Searching for the Universal Subconscious
Study on music and emotion

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Abstract

Are there any differences in how we feel about music? This research reaches to clarify differences and their reasons in our perception of music-related emotions. Furthermore, this research presents two new measuring tools for how to consider music-related emotions and musical preferences, *The Eye of Emotions and The Indicator of Interest*.

The first aim of this study was to test the above-mentioned models in practice. Both of these new models capture together the categorical and dimensional ways of thinking about music-related emotions. *The Eye of Emotions* gives us information about which of the given qualities is the most important to the participant (in relation to the heard musical excerpt) and in what intensity the emotional quality is experienced. The model is based on a combination of *valence* and *arousal* axis of *a dimensional model* and *the basic emotions*. *The Indicator of Interest* does the same with the most commonly used terms of interest and liking. The goal of using these two scales of measurement was to get exact knowledge about participants' experience in four different dimensions; quality and the amount of experienced emotions, experienced aesthetical value and the amount of liking.

The second aim of this research was to find out if the participants' *aesthetic distance*, for example musical history, age, gender and preferences, would be related with the emotions experienced during the test. In most cases the participants reported very similar emotional listening experiences despite of the differences in their current emotional state or musical background.

In addition to the two main research questions, this study reflects to the growing amount of research on the field opening aspects to the most important questions on the matter, such as what is an emotion? Are we able to recognize an emotion without feeling it and with what mechanism? Do emotions change during the human development or is it just our growing ability to communicate about the surrounding existence that develops during the years? There does not seem to be a consensus on the basic issues in this field.

Keywords
Music, Emotion, Perception of music

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1.0 INTRODUCTION

- How do you feel?

- I feel fine.

- Ok… What do you mean by that?

- By what?

- How do you feel when you're feeling ´fine´?

- Oh, I don't know… just fine I guess… you know?

- …Yes, I guess I know.

The above (conversation) could be an everyday discussion about basic emotions. This study aims at finding out and bringing back the meaning to the words we use to describe how we feel about music – are there any differences in how we feel about music? The study introduces two new models that suggest a new way to unite categorical and dimensional ways of thinking about music-related emotions. The goal of using these two models of measurement is to get as exact as possible an insight into participants' experience of musical samples – an insight that could be laid down in four different dimensions at the same time. These dimensions are: a quality and power of emotions experienced, an aesthetic value experienced and the amount of liking. The paper also hopes to capture the meaning of participants' *aesthetic distance* towards music in relation to their emotional response during the test. By the *aesthetic distance* I mean the physical and mental factors, such as memory, assumptions, hopes and fears of the future, which define our existence in the very moment we hear a given music sample. The models used in this research are based on: prototype theory (Rosch 1978), the idea of basic emotions (Ekman 1972, 1992) and the circumplex model of emotions (Russel 1980).

What are the things that we really need to study if we want to learn about music and emotions? Music and emotions – like everything else – happen mostly in real time and place, therefore they talk about the reality of a moment. One can spend a whole lifetime trying to understand or explain what happened during the Big Bang. Similarly, one can spend a whole lifetime trying to understand or explain what a person meant by saying 'thank you´ in a certain situation. Therefore we are talking about the reality of a moment. We should understand the need, use and meaning of music and everything that is musical phenomena. We should understand the need, use and meaning of emotions and everything connected to them. Naturally we also should understand the whole universe or at least the evolution on earth. What do we mean by 'reality'? Art, science and everything we do in our lives can be seen as a way to understand, define and control the meaning of our lives in a given moment. Suddenly the moment is gone and we have something else – something different to understand, define and control. It seems, we might get close to it but we will never reach it. Every process consists of billions of tiny elements and variables and so does appearance of music-related emotions. In the long run in every process a small change can make huge difference. If we are to prove something scientifically, then we need to aim at controlling variables in such way that we will be able to repeat our research and receive the same results. After all, time and place are always different. But do we really know what we need to control? And where is the fine line dividing the irrelevant details from those we need to keep under our control? In this study I try to find out something about things that might have an effect on the reality of a moment during which music evokes emotions. I controlled my musical samples and procedure. I also tried to go beyond situational elements by asking detailed questions about participants' emotional states and musical backgrounds – things that partly constitute the *aesthetic distance*.

2.0 BACKGROUND

Whether we like it or not we all deal with music and music related emotions daily in our lives. Wherever we go music is there and so are emotions. Sometimes music may lead us into strong emotional storms and sometimes it leaves us as dry as the desert sand. Music makes us move, gather together, spend time and money for musical instruments, albums and concerts. Music also has power to raise feelings and turn our moods or even emotional stages to others. It makes us laugh and weep and everything in between, and beyond. It seems pretty clear that there is a strong need for such a forum for interactive processes or whatever we would like to call this complex phenomenon – perhaps the term *music* is just enough. Well the origins of the term *music* come from a creek term *mousikë tekhnë, which* means *the art of* (9) *muses* including all of the art forms of antiquity. The term was originally used by the way we use the term *culture* nowadays. Later, in the Middle Ages, the term reflected philosophical mathematical music theory and also singing and playing instruments. Later the term was defined as music art (Tiainen, 1987).

In a way music can be seen as a social forum that emphasizes basic elements of humanity. It has been argued that listeners construe musical pieces as a virtual persona; in to whom we can mirror emotional experiencing (Gumperz & Levinson, 1996). Most of the people can say pretty fast when asked what kind of music they like, and when we get to know a new person and we want to learn about him or her we might ask about the musical favourites. If we know that a male person teaches history in the high school we might get some kind of imaginary picture about him. When we get to know that he really loves

death metal music the picture about him might change a bit. Musical likings reveal something more about personality and persons' emotional life than for example occupation or favourite colour. Music adjusts our emotional stages sometimes supported by our conscious decision and sometimes without our knowing. Emotions seem to have important role in our biological survival and problem solving processes. Some sort of emotional experiences are probably the main reason behind most people's attraction with music (Juslin & Sloboda 2001).

Thus nowadays music researchers have commonly admitted the fact that music related emotion research is the key direction to understanding the wholeness of music and musicality in all forms. The subject has been seriously ignored during the last decades. The most remarkable books on music psychology like *The Psychology of Music* (Deutsch 1999) and emotion psychology like *Handbook of Emotions* (Lewis & Haviland-Jones 2000) have not given much attention on this important subject even thought music- related emotion studies might be the shortest way to understanding the construct of the processes of our emotionality in more general (Gaver & Mandler 1987). In fact *The Psychology of Music* does not contain a chapter on emotion where as *The Handbook of Emotions* does not include a chapter on music.

Perhaps the most comprehensive book on the subject so far is *Music and Emotion* (Juslin & Sloboda 2001, updated 2009), which gathers the main points of music related emotion research from different views. Also a recent Finnish Doctoral Dissertation *Towards a Comprehensive Theory of Musical Emotions* (Kallinen 2006) reaches successfully to the issue by summarizing the results of a series of experiments on the emotional effects of music perception. Research on these matters has increased hugely during recent years, luckily.

2.1 Views on music and emotion research

Questions like how and why we experience emotional reactions to music and how and why we experience music as expressive of emotion have occupied human beings ever since antiquity (Juslin & Sloboda 2001). Furthermore what are the mechanisms that intervene between composer, performer and the music reaching listeners' ears, and the emotion being experienced? Sometimes composing process begins as a reaction to other composers' music and so the end is a new beginning.

Music related emotions as emotions in general are a difficult subject to study for numerous of ways, which is perhaps the most obvious reason for the slow development of the study and knowledge in the field; scientists must get results. First of all, emotional experiences are somewhat sensitive and intimate by their nature and the laboratory conditions might disturb participants in experimental settings. It is also difficult to measure and define emotions; describing music related emotional experiences with words could be very frustrating. The problem of music and emotions as a whole is so complex that scientists avoided it all together until 1950's (Juslin & Sloboda).

What is an emotion? This question has not received a definitive answer. Scientists often describe emotion as a sequence of events from our cognitive appraisals to bodily reactions and subjective experiences such as feelings those include action tendencies. Even tough layman seem to share a common conception of emotions there is no agreement among scientists where this process particularly starts and ends, how many 'fundamental' or 'basic' emotions we have and where is the origin of the emotional process; in the mind or in the body (Kallinen 2006).

The following definition includes several components that have commonly been accepted as part of emotions.

Emotion is a complex set of interactions among subjective and objective factors, mediated by neural/hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate subjective cognitive processes such as perceptually relevant effects, appraisals, labelling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behaviour that is often, but not always, expressive, goal-directed and adaptive (Kleinginna & Kleinginna 1981, p 355).

General definition is that emotions are biologically based action dispositions that have an important role in the determination of behaviour (Lang, 1995). Most studies suggest that emotions include three components: The subjective experience, the expressive component and the physiological component. Some studies add action tendencies and cognitive processing to these.

2.2 Some approaches to emotions

The categorical approach to emotions suggests the concept of basic emotions, the idea that there are a limited number of universal emotion categories from which all the other emotions can be constructed (Ekman, 1992). The number of basic emotions varies in the views of scientists but most often happiness, anger, sadness, fear, surprise and discuss are included in them.

The dimensional approach defines emotions through a small number of dimensions such as valence, activity and potency, which distinguish emotions from one another. Perhaps the most well known dimensional

model is the *circumplex model* (Russell, 1980). The model consists of a two- dimensional, circular structure involving the dimensions of activation and valence. The model suggests that emotions vary in their degree of similarity and that emotions could be set in bipolar dimensions in scientific models.

Prototype approach presented by Rosch (1978) is based on the idea that language, and knowledge structures associated with language, shape how people conceptualize and categorize information. The prototype approach provides compromise between dimensional and categorical approach.

The concept of *vitality affects* (Stern, 1985) such as intensity, shape, contour, and movement are common to all modes of expression. In case of music these qualities seem to be in an important role even tough it can be questioned whether they actually are emotions or forms of emotions. Dynamic terms such as *crescendo*, *explosive, diminuendo,* etc. reflect these characteristics perhaps the most. *Vitality affects* might be the lead to music's ability to be expressive of emotions; music can be seen as a dynamic form of our emotional life (Langer, 1951).

Lately nine affect terms (wonder, transcendence, tenderness, nostalgia, peacefulness, power, joyful activation, tension and sadness) were ranked out from total of 515 terms to be most reflective in describing emotions in music (Zentner, Grandjean, and Scherer 2008).

