classification model, there is more manageable regarding calculation than a quite openly adjective model (Kanters, 2009).

2.1   Theory

Since the era of music psychology studies, researchers have put more efforts in clarifying the concept of mood and emotion (X Hu, 2010). The most effect study that analyzes music and mood using psychological methodologies is the study of Meyer's (Leonard B. Meyer, 1956), (X Hu, 2010). However, to deliver the objectives of this current study adapt psychological theory of Meyer's (Meyer, 1956), (X Hu, 2010).

2.2   Related Works

Typically, past scholars argued that mood in music is too personal to be sensed (Kanters, 2009). However, previous research studies such as Bay & Downie (2007), Kanters (2009), mentioned that in one way or the other human feelings have the capacity to be communicated. A study by Juslin & Laukka (2004) proposed a method that was used to classical music in Thayer's model that serves as a content-based method for classification.

One issue on identifying of feeling is by mood rating (Xiao Hu, Choi, & Downie, 2016). The way to dealing with describing mood response in a traditional manner in music psychology is to apply an adjective descriptor, for instance confident, cheerful and depressed. Then again, these descriptive words varied quite openly in different researchers (Xiao Hu et al., 2016). There is not a standard mood classification system accepted by all currently. In Hevner's adjective checklist (Xiao Hu et al., 2016), States that in the 1930s, the study of mood reactions to music has served as the basis for some ensuing investigation on music mood.

As shown in a previous study (Xiao Hu, Downie, et al., 2008), Russell proposes a complex model that indicates two bipolar dimensions. The two-dimensional model was shown as pleasant-unpleasant and arousal-sleep. Moreover, the combinations of the effect words remain defined as the pleasure and arousal components. According to the previous study (Hampiholi, 2012), Thayer adapted Russell's model of mood using two dimensions indicated as energy and stress. Figure1. Present Russell's complex mood model. The Russell's mood model modified by Thayer's is shown in Figure 2.
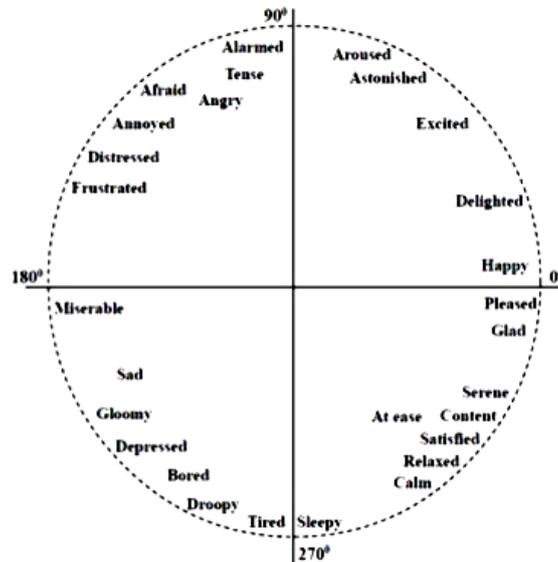
Figure 1: Adopted Russell's multidimensional complex model of scaling mood (Hampiholi, 2012), (Xiao Hu et al., 2008).
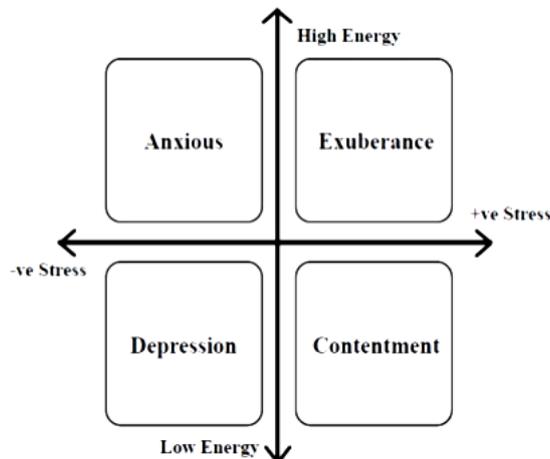
**Figure 2:** Adopted model of Thayer's two-dimensional of mood (Hampiholi, 2012).

The both model of Russell and Thayer illustrates how the moods were categorized in a prior study. The designed model helped to predict the feelings of individual using certain songs as measurement tools.

However, to justify the method of both models of Russell and Thayer, (Y. H. Yang et al., 2006) state that traditional approach is not helpful for the study of music and mood. Therefore, more method is expected to be used to document and classify music and categorize moods. Mood and music prediction and their classification have been developed in average research studies, using the different feature of music and different mood model (Y. H. Yang et al., 2006). For example, Goto et al. (Y. H. Yang et al., 2006), (Y.-H. Yang & Chen, 2012), introduce a real-time beat tracking method based on various agent architectures.

In comparison with numerous studies on the above research topics, few studies have focused on different areas of music mood prediction. In this current investigation, a Statistical Analysis was used as a technique to identify the predicted mood interred in each classified music genre that suits participants.

2.3   Proposed Model

This study *proposed* a reproduced model of Russell's and Thayer's (Hampiholi, 2012), (Y. H. Yang et al., 2006) as a framework to predict listener's mood. There are numerous methods for mood prediction when it comes to music (Hampiholi, 2012), (Y. H. Yang et al., 2006), (Krumhansl, 2002). However, these proposed methods were efficient and gathered momentum within any countries, but not in Malaysia. Therefore, a reproduced model from the both names mentioned above was designed to predict the mood of music individuals (listeners).
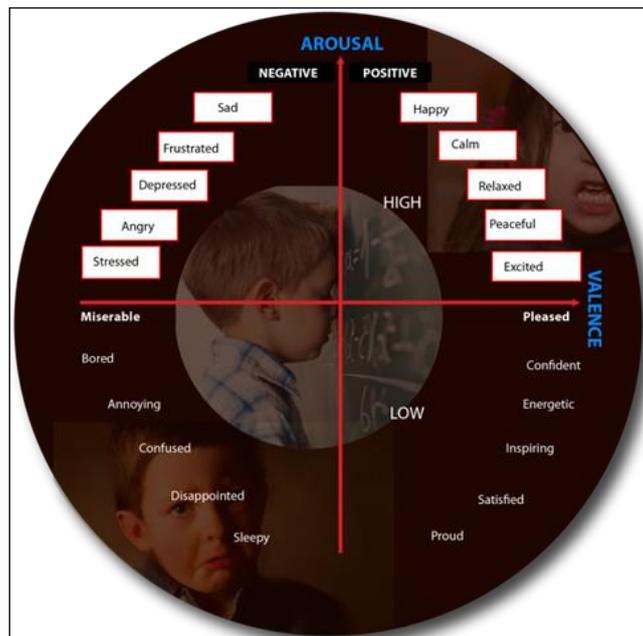

Figure 3: Adapted reproduced mood model from (Hampiholi, 2012), (Y. H. Yang et al., 2006).

Prior study replicated model which has two bipolar dimensions and both are dimensions indicated as positive and negative. Moreover, the combinations of the effect words are defined as the pleased and miserable components, which relate to the previous study of Russell's and Thayer's shown in Figure1 and Figure 2 (Hampiholi, 2012), (Y. H. Yang et al., 2006).

This current study categorizes twenty moods with twenty music genres to predict individual (listeners) mood. As mentioned above that this study provides twenty moods, only ten moods were examined due to the scope and limitation of this research. Other categorized moods shown in the model are for future reference. Moreover, the highlighted moods in Figure.3 shown above are the moods that matched with the previous study of Russell and Thayer which the researcher focuses on in this current investigation.

In measuring and predicting the mood of the individuals (listeners), twenty music genres were mentioned. See Figure.4 below.
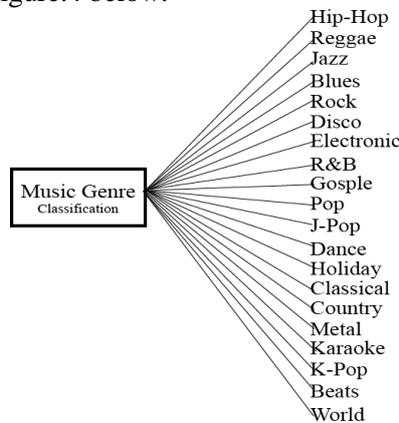
Figure 4: Adapted music classification from (Rock, 2010).

The moods are extracted from the model shown in Figure.3 above and were placed according to how it should be used in the current study. However, this study only intends to investigate ten primary major moods using the twenty classified music genre shown in Figure.4 above.
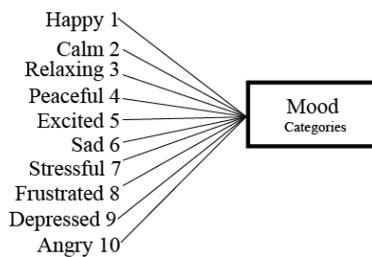
Figure 5: Adapted extracted mood model from (Hampiholi, 2012), (Y. H. Yang et al., 2006).

The idea of extricating mood from the model is important; this is to clarify the readers on selected moods. As mentioned by (Juslin & Laukka, 2004), that listeners do no only pay attention positively to music, but that they are rather actively using the music as a resource to serve certain mood function which makes this study more relevant to investigate.

3.0   Methodology

3.1   Participants

Subjects were a total of 245 respondents, from University Utara Malaysia, male and female, aged from 18-56 and above, married and single, different educational backgrounds, race, and religions. The current study used a quantitative survey method for data collection. The study focused on only students from University Utara Malaysia (UUM). The study analyzed data using SPSS version 20 and result were present in words, charts and table form.

3.2   Instrument

Statistical Analysis is known as a component of data analysis that involves collecting and scrutinizing every data samples in a set of items from which samples are represented (Greenberg, Stukel, et al., 1993), (Hyman & Sierra, 2016). Again, a sample, in statistics, is a representation selection drawn from a total population (Greenberg et al., 1993; Hyman & Sierra, 2016). A statistical analysis was used to stand as a replacement of algorithm or techniques used in previous studies to analyze the data collected from the participants in this study.

3.3   Measurement

When investigating mood, the primary important factor to be considered is its measurement. The first technique to capture this concept is through the self-report measure. It often captures participants' moods by asking them to rate how certain words best suit or describes their current mood (Djamasbi & Strong, 2008), (Loiacono & Djamasbi, 2011), (Watson, Clark, & Tellegen, 1988).

Furthermore, the items on (Watson et al., 1988) survey strongly related to this research study. Moreover, in this current study, participants were asked to participate in three sections A, B, C of the questions. Part A, participants, are required to rate on a five scale (1=strongly disagree, 2=Disagree, 3=Natural, 4=Agree and 5=strongly agree). Section B the participants were asked to click the best choice that suits thyself. Section C focuses on the demographic profile of the respondents.

3.4   Population and Sample Size

The study targeted an entirely random sample size of three-hundred (300) participants of both male and female students from Universities Utara Malaysia. Age range from 18-56 and above, married and single, different educational backgrounds, race, and religions, however, only 245 respondents were derived and analyzed in this study. On the other hand, the population size approach used in the current study was determined using (Krejcie & Morgan, 1970).

4.0   Data Analysis

Data was analyzed together as a lump samples using reliability, frequency, descriptive, and multiple choice frequencies. The data was analyzed using "Statistical Package for Social

Science (SPSS) version 20." The analysis results were interpreted and present in words, charts and table form. The data were analyzed based on majority and popularity of the respondents.

4.1   Pilot Test

In this current study, two pilot tests were conducted to identify the problem and differences on the questionnaire and the problem were amended before the actual survey was carried out. The researcher runs the first test on the question that relates to the independent variable (IV) and the second test was on a dependent variable (DV).

The twenty items were tested and the results found were positive for further investigation of the current study. The result values for the Cronbach's alpha of this study is shown in No. 5.1, page 9.

This study advised validating measured using Cronbach's. It is advisable to check for internal data consistency reliability using the Cronbach's alpha reliability coefficient of all the variable analysis to indicate the reliability of an instrument, (Gliem & Gliem, 2003a).

4.2   Frequency Analysis

The study examines the frequency analysis by identifying the frequency distribution. The frequency distribution is a set of data organized by summarizing the number of times a particular value of a variable occurs (Gliem & Gliem, 2003). It is done to obtain the amount of some response associated with the different values of variables and to express these counts in percentage term. The numbers of time various sub-categorize of phenomenon occur, from which the percentage and cumulative percentage of any occurrence were calculated.

4.3   Descriptive Analysis

Descriptive statistics is also being used to define the basic structures of the data in the study. It provides simple summaries about the sample and the measure. The study attained descriptive statistics of maximum, minimum mean and standard deviation.

4.4   Multiple Frequency Analysis

Multiple choice frequency analysis is a statically technique to predict multiple choice data. In multiple choices statically analysis data are converted into an independent variable to get the expected outputs. It is a powerful and flexible analysis for analyzing associative variables and one or more independent variables. In this study, multiple frequency analysis is used to determine whether independent variables are explaining the frequency in the dependent variable.