Recent studies, struggling still with the fact that there is no agreement on what an emotion is (Frijda, 2007; Kagan, 2007), suggest a varying lists or 'collections' of emotion and activation terms to reflect basic emotions in music. Subjective feeling seems to contain action

tendencies, physiological arousal, cognitive appraisals, and expressive motor behaviour (Niedenthal, Krauth-Gruber, & Ric, 2006).

2.3 Emotions in relation to music

Important differences have been found between mechanisms of musical emotions and other emotions but it does not mean that emotions themselves would be different (Juslin & Sloboda, 2009). As discussed before, studies on the emotional responses to music have typically used adjective check lists to research emotional responses. Significant correlations between chosen adjectives and structural properties of music have been found almost a century ago (Hevner, 1936). The structural properties of music were linked to distinct emotions.

Musicians have also proven to be able to express and communicate basic emotions by manipulating the characteristics of the music such as tempo, dynamics, timing and spectrum (Gabrielsson and Juslin, 1996, Juslin, 1998). Musical compositions have also been shown to prompt similar ratings for basic emotions across different listeners (e.g., Hevner, 1936, Tervogt & Van Grinsven, 1991). Music has also been shown to have positive effects on mood, and reduce anxiety, stress and negative feelings (Davis & Thaut, 1989; Hanser, 1990). A variety of self-reports, brain measurements and other physiological measurements such as heart rate, skin conductance, respiration rate, blood pressure, blood volume, muscular tension, motor and postural responses have been used to understand the phenomena, but the findings concerning the effects of music on these measures are inconclusive (Kallinen, 2006).

Of course some of us might find it interesting to know for example that cortisol levels and relative right frontal activation might rise or

attenuate significantly during and after listening to music even though observed and self-reported mood might not change, but I believe that in my case creative self-reporting measures might give more coherent information about the studied subject. Self-report is still only way to get information of participants' experiences.

Let us now turn our focus on the interaction between the listener, the sound source that might be imagined or real, and the contextual problem. The question, whether music can capture and express emotions or are the experienced emotions just subjective illusion or trick of personality, have caused a lot of discussion among scientists.

Listening to or hearing music always happens in some situation, which includes time, place and also knowledge and personal history of the experiences of the listener. Music usually connects to our lives in a way that it is hard to be sure if the emotions we experience while listening to music are caused by the previous situational elements that we have experienced early in our lives while hearing the same or same kind of a musical piece, or if they really are flowing to us from the sound source we are hearing in the moment.

Many characteristics in two different sounds can be similar even though the combination of qualities produces different wholeness. Familiar characteristics in a musical piece that a person never has heard before might raise memory connections to earlier experiences with different music and mix the experience. There are no two persons with a similar experience history, so this is an element we should be able to control if we would like to have reliable knowledge about the issue: does the same music make participants experience similar emotions while listening. Aesthetical values and likings of the listener might also cause confusion in such a task. "Music can give rise to very different kind of emotion because people are biologically and mentally different and

because they all have their unique emotional situations; appraisal history" (Lazarus and Smith 1988, p. 286). Kallinen (2006) goes beyond this statement by separating interactions of musical, individual and contextual factors of musical emotions. If we can clean our experimental situation from individual and contextual factors we might be dealing with pure perception of emotion in music.

3.0 PROBLEM STATEMENT AND RESEARCH QUESTIONS

Before introducing the actual research questions I want to point out some matters those occupied my mind while I was gathering information for this study. These questions sprang up regularly during the reading process and they lead my thinking in trying to understand how I could capture new information of music-related emotions. Following aspects might not be straight connected to the actual research questions but they capture some essential information of the complex nature of this matter and could be important particles or factors of the results of this study.

3.1 Are there any differences in how we feel about the music?

Could music be seen as a cross-cultural *language* that raises similar emotions in all the people? Could it be kind of a language of emotions; higher or more complex and whole form of communication; perhaps an evolutional direction for development of communication? Sometimes there rises discussion about *universal subconscious.* If we have a universal language of emotions, could it be even a cue to that – to *the universal subconscious* – if there is one?

Many scientists who have done studies on music related emotions claim that music is able to communicate even in situations where words fail (surely words can do it other way round in many situations). At the same time the most trusted way to study musical emotions seems to be the language-based self-reports or tests where subjects choose words from adjective lists; words that most closely describe their feelings about the music heard. How to describe musical emotions by words if

music reaches something deeper (than words)? It is a tricky question, how to avoid this problem in research? In addition to self-reports also some physiological measurements are used to understand our music-related emotions but what do the results really reveal about our emotions; about when, how, and why we feel in relation to music or how our emotional experience translates to our everyday life. They only tell that something is happening in our body – not how it feels or why we need such a phenomena.

The growth of cognitive capacity was coordinating with the development of the conscious (Juslin & Sloboda 2001). The level of musical development valuates many times cultures so that the state of civilization is measured by musicality. Perhaps our continuously developing musical ability and knowledge could be evolutional response into our need to find more coherent ways to communicate about our complex psychophysical existing.

3.2 Do emotions change during the human development?

What if the scale of emotions does not vary between individuals but only *the aesthetical distance* and the ability of communicating (understanding) vary and increase with experience? What if emotions do not change during the human development but only the understanding of oneself in relation to the surrounding existence changes or develops?

The same individual might feel different about the same piece of music in different time, place and situation. The difference in individual responses to music could possibly be explained also by contextual differences. *Aesthetic distance* to music varies within individuals. By aesthetic distance I mean the physiological and mental factors including

memory of the all passed, as well as assumptions, hopes and fears of the future, which define our existence in a moment we are hearing the music. Still it seems that music has power to lead people who are hearing the same piece of music into the same *emotional state;* for example in concerts. If music is able to gather people around the world together into the concert and sell hundreds of millions of copies of albums it has to have cross-cultural potential to reach emotional stages of people around the world without looking to the cultural differences. We tend to think that we are different from each other but if we compare a human being to anything else in the universe and after that to another human being we find out that we are mostly similar; the structure of the body and mind. We are taught to face new things in forms of dissimilarity. When we get to know a new person we wonder things that separate us from each other instead of searching qualities that connect us. By accepting that the most probable reality, that we are mostly similar, is true - we can start to wonder the reasons why we feel dissimilar in some situations.

Researchers seem to agree that emotions change during the human development (e.g. Ekman & Davidson 1994). Even 3 – 4 year old children can recognize certain emotions (basic emotions) like joy, sadness, anger and fear from music (Dolgin & Adelson 1990; Kastner & Crowder 1990). Children have been studied by asking them to connect pictures that include facial expressions of emotions with the music they hear. This ability seems to increase up to age of six. It has been argued that the emotional response to music depends on the general development of emotions (Gempris 1995). What do these studies really reveal? Could it be that as we study how well children connect facial expressions to music, in emotional sense, we study how well they understand our way to communicate to each other instead of how we feel about the music? Could it be that our communication skills develop

up to age of six and the feelings remain the same so that in the age of six we are able to connect our basic emotional states to the cross-culturally agreed physical expressions for them?

3.3 Do we have to separate felt and perceived emotions?

Could it be that an individual is unable to recognize emotion without experiencing or feeling it? Even if it does not *move*, could it be that it has to be *felt* (at some level) for one to be able to name the feeling? Researchers working on music and emotions usually separate feelings that listeners experience when listening music from the feelings they perceive or recognize in the music without feeling them; *emotions felt and emotions perceived* (Gabrielsson 2002). It is true that happy song does not necessarily make us happy but still we can say that it sounds happy. So far no one has come up with a theory of the mechanism that makes emotional recognition possible in any other way than just the cluster of events that happens in a normal emotion process. How to measure how strongly a subject feels the music he or she hears? Where to draw the line between experiencing an emotion and just recognizing without experiencing it? Sometimes when we hear music, for example from the radio, we do not give much attention to it but later when something happy or dramatic happens the music heard might rise from the memory with a strong emotional experience. *The Aesthetic distance* might not always be optimal when we hear music; something else is more important in a moment. Even if we give just a tiny part of our emotional response to the music in a given situation it still seems logical to claim that we do somewhat experience the feelings that we recognize in the music. I do not see a reason to completely separate felt and perceived emotions.

3.4 How we name emotions?

Could it be that an individual names the experienced emotion context-dependently based on words? Is it necessary so that for example fear and hate feels different in the body? Could it be that the context would lead to naming the same feeling differently? Could this be one of reasons why words fail in describing our complex emotional experiences?

We name things, events, and phenomena with words and base the science on language. Do the words have same meaning for everyone, or have the words built a prison for our consciousness and imagination? When words are used in a situation the context defines their meaning and we seem to understand each other sometimes pretty well but never completely. We can communicate with words pretty successfully in a basic level about simple phenomena of concrete events like the weather, as we understand its nature of existence. As we dive deeper and ask why it exists and how we feel about it, things are getting messy. Spoken language is always more effective than written because of the presence of the speaker. The same happens with music; the musician gives the meaning for the notes he or she plays in a moment and the same happens with emotions; when someone tells how he or she feels the most of the information runs nonverbally. So it seems that words are just harsh guides that give directions for listeners to understand the message. But what happens when we read without the presence of the speaker. Well – the history of religions might tell something about that. As we walk alone in a forest, we do not experience the nature around us through words. We may need words to describe the experience later to our friends – or do we necessarily? Emotional experience is also always context-dependent. It happens in the reality of a moment. What we mean by saying we feel sad or

happy? How does it feel to be sad or happy? Does it always feel the same or are there billions of different colours and nuances in our emotional experience? Is one word enough to describe the wholeness of our emotional state in a moment? It seems to me that we name our emotional experiences context- dependently; the feeling in the body is something that is connected to the current moment and our experience of the passed gives us the models how we act and name our situational psycho-physiological experiences in that moment. So measuring music-related emotions with language-based experiments might already fail straight at the level of an idea. Perhaps art like music flows before architecture of concepts.

3.5 Research Questions

The first aim of the current research was to test two new models, *The Eye of Emotions* and *The Indicator of Interest*, in practice. The models are made to clarify the similarities and dissimilarities in how the participants experience music, and what are their interests and preferences towards music.

The second aim of the current research was to find out if *aesthetical distance* (participants current emotional state, musical background, preferences, age, gender, familiarity to the music heard, etc.) has an effect on the participants' emotional response to music. *Do the participants, who share, for example, current emotional state experience the music more similar way than participants who are in completely different moods?*

4.0. METHODS

4.1. Participants, stimuli and procedure

45 participants were tested with twenty music samples (listed later at Appendix 2.) that were the same for everyone. Each sample lasted about 20 seconds and was played to the participants with a normal portable CD player in a classroom. Music samples were pretty randomly selected among different genres like pop, rock, classic, gospel, dance etc. trying to gather samples those might have strong emotional power. Total of 45 participants were tested. During participant selection process musicians and strongly musically oriented people were avoided to gather experiences of "common" people. Participants of different ages and genders were emphasized. 20 of participants were students of JAO (Ammattiopisto, Jyväskylä) along two of their teachers. 13 of participants were culture students of Humanities Polytechnic along one of their teachers. There was also group of four senior citizens from Jyväskylän hoivapalveluyhdistys ry and five participants, randomly selected friends of mine, were tested one by one. There were total of 37 female and 8 male participants.

At first all participants answered to a questionnaire that scanned their current emotional state and musical background considering musical taste and activity, age, gender etc. (appendix 1.). Participants answered on the scale one to five (not at all – very much) for example how happy they were at the moment. After listening music samples participants analyzed their experience during the listening by two different circumplex models. First of the models measured the quality and amount of their emotional arousal and the second model measured the

quality and level of their interest and liking to the musical excerpts. They also answered on scale from one to five about how well they knew the heard samples.

4.2. Scales

Two circumplex models, the Eye of Emotions and the Indicator of Interest, were used first time in the current study.

Figure 1. *The Eye of Emotions*
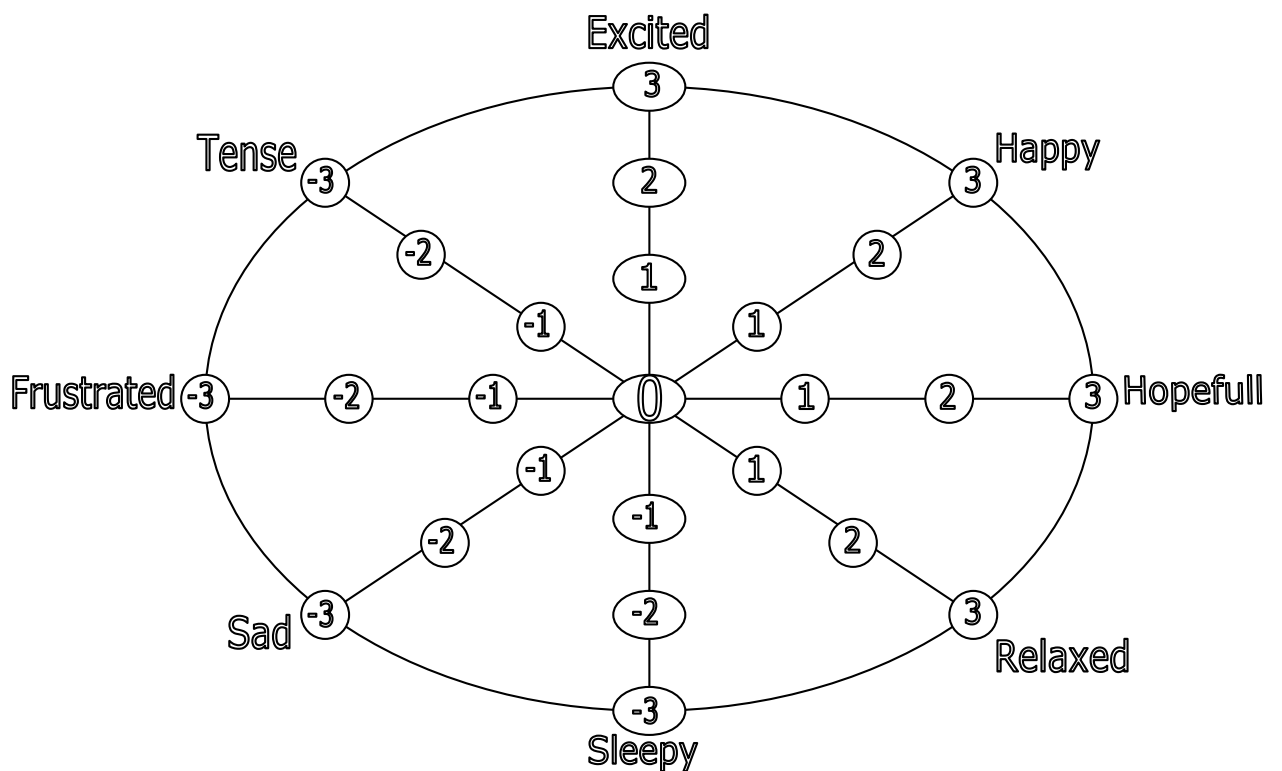
4.2.1 Scale 1: The Eye of Emotions

In the centre of the model is a zero point of emotions and arousal. Arousal rises in the vertical scale from *sleepy* to *excited*. Emotional quality moves in the horizontal scale from *frustrated* to *hopeful*.

Participants are advised to choose only one *ball* (quality) that they find to be the best to describe their emotional experience during listening to each sample. The model is my own and made to force the participants in to a situation where they cannot have two opinions for one matter at the same time. The model links together qualities that commonly are processed separately to give more precise information of participants' emotional states. It puts their ´back against the wall´ as they are asked to choose only one *ball* (quality) after listening to each sample so that they have to decide which quality describes the musical sample the most. The model gives us information about which of the given qualities is the most important to the participant and in what intensity the emotional quality is experienced. The model bases on combination of *valence* and *arousal* axis of *dimension model* and *basic emotions*.

Figure 2. *The Indicator of Interest*
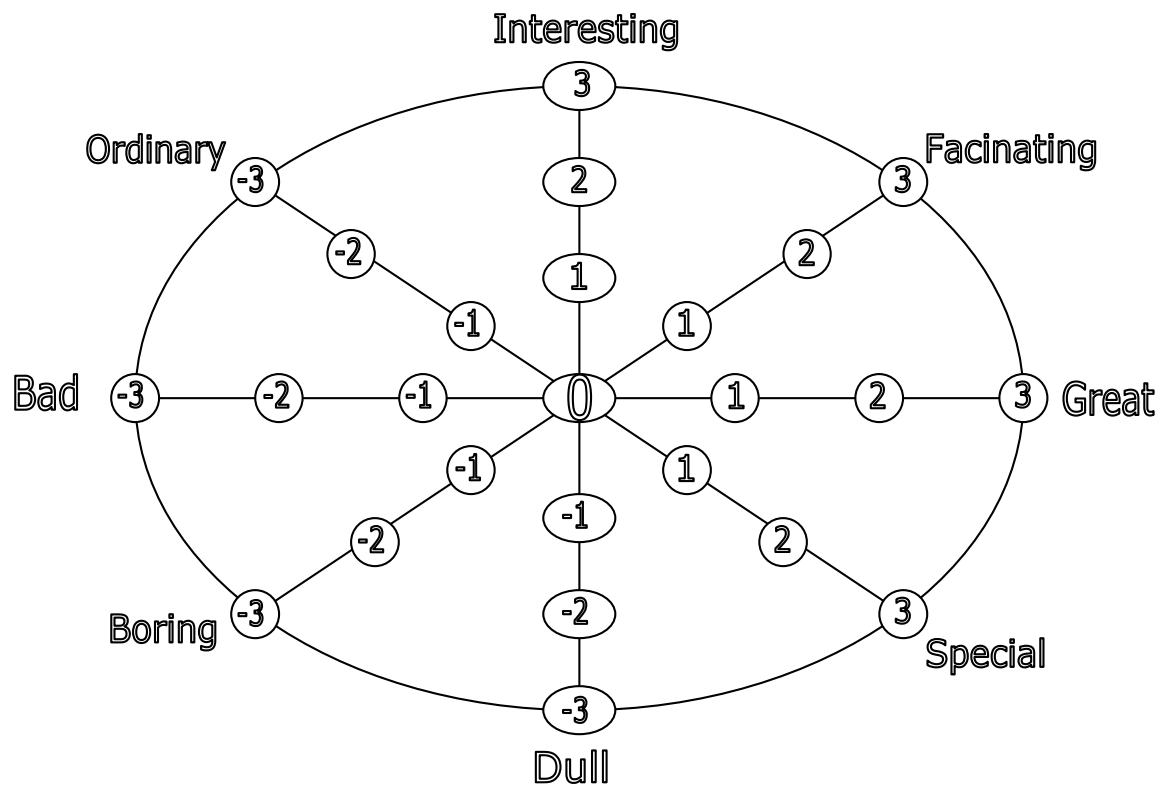
4.2.2 Scale 2: The Indicator of Interest

In the centre of the model is a zero point of interest and liking. Participant is advised to choose only one *ball* (quality) that he or she considers to describe his or her aesthetical interest and liking the most during the listening to each sample. The model shows us what of the given qualities is the most important to the participant and in what intensity the chosen quality is experienced.

4.3 Analyses

The goal of using these two scales of measurement was to get exact knowledge about participants experience in four different dimensions; quality and amount of experienced emotions, experienced aesthetical value and amount of liking. These models unite categorical and dimensional thinking of our emotional existence. Usually music-related emotional studies give these qualities separately for participants to consider. Now as my main focus was to get knowledge of possible similarities in participants' emotional responses to heard music (in relation to their current emotional state and level of musicality or at least level of interest and activity to music) these models were used in order to get give more accurate data than by using the usual measurement tools.

To run analyzes over the collected data both models, the Eye of Emotions and the Indicator of Interest, were given values from 1 to 24 (Figure 3.). Finding the modal and most often given values pointed out participants' opinions of heard musical samples (Figure 4.).

Figure 3. Given values
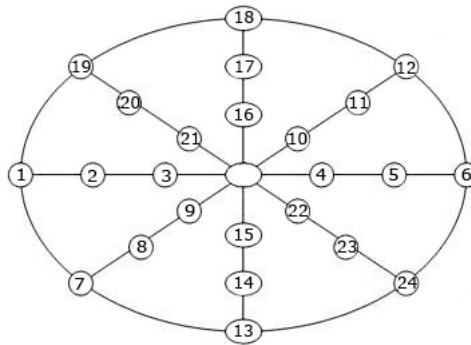
After finding the modal values of the collected data participants were shared in groups according to their answers on the previously explained questionnaire. If a participant answered les than four on the scale one to five whether he/she, for example felt hopeful, he/she was given value 1. If a participant answered 4 or 5 to the question, he/she was given value 2. The responses of participants in these different groups were then investigated separately (Figure 5). Later in this study the participants who gave les than four on the scale one to five to the question concerning their musical activity will be called non-musicians and participants who rated four or five to the same question will be called musicians.