5.0   Findings And Results

5.1   Reliability

The study checked reliability test result after computation of question A and B variables. The reliability analysis shows that the measurements used are reliable and that it is valid for this current study. The values for the Cronbach's alpha ranges from .819 for ten

questions in part A and .936 for another ten question in part B. These values are in conformity with the rule of thumb described in the work of (Gliem & Gliem, 2003b). However, this method was introduced by Lee J. Cronbach's (Gliem & Gliem, 2003).

5.2   Descriptive and Frequency Analysis

The *demographic* results and findings derived from the participants in section C of the survey were measured based on majority and popularity. The results indicate that the majority of the respondents were female participants. The results ranging from n=137, 55.9%, and male were n=108, 44.1%, the highest level of their ages were 18-25, n=133, 54.3%, and 26-35, n=98, 40.0%, followed by other age groups, majority of them were single which range from n=202, 82.4% followed by married n= 41, 16.7%, n=1, .4% is divorce, other n=1, .4%. The result shows that regular student's population size ranged to n= 238, 97.1% and students who are worker reached to n=7, 2.9%, the majority responded level of education were bachelor's degree and master with a population size of n=144, 58.8% and n= 74, 30.2% respondents. Again the majority race in this study was Asia and America/Africa with a population size of n=169, 69.0%, and n= 63, 25.7% followed by others race. Finally, the results and finding of the respondent's demographic indicate that majority of the participants were Islamist, with a population size ranging from n= 133, 54.3%, followed by Christianity n=39, 15.9%, followed by other religions.

5.3   Descriptive and Frequency Analysis

In part A of the study survey, the study proposed a Likert measurement to capture the participants responds as mentioned previously. Note that only ten (10) questions are assigned in this part. The results were derived from descriptive statistics measure. The results of the participants were measured ranging from "Strongly Disagree" to "Strongly Agree."   The questions were designed to determine the respondent's population level of agreement regarding the general assertion of how music can influence listener's mood.

Table 1: General Descriptive Statistic

Descriptive Statistics				
N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
245	27.00	50.00	41.3918	5.29088

5.4   Descriptive Statistic

This result shows the mean and Std of the total items involved in part A. The total variables were computed and gave a result of m= 41.3918, Std= 5.29088, and the range of the total actual score of the items was from 27.00 to 50.00. Table.1 above Illustrates the overall statistical results of respondents that agree and strongly agree for (Q1-Q10) of part (A) of the study.

5.5   Frequency Statistic

The total result derived from the respondents that agree and strongly agreed in (Q1-Q10) of part (A) of the research is 60%- 80% percent. These indicate that music can influence individual moods in this study. Below are the results presented in bar chart form.
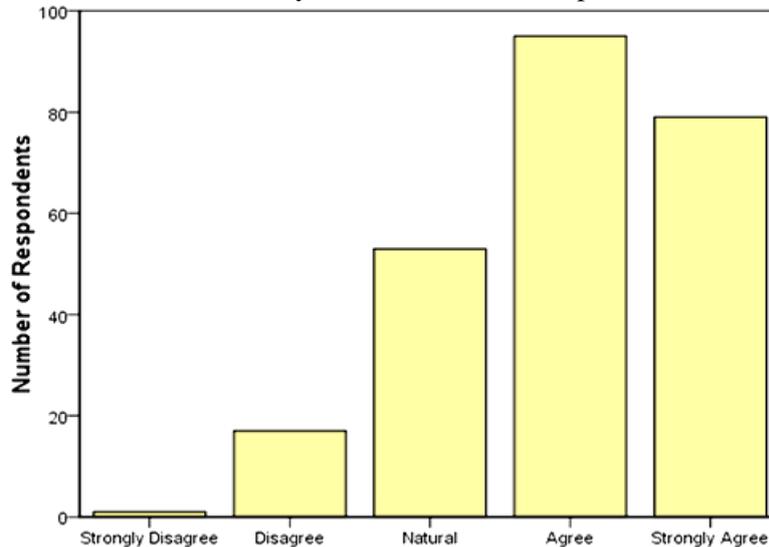

Figure 6 : (Q.1)**, "**a set of mood can be defined as relatively unclear widely accepted and useful for the average music listener's," is a general statement used in predicting the mood of the individual's.

The study shows that only one (N=1) respondent strongly disagrees, seventeen (N=17) disagree, fifty-three (N=53) natural, ninety-five (N=95) agree and seventy-nine (N=79) strongly agree. According to the findings, the result of participants who agree and strongly agree are higher. The result found indicates that statement That the Q.1 has a positive outcome in this study.
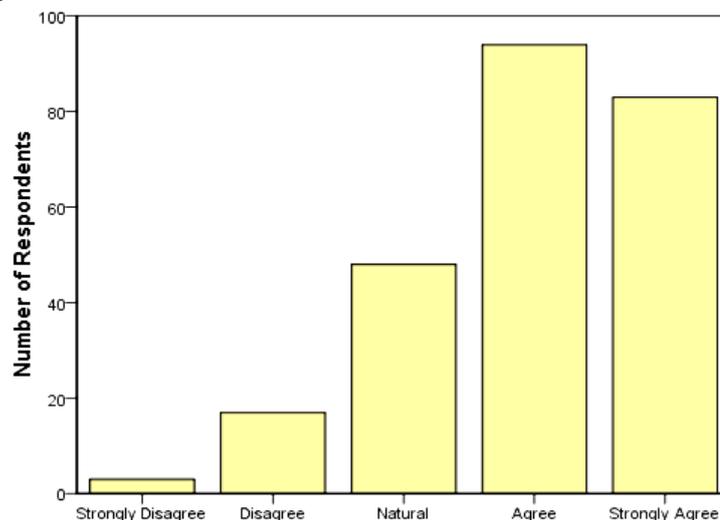