After the grouping, the data were compared through all of the variables in the questionnaire so that, for example answers of participants who reported to be sad before the listening test were compared to all answers and also to the group of participants who reported to be in opposite mood (happy) at that time. Some crosschecking was also made for example to the group of "happy non-musicians" against "unhappy non-musicians".

The following part will explain details of the findings. Findings are analysed through the figures those represents distribution of

participants' ratings over the heard musical samples on the models Eye of Emotions and Indicator of Interest. For the first four musical samples there are also figures of some divided data-runs (happ/sad, musicians/non-musicians) to clarify the differences these factors caused. These selected factors caused strongest differences.

5.0 FINDINGS

Music Sample 1.0. John Mayer: *The Heart of Life* (first 20 seconds)

Figure 4. The Eye of Emotions: Total ratings for the song 1.
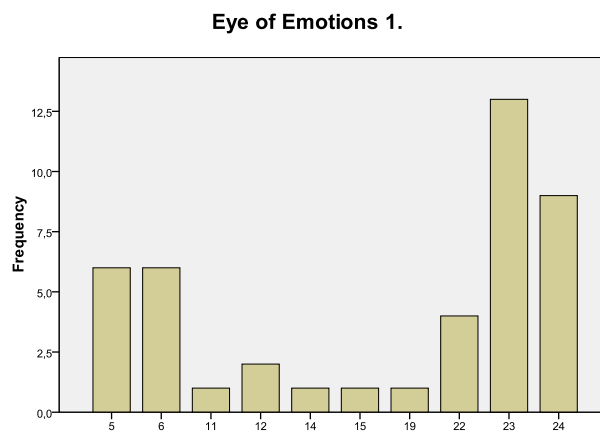
The modal value of given ratings for John Mayer's song called *The Heart of Life* was 23, which was given thirteen times. So most of the participants chose the Eye of Emotions scale *tense-relaxed* and gave the second highest rating possible towards *relaxed.* Nine of the participants gave the highest rating (24) on the very same scale. Twelve of the participants rated the sample on scale *frustrated-hopeful.* Six of them gave the highest rating (6) towards *hopeful* and six of them gave the second highest rating (5) at the same end. Participants clearly rated this sample to be relaxed and hopeful on the Eye of Emotion (Figure 4).

The level of happiness did not have much effect to responses on this musical excerpt. Participants who reported to be happy (gave more than three on *the happiness scale* from one to five) before the listening test rated this sample almost identical way with participants who reported to be not happy (Figures 5 and 6).

Figure 5. The Eye of Emotions: Happy ratings for the song 1.
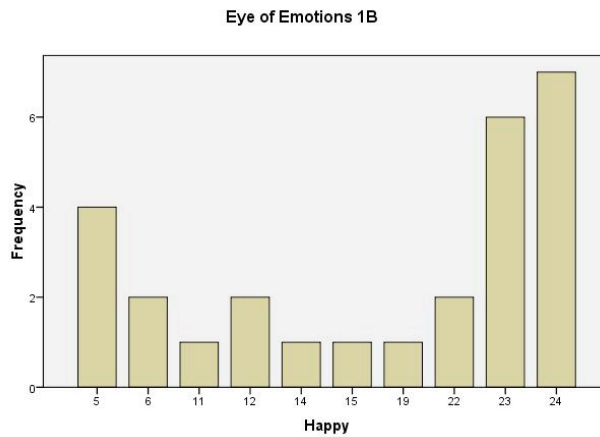
Eye of Emotions 1B

Figure 6. The Eye of Emotions: Sad ratings for the song 1.

Eye of Emotions 1C
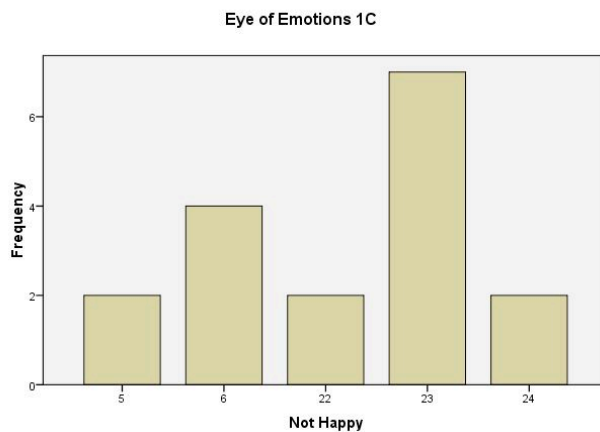
Participants who reported that they had studied/practiced music a lot gave also very similar responses to this musical sample with participants who did not have so strong musical background. Main difference was that *musicians* felt happiness and hopefulness more often than sleepiness like *non-musicians*. These two groups seemed to be a bit on the other sides of the sectors from sleepy to happy (Figures 7 and 8).

Figure 7. The Eye of Emotions: Non-musicians' ratings for the song 1.
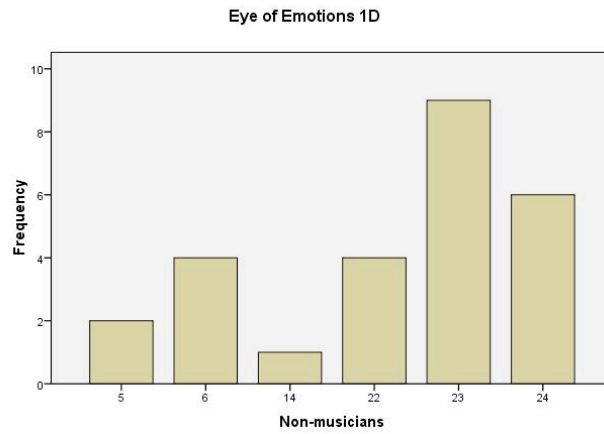
Eye of Emotions 1D

Figure 8. The Eye of Emotions: Musicians' ratings for the song 1.

Eye of Emotions 1E
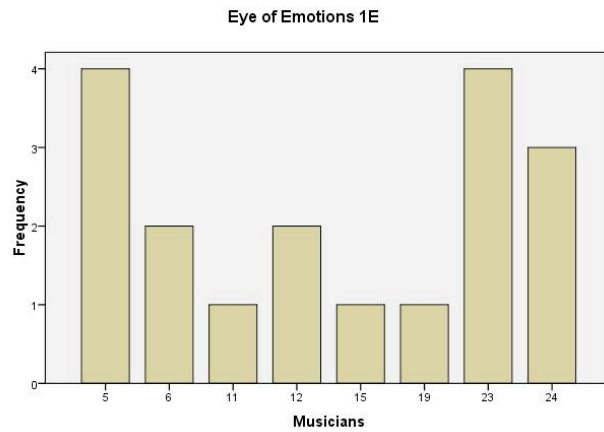
For the model Indicator of Interest the modal value for Mayer's song was 17, which is the second highest rating on the scale *dull-interesting* towards *interesting*. This value was given nine times. Ten of the participants rated the sample on the scale *ordinary-special* and the votes split in half for values 20 and 21, which are the second and third highest ratings towards *ordinary*. Taken together, the participants rated Mayer's song to be pretty interesting but somewhat ordinary too (Figure 9). Most of the participants had not heard the song or did not recognize it from the heard sample (Figure 10).

Figure 9. The Indicator of Interest: Total ratings for the song 1.

Indicator of Interest 1.
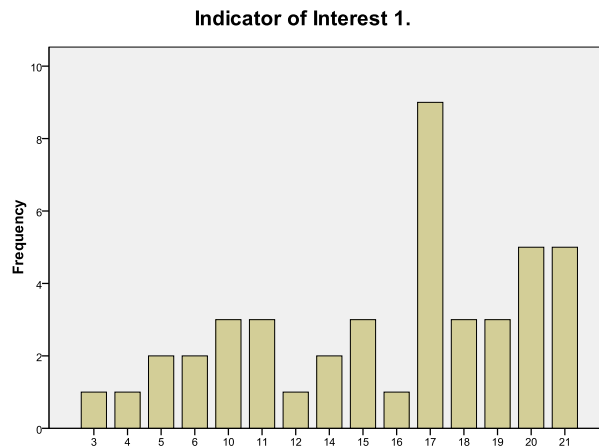
Figure 10. Familiarity of the song 1.

Familiarity 1.
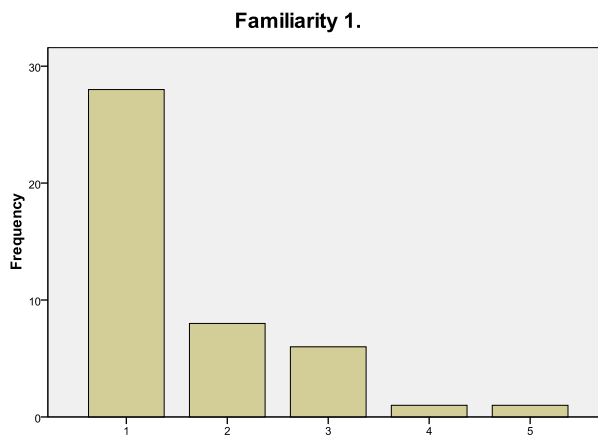
Music Sample 2.0. U2: *Fez Being Born* (intro)

Figure 11. The Eye of Emotions: Total ratings for the song 2.

Eye of Emotions 2.
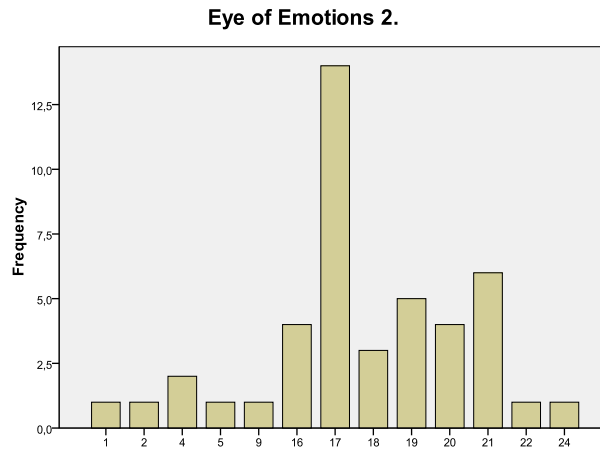
The modal value for the given ratings for U2's song *Fez Being Born* was 17, which is the second highest value on the scale *sleepy-exited* towards *exited*. It was given fourteen times. Fifteen of the participants chose to use the scale *tense-relaxed*. Five of them gave the highest rating (19) towards *tense*. Four of them gave the second highest and six the third highest rating at the same end. Participants clearly rated this sample to be exited and tense on the Eye of Emotion (Figure 11). Happiness or musical background did not make a difference on responses over this music sample (Figures 12, 13, 14 and 15).

**Figure 12. The Eye of Emotions: Happy ratings for the song 2.**
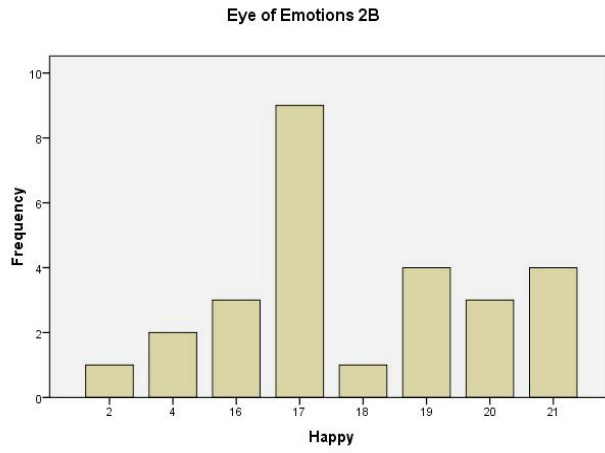
Eye of Emotions 2B

Figure 13. The Eye of Emotions: Sad ratings for the song 2.
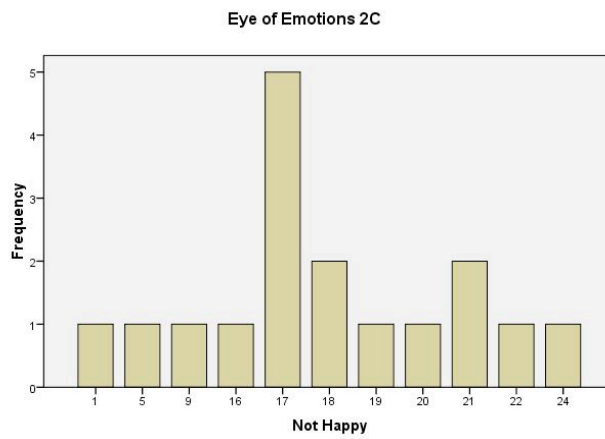
Eye of Emotions 2C

**Figure 14. The Eye of Emotions: Non-musicians' ratings for the song 2.**
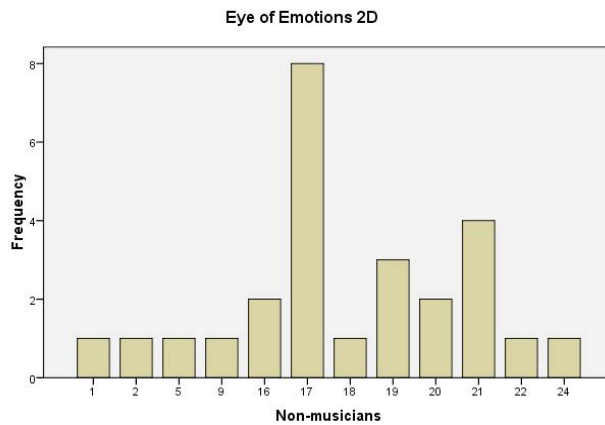
Eye of Emotions 2D

Figure 15. The Eye of Emotions: Musicians' ratings for the song 2.
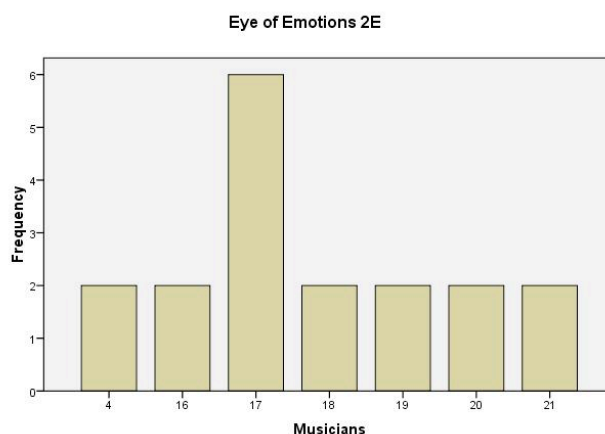
For the model Indicator of Interest the modal value for U2's song *Fez Being Born* was 16, which is the third highest rating on the scale *interesting-dull* towards *interesting*. This value (16) was given six times where as the value 17 (the second highest on the same scale) was given four times.

Values 10, 11 and 12, which are the tree highest values on the scale *boring-fascinating* towards *fascinating*, were given all together nine times. The highest value (12) was given two times, the second highest value (11) three times and the third highest value (10) four times. On the other hand values 19, 20 and 21, which are the highest values on the scale *ordinary-special* towards *ordinary* were given all together six times.

So the modal value (16) pretty much describes participant's opinion of this music sample (Figure 16). U2's *Fez Being Born* seems to be a bit interesting. 33 of total 44 participants did not recognize this music sample (Figure 17).

Figure 16. The Indicator of Interest: Total ratings for the song 2.

Indicator of Interest 2.
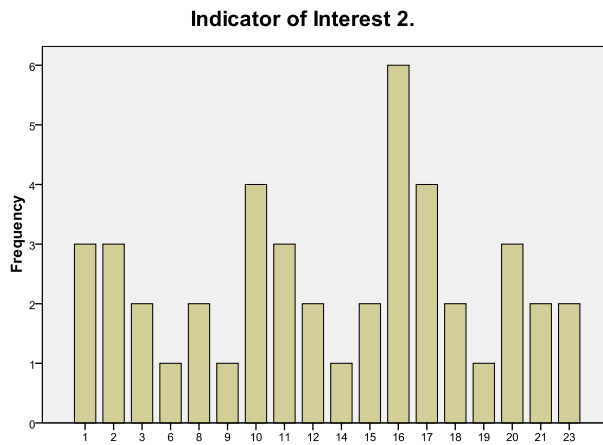
Figure 17. The familiarity of the song 2.

Familiarity 2.
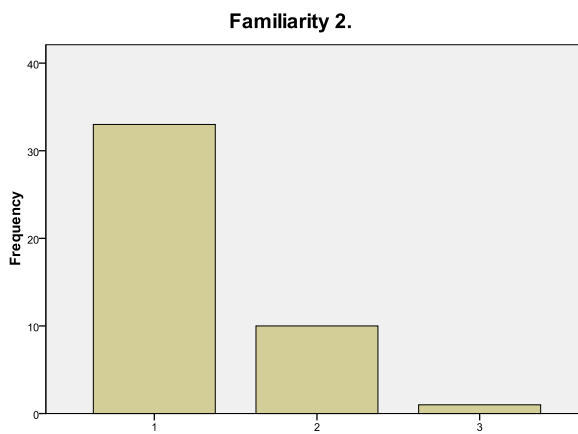
Music Sample 3.0. Elliot: *Requiem* (20 seconds from the instrumental part)

Figure 18. The Eye of Emotions: Total ratings for the song 3.
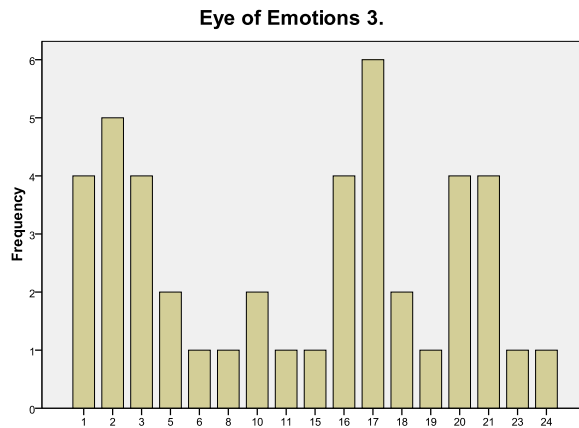
The modal value of given ratings for Elliot's song *Requiem* was 17, which is the second highest rating on the *scale sleepy-excited* towards *exited*. This value (17) was given only six times so it does not tell the whole truth of this music sample even thought the value 16 (the third highest at the same end) was given four times. There can be seen three clusters of ratings. The second cluster is on the scale *frustrated-hopeful* where the tree highest ratings towards *frustrated* were given all together thirteen times. The highest value (1) was given four times, the second highest value (2) five times and the third highest value (3) also four times. The third cluster is on the scale *tense-relaxed*. Values 20 and 21 those are the second and the third highest values towards *tense* was given both four times. These tree clusters are somewhat all equally strong. Participants rated this music sample to be frustrated, tense and excited on the Eye of Emotion (Figure 18). Participants who reported themselves to be happy felt this musical excerpt to be a bit more hopeful than participants who reported to be not happy but over all ratings are almost identical in both groups. Musical background did not also make difference on the ratings over this music sample (Figures 19, 20, 21 and 22).

**Figure 19. The Eye of Emotions: Happy ratings for the song 3.**
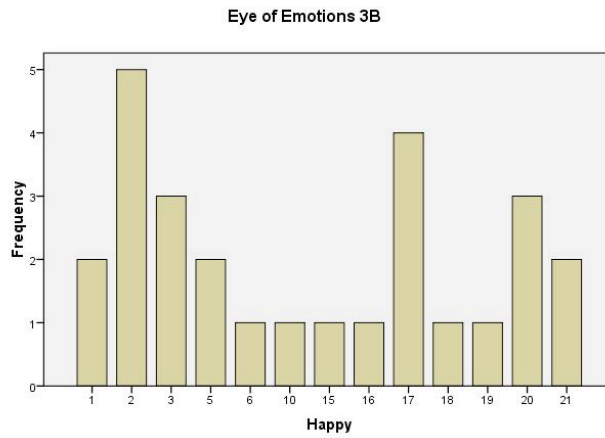
Eye of Emotions 3B

Figure 20. The Eye of Emotions: Sad ratings for the song 3.
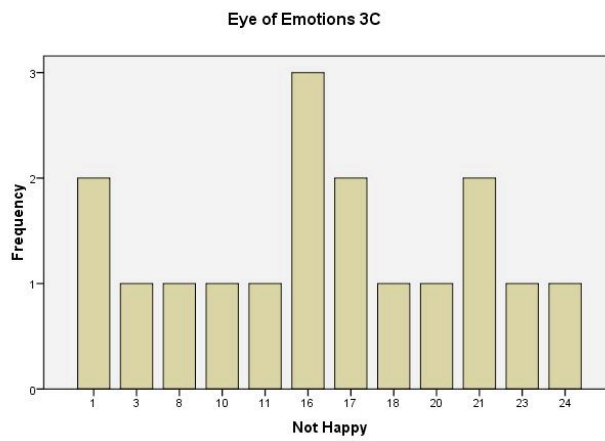
Eye of Emotions 3C

**Figure 21. The Eye of Emotions: Non-musicians ratings for the song 3.**
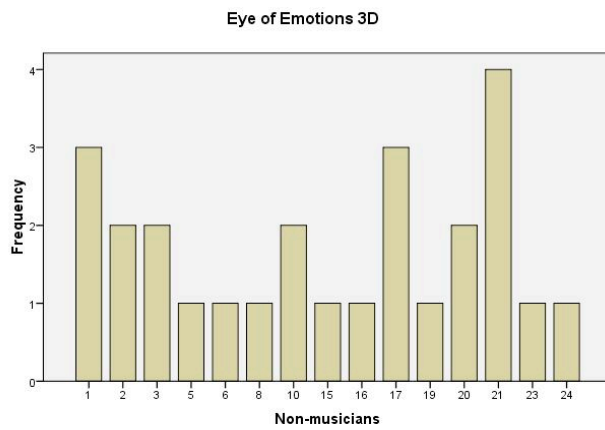
Eye of Emotions 3D

Figure 22. The Eye of Emotions: Musicians ratings for the song 3.