Figure 7: (Q.2), the statement that "the problem of efficiency music selection can be solved by having too many mood classes." The result has shown that this second question has answered the first and third objective in the study, result in Figure.7 has shown that three
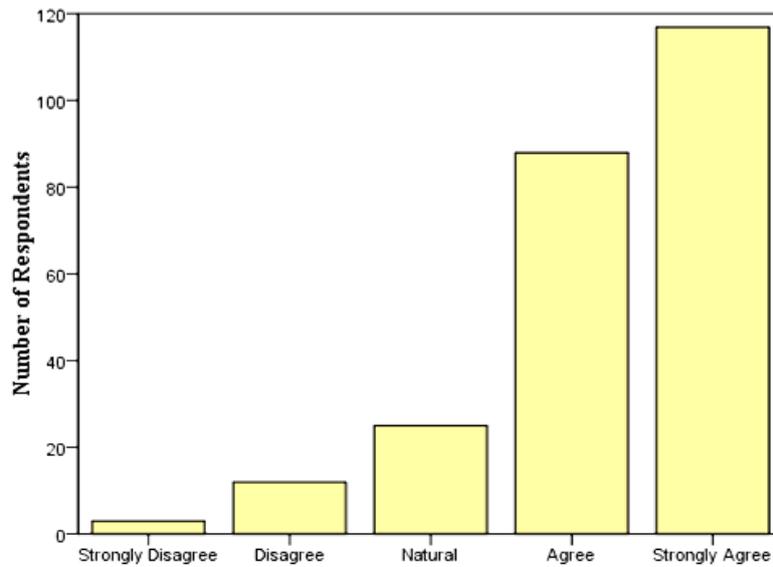
(N=3) strongly disagree, seventeen (N=17) disagree, forty-eight (N=48) natural, ninety-four (N=94) agree and eighty-three (N=83) strongly agree. In summary, as long as the participants who agree and strongly agree are higher in this study indicates that the subjects believed that the problem of efficiency music selection could solve by having too many mood classes.
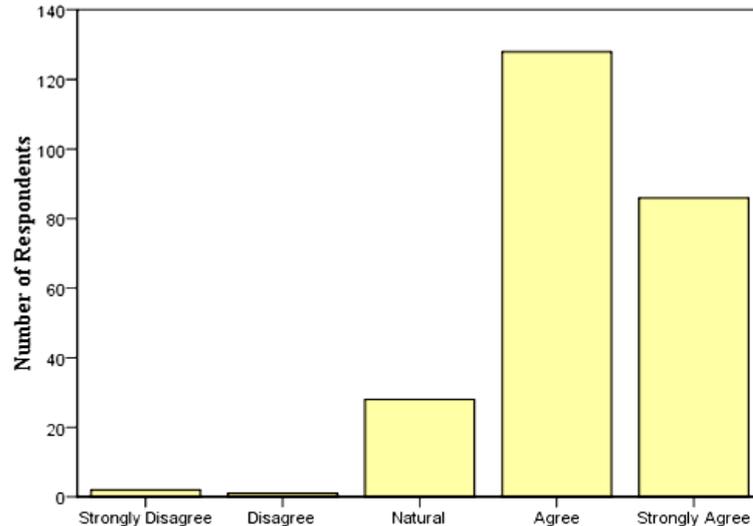

Figure 8 : (Q.3), the statement that "listeners can perceive mood of music based on their individual preference or at least on the cultural backgrounds" shows a positive impact in this current study. The result ranged from two (N=2) strongly disagree, one (N=1) disagree, twenty-eight (N=28) natural, one hundred and twenty- eight (N=128) agree and eighty-six (N=86) strongly agree.
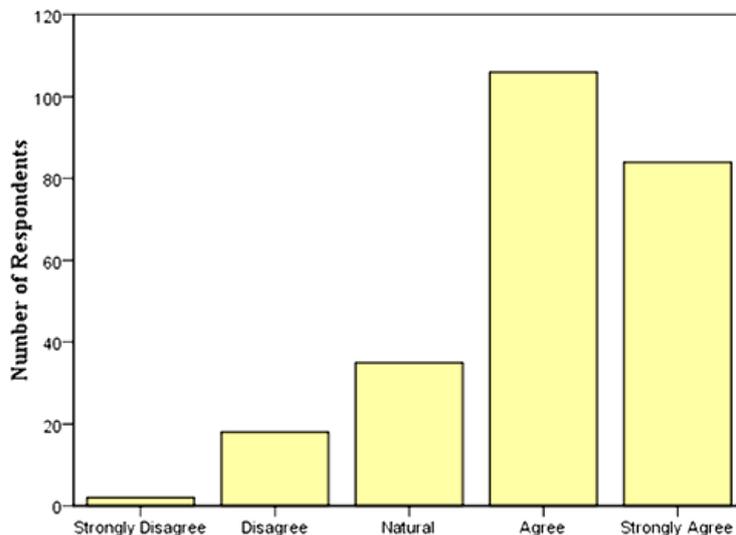

Figure 9: (Q.4), the following question based on this study; indicate that the statement "there is a strong connection difference in the perception of mood in music." It appears that two (N=2) respondents strongly disagree, eighteen (N=8) disagree, thirty-five (N=35) natural, one-hundred and eight (N=108) agree and eighty-four (N=84) strongly agree. However, sine only two participants strongly disagree and eighteen do not agree with this statement; the result is seen to be effective. See Figure.10 below for the next question and result.

Figure 10: (Q.5)**,** the statement that "most listeners choose music based on their mood" is reported to which three (N=3) respondents strongly disagree, twelve (N=12) disagree, twenty-five (N=25) natural, eighty-eight (N=88) agree and one-hundred, and seventeen (N=117) strongly agree. However, the effect of the three respondents that strongly disagree and the twelve that do not agree with this statement has no influence on the narrative used in the study.
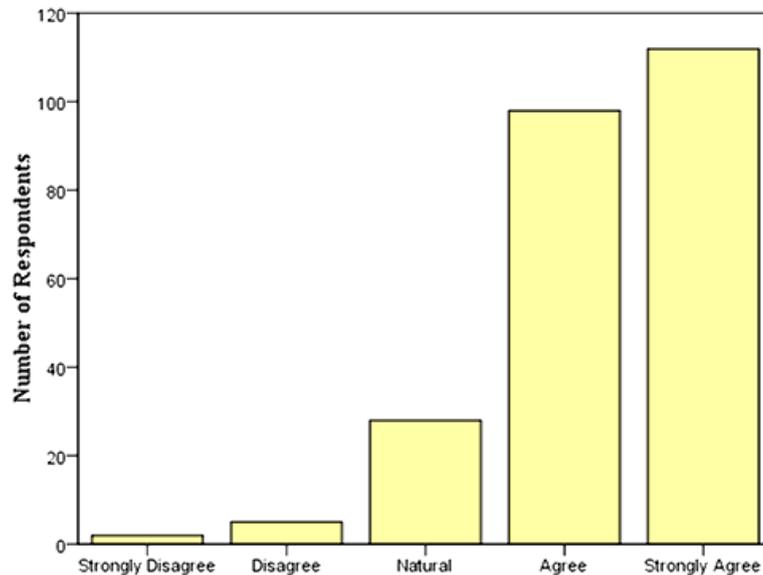
Figure 11 : (Q.6), according to the statement that "Music can bring out the mood in the listeners." The study report that only two (N=2) respondents strongly disagree, five (N=5) disagree, twenty-eighty (N=28) natural, ninety-eight (N=98) agree and one-hundred, and twelve (N=112) strongly agree. However, the statement occurs to influenced by only the respondents that agree and strongly agree with the statement which means that the observation is valid in this study.
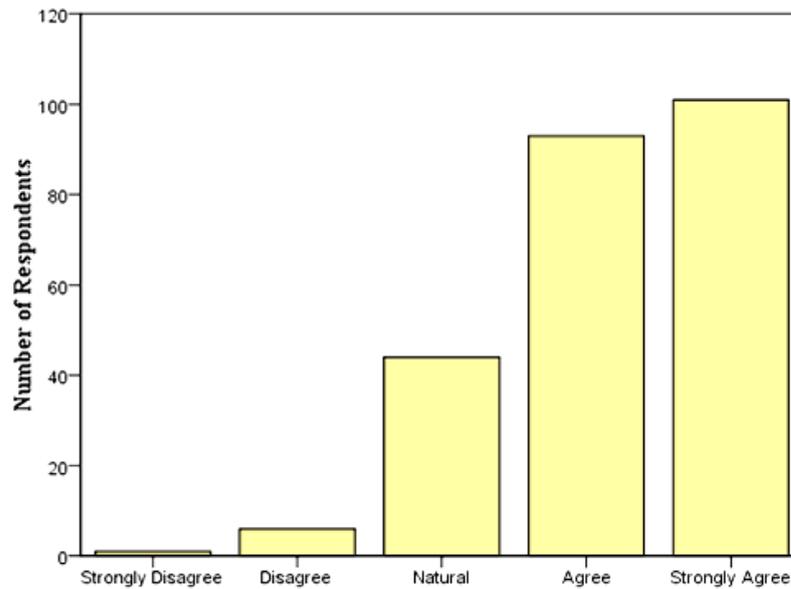
Figure 12 : (Q.7)**,** the following question that "Certain pieces of music can be attached to a different mood," the result appears that only one (N=1) respondent strongly disagree, six (N=6) disagree, forty-four (N=44) natural, ninety-three (N=93) agree, and one-hundred and one (N=101) strongly agree. Sine only one participant strongly disagrees, and six disagree on this statement, the result reported being positive. See below another result shown in Figure.13 for question eight of the study.
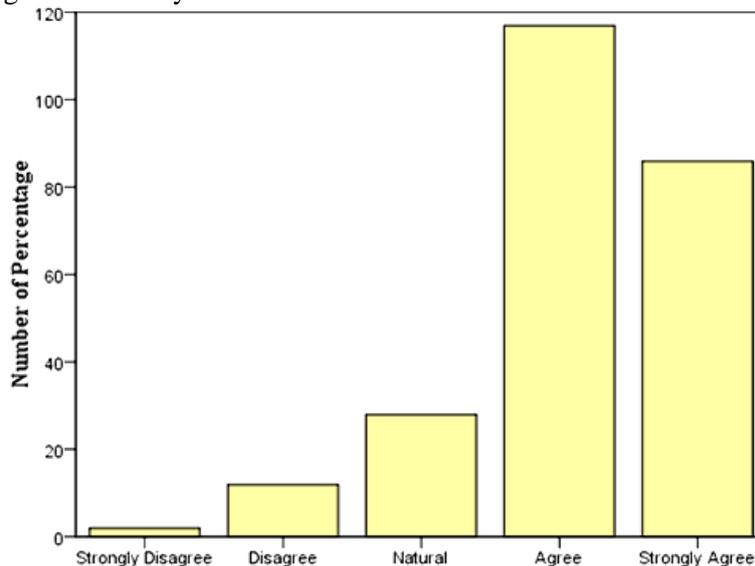
Figure 13: (Q.8), based on the statement that "Slower classical style music can relax the listener" was strongly reported, to which two (N=2) respondents strongly disagree, twelve (N=12) disagree, twenty-eight (N=28) natural, one-hundred and seventeen (N=117) agree and eighty-six (N=86) strongly agree. For the fact that the population that agrees and strongly agrees were higher, the statement "Certain pieces of music can be attached to different mood" is convinced in this study. See Figure.14 below for the next question and result.
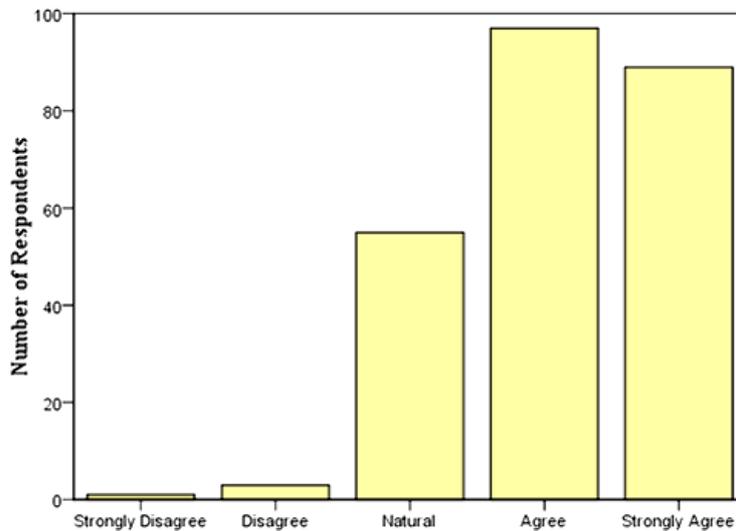
Figure 14 : (Q.9), the statement that "Playing a faster song in club or occasion keeps patrons happy and upbeat" indicates that only one (N=1) respondents strongly disagree, three (N=3) disagree, fifty-five (N=55) natural, ninety-seven (N=97) agree and eighty-nine (N=89) strongly agree. However, since only one respondent strongly disagrees and the three that do not agree with this statement, study shows that the outcome of this study is positive.
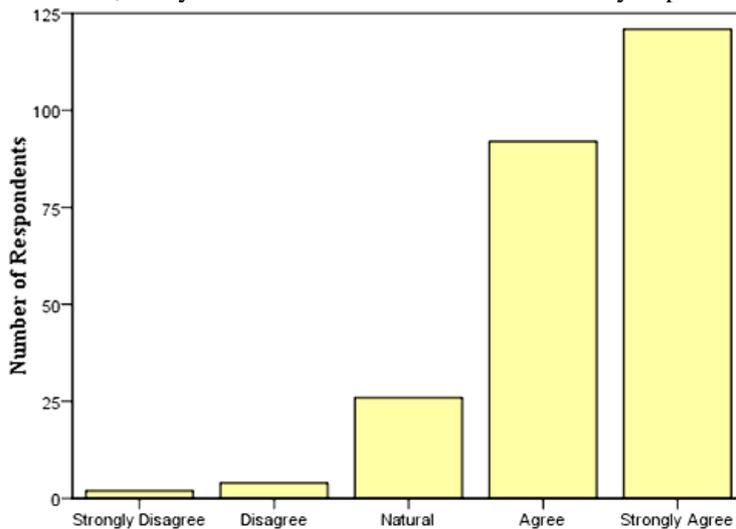

Figure 15 : (Q.10), the last question, that "Mood can be triggered by music as an important therapy for the mind," showed a positive play in this section. The study has reported that most of participants' believed that moods could trigger by music as an important therapy for the mind. The result shows that only two (N=2) respondents strongly disagree with the statement, four (N=4) disagree, twenty-six (N=26) natural, ninety-two (N=92) agree and one-hundred and twenty-one (N=121) strongly agree.