Eye of Emotions 3E
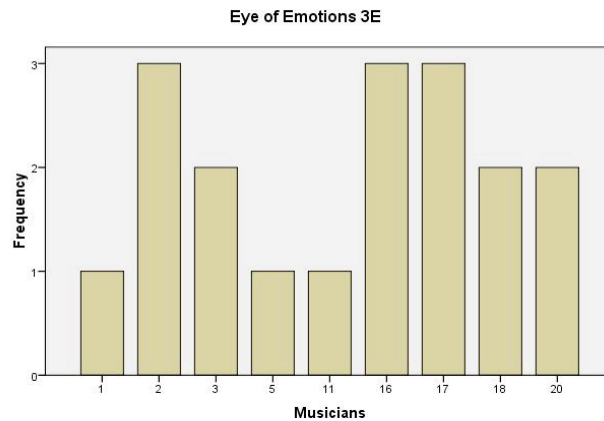
For the model Indicator of Interest the modal value for Elliot's song was 21, which is the third highest rating on the scale *ordinary-special* towards *ordinary*. This value (21) was given seven times. Supporting values (19 and 20) was given together three times. When other ratings seem to be equally strong it seems that participants rated this music sample to be somewhat ordinary (Figure 23). Thought in this case strong dispersion between all the values might tell more than the modal value. The model Eye of Emotions also revealed that there might be something that causes interference in this sample. The song was not familiar to participants (Figure 24).

Figure 23. The Indicator of Interest: Total ratings for the song 3.

Indicator of Interest 3.
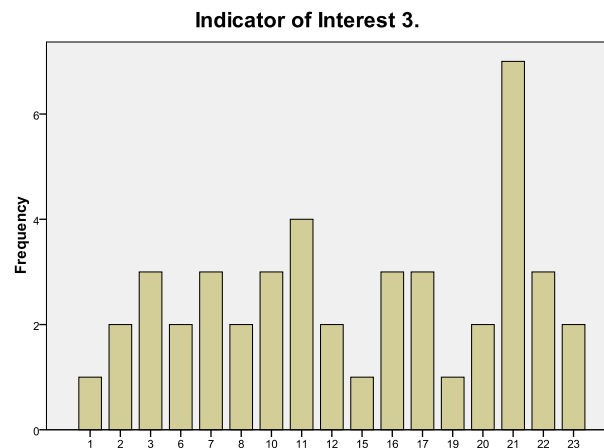
Figure 24. Familiarity of the song 3.

Familiriaty 3.
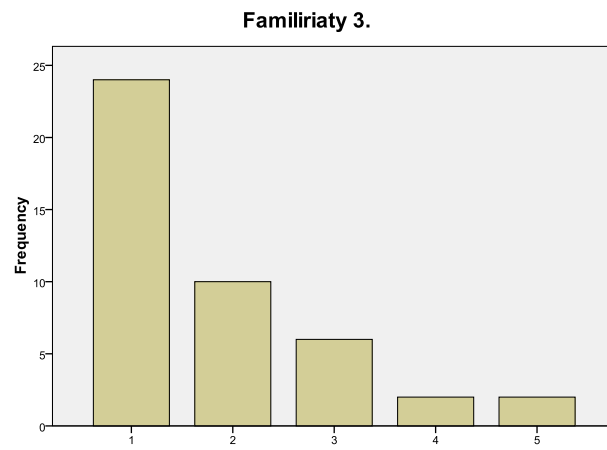
Music Sample 4.0. Crowded House: *Private Universe* (C-part)

Figure 25. The Eye of Emotions: Total ratings for the song 4.
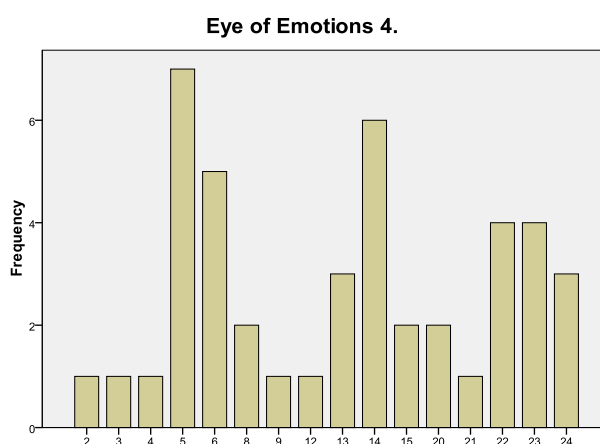
For this musical excerpt the modal value was 5, which is the second highest rating on the scale *frustrated-hopeful* towards *hopeful*. The value was given seven times and supporting value (6), which is the highest at the same end of the scale, was given five times. Values 13, 14 and 15, which are the three highest values on the scale excited-sleepy in the end sleepy were given all together eleven times. The values 22, 23, 24 those are the three highest on the scale *tense-relaxed* at the end *relaxed*, were given all together eleven times as well. There can be found three somewhat equally strong clusters of ratings on this sample also. Participants rated this music sample to be hopeful, relaxed and sleepy on the model Eye of Emotions (Figure 25).

Participants who reported to be not happy felt this musical excerpt to be lightly less relaxed and a bit sleepier than happy participants. Over all these two groups reported very similar emotions. It seems that happy participants rated a bit strongly positive emotions than not happy participants (Figures 26 and 27). Musical background did not make difference on the ratings over this music sample (Figures 28 and 29).

Figure 26. The Eye of Emotions: Happy ratings for the song 4.
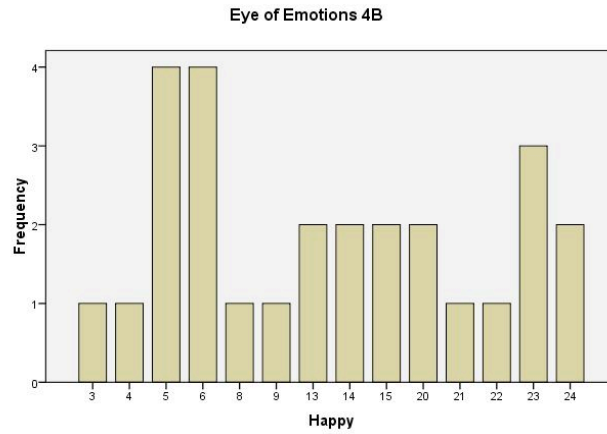
Eye of Emotions 4B

Figure 27. The Eye of Emotions: Sad ratings for the song 4.
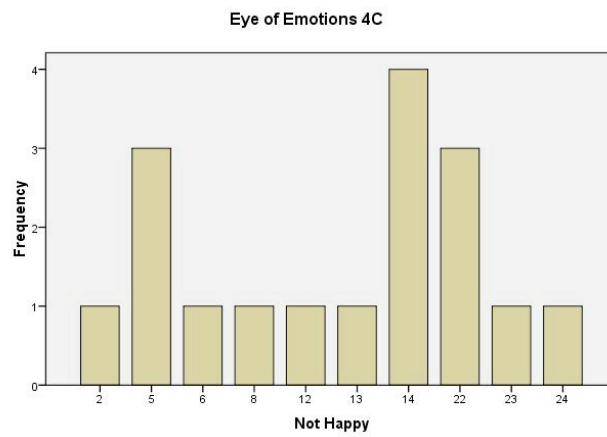
Eye of Emotions 4C

Figure 28. The Eye of Emotions: Non-musicians ratings for the song 4.
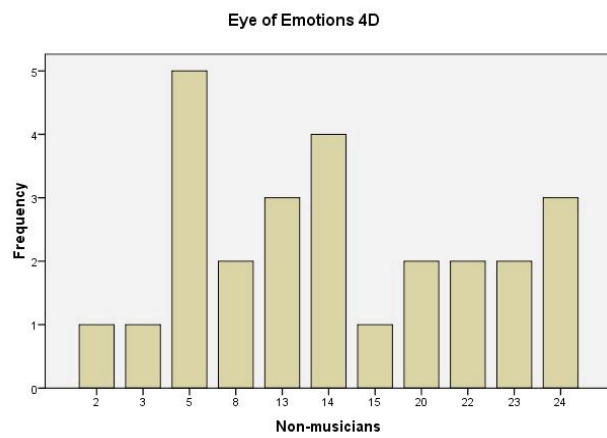
Eye of Emotions 4D

Figure 29. The Eye of Emotions: Musicians ratings for the song 4.
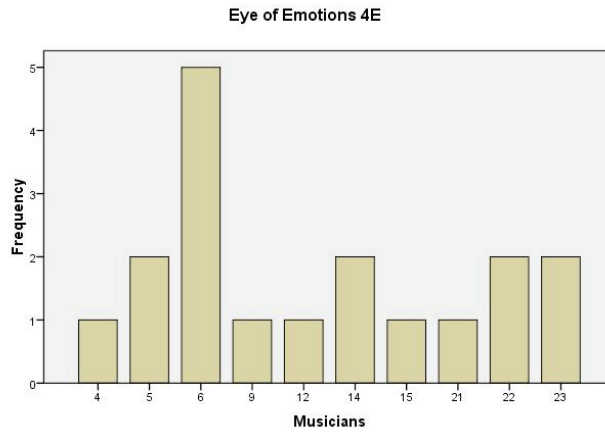
On the model Indicator of interest the modal value of ratings was 11, which is the second highest value on the *scale boring-fascinating* towards *fascinating (*Figure 14). This value (11) was given ten times and comes out as a clear peak from the ratings. I guess in this case we can say that the participant's opinion of this music sample is to be fascinating (Figure 30). The song was not known (Figure 31).

Figure 30. The Indicator of Interest: Total ratings for the song 4.
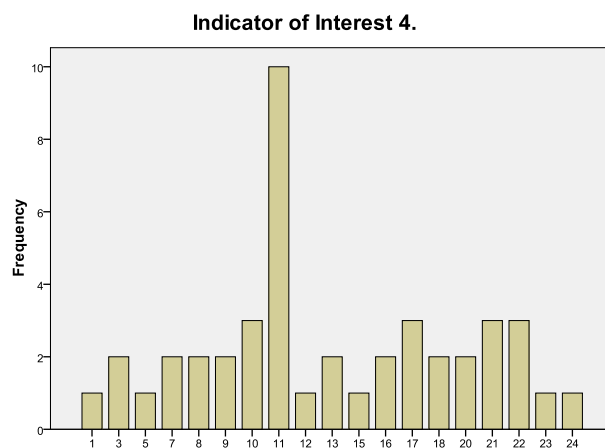
Figure 31. Familiarity of the song 4.

Familiriaty 4.
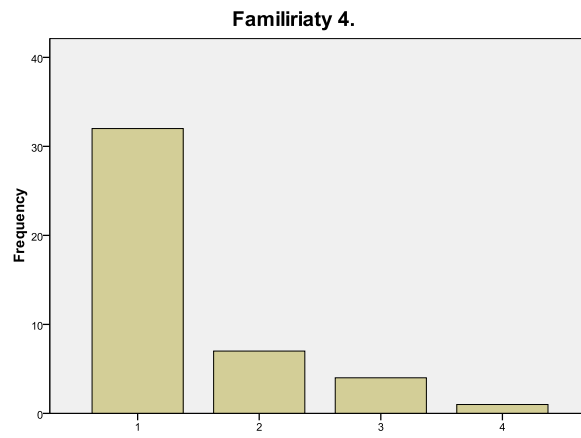
Music Sample 5.0. Radiohead: *Pyramid Song* (intro)

Figure 32. The Eye of Emotions: Total ratings for the song 5.
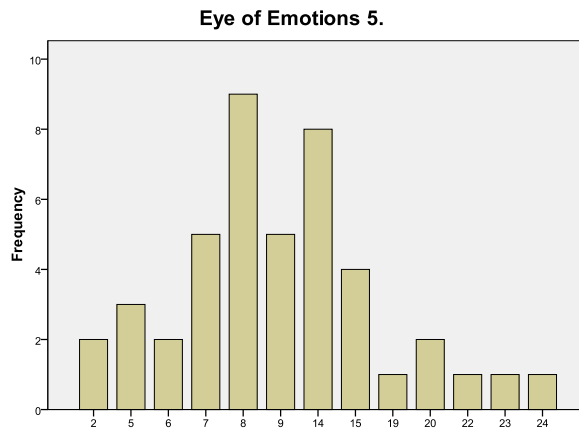
Eye of Emotions 5.

For this musical excerpt the modal value on the model Eye of Emotions was 8, which is the second highest rating on scale *sad-happy* towards *sad* and was given nine times. Supporting values 7 and 9, which are the highest and the third highest rating at the same end of the scale were given five times both. The second and the third highest values (14 and 15) from the neighbour scale *sleepy-excited* were given together twelve times. In complete the model Eye of Emotions clarifies this excerpt to be sad and sleepy (Figure 32).

Figure 33. The Indicator of Interest: Total ratings for the song 5.

Indicator of Interest 5.
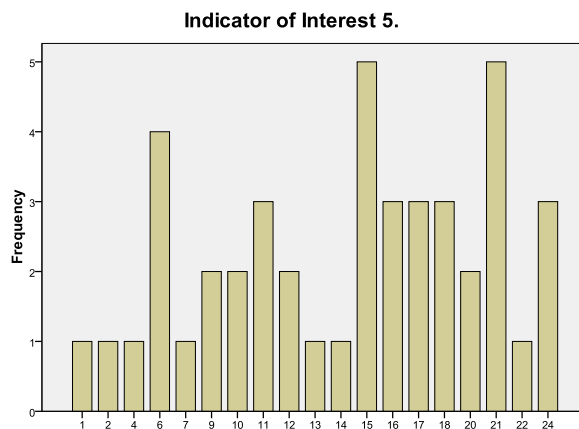
The model Indicator of Interest gave two modal values (15 and 21). The values were given both five times. Value 15 is the third highest rating on the scale *dull-interesting* towards *dull* and value 21 is the third highest value on the scale *ordinary-special* towards *ordinary*. Now as these both are only third highest or should we say lowest rating at the ends of the scales they presents, and as there can be seen strong dispersion among the responses, these modal values might not tell us whole truth about this excerpt. There can also be seen strong cluster on the scale *dull-interesting* towards *interesting* where the three highest values (16, 17 and 18) were given all together nine times.

The highest value (24) on the scale *ordinary-special* towards *special* was given three times and the highest value (6) on the scale *bad-great* towards *great* was given four times. There can also be seen a cluster of ratings on the scale *boring-fascinating* towards *fascinating* where the three highest values (10, 11 and 12) were given all together seven times. Participants rated this excerpt to be more likely interesting, special and fascinating than dull and ordinary on the model Indicator of interest (Figure 33). Also this song was weekly known (Figure 34).

Figure 34. Familiarity of the song 5.
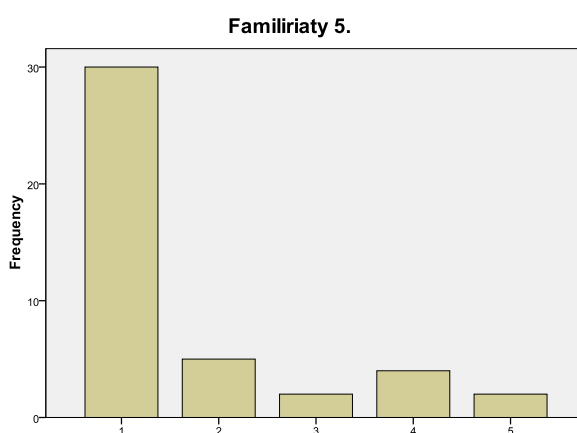
Music Sample 6.0. Moby: *Natural Blues* (intro)

Figure 35. The Eye of Emotions: Total ratings for the song 6.
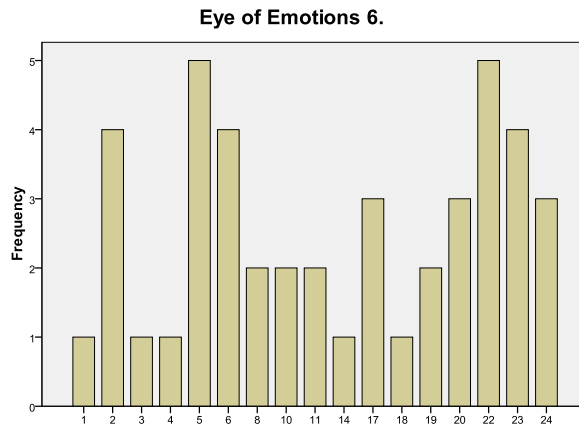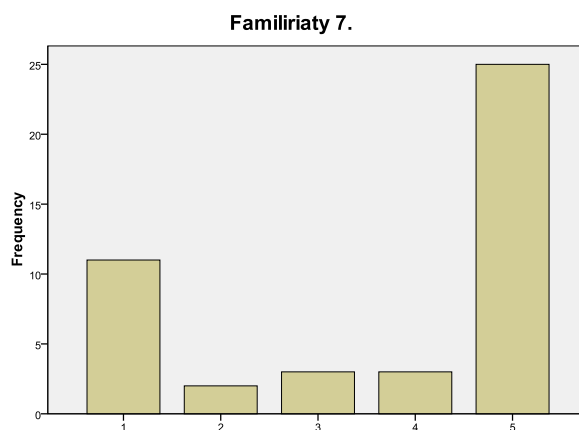

Eye of Emotions 6.

There can be seen two modal values and clusters of ratings for Moby's song *Natural Blues* on the model Eye of Emotion (Figure 19). Modal values are 5, which is the second highest rating on the scale *frustrated-hopeful* towards *hopeful* and 22 which is the third highest rating on the scale *tense-relaxed* towards *relaxed*. These modal values were given both five times.

Value 5 was supported by the highest value (6) at the same end of the scale *frustrated-hopeful*. This value (6) was given four times. Value 22 was supported by values 23 and 24 on the scale *tense-relaxed* towards *relaxed*. These values (23 and 24) were given together seven times.

Participants selected values at the same end of the 'neighbour' scales and rated this musical excerpt to be hopeful and relaxed by the model Eye of Emotions (Figure 35).

Figure 36. The Indicator of Interest: Total ratings for the song 6.

Indicator of Interest 6.
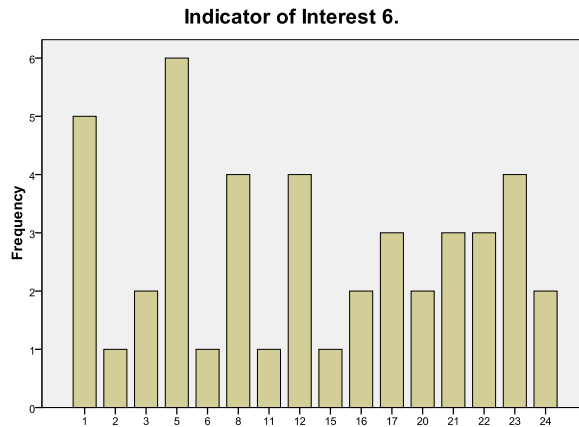
Modal value for Moby's blues on the scale Indicator of Interest was 5, which is the second highest rating on the scale *bad-great* towards *great*. This value (5) was given only six times with out supporting values. On the other hand the second highest peak of the ratings can be seen at the opposite end of the same scale. Value 1, which reflects meaning *bad* was given five times. While other ratings spread out with strong dispersion there cannot be found consensus on the ratings for this sample on the scale Indicator of Interest (Figure 36). That might have something to do with the familiarity of the song (Figure 37). Approximately half of the participants knew the song well and other half did not recognise it at all.