5.6   Descriptive and Frequency Analysis

The study classified twenty music genres to predicting ten influential moods of participants. Though the categorized mood is twenty as mentioned in this study, however, the study looked into ten (10) significant moods, such as "Happy, *Calm, Relaxing, Peaceful, Excited, Sad, Stressed, Frustrated, Depressed and Angry*" The music genre used in predicting ten

major moods were Hip-Hop, Reggae, Jazz, Blues Rock Disco Electronic R&B, Gospel, Pop, J-Pop, Dance, Holiday, Classical, Country Metal, Karaoke, K-Pop, Beats, World.

The participants were required to choose multiple choice answers based on their mood state in survey questions proposed. However, for easy analysis, the researcher entered the data into SPSS as dichotomous variables (where one (1) represents "No" the Respondent do not listen to such music genres"; "and two (2) represent "Yes" the respondent do listen to such music genres." This ideology was applied because the respondents were given a chance to choose more than one music genre).

5.7   Descriptive Statistic

Table 2: General Descriptive Statistic

Descriptive Statistics				
N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
245	268.00	386.00	315.4408	26.35511

The result above shows the mean and Std of the total items involved in part B. The total variables in this part was also computed and gives a result of m= 315.44, Std= 26.35511, and the range of total actual score of the items was from 268.00 to 386.00. Note that the mean and Std values were high due to the multiple choice result derived from the respondents. Table 2 illustrates the total statistical results obtained from the multiple choices of respondents in this study.

5.8   Multiple Choice Frequencies

The results for multiple choices frequency were extracted from Multiple Choice Frequencies analysis *table*s and presented in a *word* form. The results were presented based on frequency and percentage on the general assertion to what kind of music genres participants choose when they are in a particular mood state. Moreover, this is to answer the second and third objective of this study.

Based on section B of the study, the first statement "what kind of music genre participants listen to when they are in a happy mood." The result indicates that the observation is convinced. Twelve (12) highest music genres result were extracted from the statistical analysis table and reported based on the frequency and percentage. The results scores are reaching the range n=189 Hip-Hop, 77.1%, followed by n= 162 Pop, 66.1%, followed by n=162, Karaoke, 66.1%, followed by n=159, Disco, 64.9%, followed by n=153, J-Pop, followed 62.4%, followed by n=148, Beats, 60.4%, followed by n=142, K-pop, 58.0%, followed by n=141, Dance, 57.6%, followed by n=138, Other, 56.3%, followed by n=134, Reggae, 54.7%, followed by n= 134, Holiday, 54.7%, and followed by n=127, Rock, 51.8%. This answer the first research questions in section B (Q11) of the research study.

The study indicates that seven (7) highest music genres were extracted from the table and reported accordingly based on the frequency and percentage score of the kind of music genre participants listen to when they are in a "Calm Mood." The results range from n= 163 Classical, 66.5%, followed by n=160 R&B, 65.3%, followed by n=150 Blues, 61.2%, followed by n= n=141 Beats, 57.6%, followed by n=137, Electronic, 55.9%, followed by n=128,

Country, 52.2% and followed by n=125, World, 51.0%. This answer the second research questions in section B (Q12) of the research study. Some previous research state that music can be used to calm individual mood, but however, the study of using music to predict calm mood give a negative result in this current investigation due to the respondent's choices.

Based on (Q13) of the study, the statement what kind of music genre participants listen to when they are in a "Relaxing Mood." Result shows that Ten (10) highest music genres were extracted and reported by the author, the indicated results were ranging from n= 167 Blues, 68.2%, followed by n=160 World, 65.3%, followed by n=152 Holiday, 62.0%, followed by n=146, Country, 59.6%, followed by n= n=142 Electronic, 58.0%, followed by n=140, B&B, 57.1%, followed by n=135, Karaoke, 55.1%, followed by n=134, Classical, 54.7%, followed by n=134, Other, 54.7%, and followed by n=133, Jazz, 54.3%. the result of the investigation indicates that listeners can use music as subject to their relaxing mood.

The study has illustrated another following question based on the frequency and percentage score of the kind of music genre participants chosen to listen when they are in a "Peaceful Mood." Result shows that about eleven (11) highest music genres were extracted and reported by the author, result were ranging from n= 180 Blues, 73.5%, followed by n= 172, R&B, 70.2%, followed by n=164, Classical, 66.9%, followed by n=159, Country, 64.9%, followed by n=136, Karaoke, 55.5, followed by n=134, Electronic, 54.7%, followed by n=133, J-Pop, 54.3%, followed by n=130, Disco, 53.1%, followed by n=128, K-Pop, 52.2%, followed by n=125, Pop, 51.0% and followed by n=125, Beats, 51.0%. The study shows a positive effect that listeners can use music as a subject to their peaceful mood.

The result indicates that the question, what kind of music genre participants listen to when they are in an "Excited Mood is positive." The result appears that ten (10) highest music genres were extracted and reported. The result score ranges are as follow, n= 176,Hip-Hop, 71.8%, followed by n=164 Pop, 66.9%, followed by n=161 Dance, 65.7%, followed by n=161, World, 65.7%, followed by n= n=159 J-Pop, 64.9%, followed by n=156, Reggae, 63.7%, followed by n=151, Metal, 61.6%, followed by n=135, Karaoke, 55.1%, followed by n=131, Jazz, 53.5%, and followed by n=131, Holiday, 53.5%.

The next question in this study shows the resulting score of the kind of music genre participants listen to when they are in a "Sad Mood." The result indicates that four (4) highest music genres were extracted and reported. The reported results range from n= 171, Jazz, 69.8%, followed by n=164, Blues, 66.9%, followed by n=152, Classical, 62.0%, and followed by n=126, Holiday, 51.4%. Based on the result indicated above in, the researcher observed that the outcome from the participants has no good effect on the prediction of "Sad Mood" so therefore, the result is negative. Below is another result shown for the following question "Stressed Mood."

The current study has indicated another following result question based on the kind of music genre participants chosen to listen when they are in a "Stressed Mood." The result shows that twelve (12) highest music genres were selected, extracted and reported accordingly. Result indicate that respondents were reaching the range of n= 173 Holiday, 70.6%, followed by n= 171, Classical, 69.8%, followed by n=169, Blues, 69.0%, followed by n=167, Karaoke, 68.2%, followed by n=166, World, 67.8%, followed by n=162, Country, 66.1%, followed by n=161, Electronic, 65.7%, followed by n=158, R&B, 64.5%, followed by n=152, Jazz, 62.0%, followed by n=150, Beats, 61.2%, followed by n=146, Other, 59.6%, and followed by n=139,

Hip-Hop, 56.7% . Based on the result shown above, the survey of using music genre to predict stressed mood is effective due to the respondent's feedback.

According to the question on the kind of music, genre participants listen to when they are in a "Frustrated Mood." The result has shown ten (10) highest music genres that were extracted and reported in the study. The reported results are reaching the range n= 160, Blues, 65.3%, followed by n=160, Classical, 65.3%, followed by n=156, Electronic, 63.7%, followed by n=152, Holiday, 62.0%, followed by n=151, Jazz, 61.6%, followed by n=150, R&B, 61.2%, followed by n=149, Country, 60.8%, followed by n=140, Other, 58.4%, lowed n=140, World, 57.1%, and followed by n=133, Karaoke, 54.3%. Based on the multiple choice frequency result shown, the researcher observed that the outcome from the respondents has a good effect on the prediction of "Frustrated Mood." In this case, the author indicates that the prediction based on the participant's response is positive. Below is another result of "Depressed Mood."

The current investigation has extracted another eleven (11) highest music genres from the survey of the kind of music genre participants listen to when they are in a "Depressed Mood." The researcher reported that the results were positive which ranged from n=178, World, 72.7%, followed by n=174, Holiday, 71.0%, followed by n=169, Country, 69.0%, followed by n=166 R&B, 67.8%, followed by n=169, Country, 69.0%, followed by n=154, K-Pop, 62.9%, followed by n=152, Blues, 62.0%, followed by n=151, Pop, 61.6%, followed by n= n=142, Electronic, 58.0%, and followed by n=129, Karaoke, 52.7%. For the fact shows a positive outcome, the study of using music to predict depressed mood is very much important.

Finally, the last question in section B, the researcher shows the following result based on the kind of music genre participants listen to when they are in an "Angry Mood." The result indicates that eight (8) highest music genres were extracted and reported by the researcher. The reported results are reaching the range of n= 169, B&B, 69.4%, followed by n=169, Classical, 69.0%, followed by n=164, Blues, 66.9%, followed by n=150, R&B, 61.2%, followed n=157, Jazz, 64.1%, followed n=138, Karaoke, 56.3% followed n=133, Other, 54.3%, followed n=127, Electronic, 51.8% and followed by n=125, Country, 51.0%. Based on the result reported, however, the researcher observed that the response from the participants is not up to average which made the prediction of "Angry Mood" negative.

6.0   Discussion

According to the current study findings, this study suggested that there is a need for university students to pay more attention to listening to music to balance their stress life. Since this survey was conducted in University Campus, the vast majority of the participants were university-aged students. This study recommended that having larger samples and expanding the scope of the investigation would be a good idea to extend the information gathered. Again, the study suggested that it is important to look into this research study and complete to further more positive results and expound upon the connection of mood and music in national and global context.

The study recommended that the best way for this exploration to proceed would be to expand upon the research of John A. Sloboda (Sloboda, Neill, & Ivaldi, 2001), who has done the most important investigation in connecting two-three parts of studies together. Specifically, what is distinctive to Sloboda is that in his investigation, he only attempts to connect two components at a time (for example, music and memory, memory and mood, or mood and

music), in so doing providing a concrete and sequential basis for ultimately combining all the parts.

Based on the current study, the findings have shown that this study is important to conduct in Malaysia in particular and in any other country at large as longs as the mood is one of the most important affective effects that individuals are worried about today. As mentioned by Meyer, mood refers to a relatively long lasting and stable emotional state (X Hu, 2010). This study has indicates that mood does not have music, but it can use music as a therapy to salve problem of mood change.

7.0   Conclusion

This study is needed and is important as to reduce stress and discomfort associated with relieving anxiety and depression in an individual. The study has presented a quantitative method that helps in predict the mood of the listener's based on music genres. The adapted Russell and Thayer model have helped in categorizing the influential moods that were predicted in the study using the twenty classified music genre. The findings indicates that 60%-80% percent respondents in both parts of the study (A and B) shows that music could be used to influence individual mood and the genre of music selected by individual who listen to music plays an important role in this current study. Result in part A of the study indicates that music can be used to influence personal mood. Meanwhile, the finding in part B shows that the classified music genre was helpful to predict particular moods. The result for Q1-Q10 of the study, the researcher illustrates that the respondents who agreed and strongly agreed in section A are highly reasonable that made the findings valid. While the result for Q11-20 of part B of the study indicates that the range of frequency and percentage of responded is convinced. Due to the multiple choice analysis in Q11-20, the result shows that seven of positive and three of the negative result were obtained from the findings. Lastly, in section C which is the demographic section in the current research shows that majority of respondents were female followed by male. The age range that influences this current study ranged from 18-25 and 26-35. Based on the educational level, the majority that impacts this study was degree and master students, and the majority of them are single. The Asians and America/Africa participants were the majority respondents in the study. In justifying the current study findings, the study referenced a study by (Rollin McCraty, Bob Barrios-Choplin, et al., 1998) which found a positive result and indicated that the study of mood is very much significant due to the mental and emotional activity which can alter autonomic nervous system (ANS) function. Conclusively, this study is needed to pay attention to as it has stated by the previous study that music can alter mood and emotional state of any individual. It is likely that stress, depression, anger, immune and hormonal changes seen after subjects listen to music are mediated by the ANS (Rollin McCraty, Bob Barrios-Choplin, et al., 1998).

References

Baniya, B. K., Hong, C. S., & Lee, J. (2015). Nearest Multi-Prototype Based Music Mood Classification, 1–4.

Bay, M., & Downie, J. S. (2007). Creating a Simplified Music Mood Classification Ground-Truth Set, 3–4.

Deng, J. J., & Leung, C. H. C. (2015). Dynamic Time Warping for Music Retrieval Using Time Series Modeling of Musical Emotions, *6*(2), 137–151.

Djamasbi, S., & Strong, D. M. (2008). The effect of positive mood on intention to use computerized decision aids. *Information & Management*, *45*(1), 43–51. https://doi.org/10.1016/j.im.2007.10.002

Ei, E., & Myint, P. (2010). An Approach for Mulit-Label Music Mood Classification, 290–294.

Gliem, J. A., & Gliem, R. R. (2003a). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales, (1992), 82–88.

Gliem, J. A., & Gliem, R. R. (2003b). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest Research to Practice Conference in Adult, Continuing, and Community Education*, (1992), 82–88. https://doi.org/10.1109/PROC.1975.9792

Greenberg, E. R., Stukel, T. a, Baron, J. a, & Freeman, D. H. (1993). Statistical methods in research. *Lancet*, *342*(8878), 1055. https://doi.org/10.1016/0140-6736(93)92911-C

Hampiholi, V. (2012). A method for Music Classification based on Perceived Mood Detection for Indian Bollywood Music, *6*(12), 478–485.

Hu, X. (2010). Music and mood: Where theory and reality meet. *Proceedings of iConference*, 1–8. Retrieved from http://www.ideals.illinois.edu/handle/2142/14956

Hu, X., Choi, K., & Downie, J. S. (2016). A framework for evaluating multimodal music mood classification. *Journal of the Association for Information Science and Technology*, (February), n/a-n/a. https://doi.org/10.1002/asi.23649

Hu, X., Downie, J. S., Laurier, C., Bay, M., & Ehmann, A. F. (2008). The 2007 MIREX Audio mood classification task: Lessons learned. *Statistics*, 462–467. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.182.2004&rep=rep1&type=pdf

Hu, X., & Yang, Y.-H. (2016). Cross-dataset and Cross-cultural Music Mood Prediction: A Case on Western and Chinese Pop Songs. *IEEE Transactions on Affective Computing*, *3045*(c), 1–1. https://doi.org/10.1109/TAFFC.2016.2523503

Hyman, M. R., & Sierra, J. J. (2016). Statistical methods a marketing research consultant might use (Part 2). *NMSU Business Outlook*, *14*(12).

Juslin, P. N., & Laukka, P. (2004). Expression, Perception, and Induction of Musical Emotions: A Review and a Questionnaire Study of Everyday Listening. *Journal of New Music Research*, *33*(3), 217–238. https://doi.org/10.1080/0929821042000317813

Juslin, P. N., & Västfjäll, D. (2008). Emotional responses to music: the need to consider underlying mechanisms. *The Behavioral and Brain Sciences*, *31*(5), 559–621. https://doi.org/10.1017/S0140525X08005293

Kanters, P. W. M. P. (2009). Automatic Mood Classification for Music, (June).

Krejcie, R. V, & Morgan, D. W. (1970). Determining Sample Size for Research Activities Robert. *Educational and Psychological Measurement*, *38*(1), 607–610. https://doi.org/10.1177/001316447003000308

Krumhansl, C. L. (2002). Music : A Link Between Cognition and Emotion Basic Emotions and Tension. *Current Directions in Psychological Science*, *11*(2), 45–50. https://doi.org/10.1111/1467-8721.00165

Laukka, P. (2007). Uses of music and psychological well-being among the elderly. *Journal of Happiness Studies*, *8*(2), 215–241. https://doi.org/10.1007/s10902-006-9024-3

Lee, J. H., Hill, T., & Work, L. (2012). What Does Music Mood Mean for Real Users? *2012 iConference, Proc.*, 112–119. https://doi.org/10.1145/2132176.2132191

Loiacono, E., & Djamasbi, S. (2011). Moods and Their Relevance to Systems Usage Models within Organizations: An Extended Framework. *AIS Transactions on Human-Computer Interaction*, *3*(1), 1–25. https://doi.org/10.5121/ijfcst.2014.4403

Lu, L. I. E., Liu, D. a N., & Hong-Jiang, Z. (2006). Automatic mood detection and tracking of music audio signals : Statistical and Perceptual Audio Processing. *IEEE Transactions on Audio, Speech, and Language Processing*, *14*(1), 5–18. Retrieved from http://www.refdoc.fr/Detailnotice?idarticle=6601708

Matthews, S. (2012). The Immediate effect of musical Tempo on Stress, Mood, and Self-Efficacy. https://doi.org/10.1017/CBO9781107415324.004

Meyers Emotion-and Meaning-in Music. (1956).

Rock, H. (2010). List of Type of Music | Music Genres.

Rollin McCraty, Bob Barrios-Choplin, Mike Atkinson, D. T. (n.d.). The effect of different types of music on mood, tension, and mental clarity.

Saari, P., Fazekas, G., Eerola, T., Barthet, M., Lartillot, O., & Sandler, M. (2015). Genre-adaptive Semantic Computing and Audio-based Modelling for Music Mood Annotation. *IEEE Transactions on Affective Computing*, 1–1. https://doi.org/10.1109/TAFFC.2015.2462841

Shin, I., Cha, J., Cheon, G. W., Lee, S. Y., Yoon, H., & Kim, H. C. (2014). Automatic stress-relieving music recommendation system based on photoplethysmography-derived heart rate variability analysis. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2014, EMBS*, 6402–6405. https://doi.org/10.1109/EMBC.2014.6945093

Sloboda, J. a, Neill, S. a O., & Ivaldi, A. (2001). Functions of music in everyday life: an exploratory study using the experience sampling method. *Musicae Scientiae*, *5*(1), 9–32. https://doi.org/10.1177/102986490100500102

Vempala, N. N., & Russo, F. a. (2012). Predicting Emotion from Music Audio Features Using Neural Networks. *International Symposium on Computer Music Modeling and Retrieval (CMMR)*, (June), 19–22.

Watson, D., Clark, L. a, & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–70. https://doi.org/10.1037/0022-3514.54.6.1063

Yang, Y.-H., & Chen, H. H. (2012). Machine Recognition of Music Emotion. *Tist*, *3*(3), 1–30. https://doi.org/10.1145/2168752.2168754

Yang, Y. H., Yang, Y. H., Liu, C. C., Liu, C. C., Chen, H. H., & Chen, H. H. (2006). Music emotion classification: a fuzzy approach. *Proceedings of the 14th Annual ACM International Conference on Multimedia*, 84. https://doi.org/10.1145/1180639.1180665

Ziv, G., & Lidor, R. (2011). Music, exercise performance, and adherence in clinical populations and in the elderly: A review. *Journal of Clinical Sport Psychology*, 1–23.