Figure 37. Familiarity of the song 6.

Familiriaty 6.
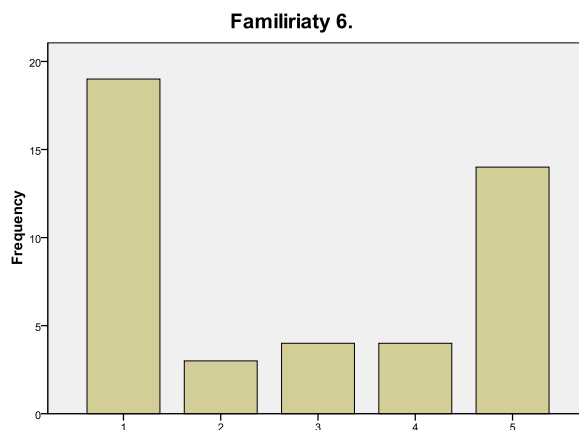
Music Sample 7.0. U2: *One* (last twenty seconds)

Figure 38. The Eye of Emotions: Total ratings for the song 7.

Eye of Emotions 7.
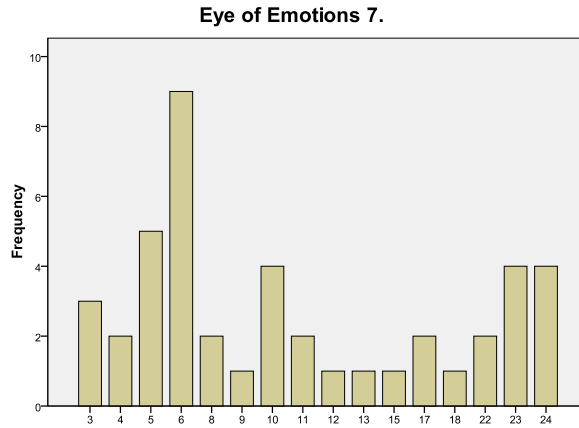
The modal value of given ratings for U2's song *One* was 6. Value (6), which was given nine times, represents the highest value on the scale *frustrated-hopeful* towards *hopeful* and was supported five times with the second highest value (5) on the same end of the scale. There can be also seen a small peak of ratings on the scale *sad-happy* towards *happy* and also on the scale *tense-relaxed* towards *relaxed*. Participants rated this musical excerpt to be hopeful, happy and relaxed by the model Eye of Emotions (Figure 38).

Figure 39. The Indicator of Interest: Total ratings for the song 7.

Indicator of Interest 7.
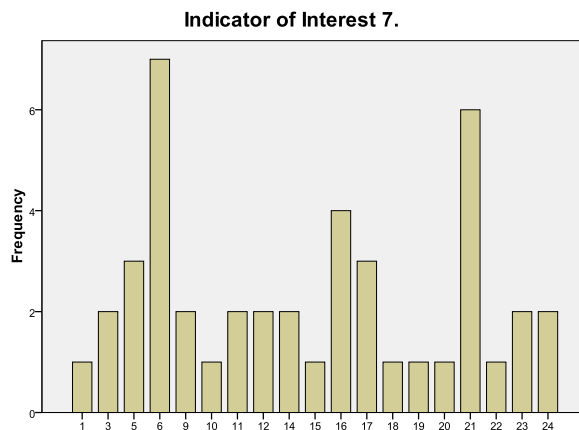
There can be seen two strong peaks in the ratings on the Indicator of Interest for this song. Value 6, which reflects the meaning *great* was the modal value and was given seven times. This value (6) was supported three times by the value 5, which is the second highest rating on the scale *bad-great* at the same end of the scale. Value 21, which is the third highest value on the scale *ordinary-special* towards *ordinary*, was given six times. There can be seen also a small peak on the scale *dull-interesting* towards *interesting*. Participants rated this music sample to be great and interesting but a bit ordinary on the model Indicator of Interest (Figure 39). The song was recognized pretty well (Figure 40).

Figure 40. Familiarity of the song 7.

Music Sample 8.0. Aquila Rose & Idana: *Hotel Buena Vista* (intro)

Figure 41. The Eye of Emotions: Total ratings for the song 8.
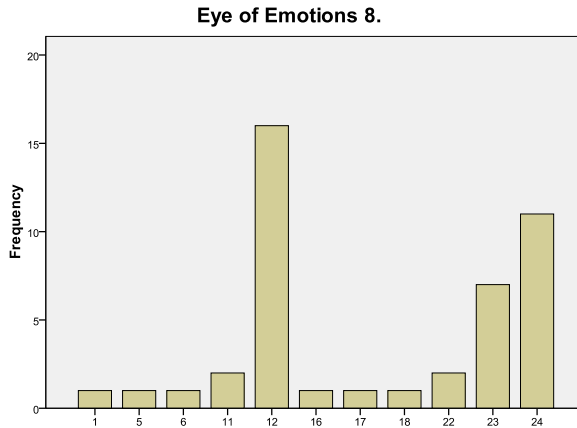
Ratings for *Hotel Buena Vista* are somewhat bi-modal. The modal value on the model Eye of Emotions was 12, which reflects *happy.* The value was given sixteen times. Other peak can be seen on the scale *tense-relaxed* towards *relaxed*. The three highest values of the scale were given all together twenty times. Participants rated this music sample to be happy and relaxed on the Eye of Emotions (Figure 41).

Figure 42. The Indicator of Interest: Total ratings for the song 8.
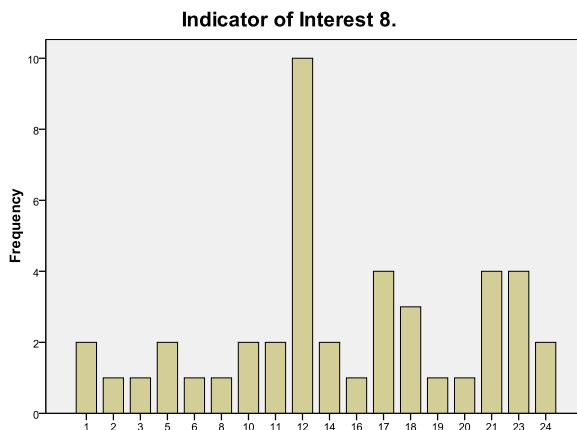
The modal value of ratings on the Indicator of interest was 12, which was given ten times and reflects *fascinating.* There can be seen two other peaks in the ratings. One peak is on the scale *dull-interesting*

towards *interesting* where three highest values (16, 17 and 18) shows up all together eight times. Other peak is on the scale *ordinary-special* where two highest values (23 and 24) were given together six times. Participants rated this musical excerpt to be fascinating, interesting and special by the Indicator of Interest (Figure 42). The sample was poorly known (Figure 43).

Figure 43. Familiarity of the song 8.

Familiriaty 8.
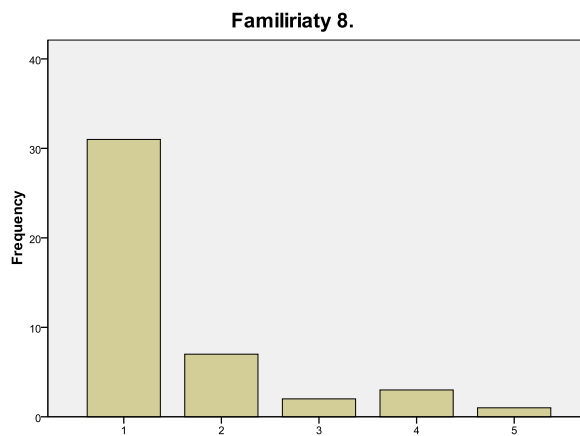
Music Sample 9.0. The Verve: *Bitter Sweet Symphony* (intro)

Figure 44. The Eye of Emotions: Total ratings for the song 9.
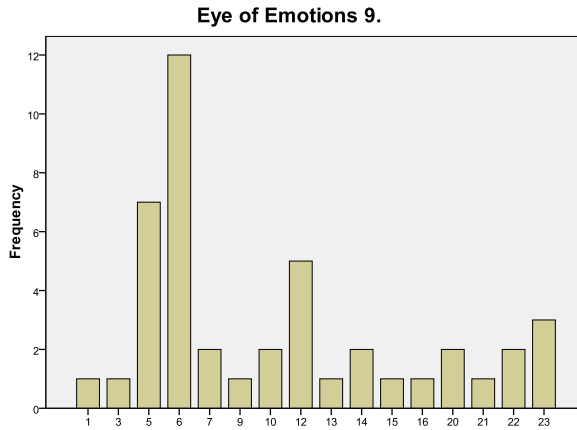
The modal value of given ratings for The Verve's song *Bittersweet Symphony* was 6, which reflects the highest rating towards *hopeful* on the scale *frustrated-hopeful*. It was given twelve times and supported seven times by the value 5, which is the second highest value at the same end of the scale. Two other tiny peaks can be seen at the positive ends of the scales *tense-relaxed* and *sad-happy*. Participants rated Bittersweet Symphony to be hopeful on the model Eye of Emotions (Figure 44).

Figure 45. The Indicator of Interest: Total ratings for the song 9.
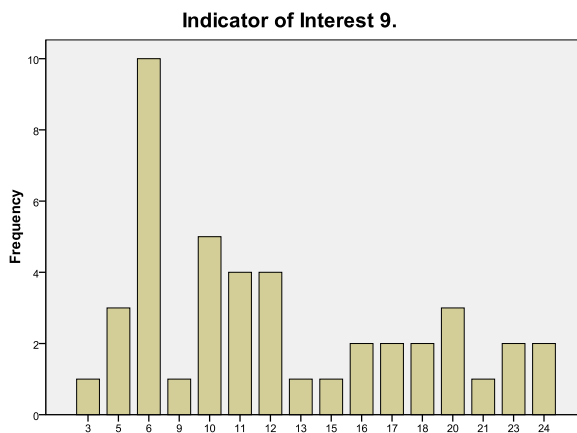
The modal value for this music sample on the scale Indicator of Interest was 6, which is the highest value on the scale *bad-great* towards *great*. It was given ten times and supported three times by the second highest rating (5) at the same end of the scale.

Other peak can be seen on the scale *boring-fascinating* where three highest values at the positive end stand up all together thirteen times. Participants rated this music sample to be great and fascinating on the Indicator of Interest (Figure 45). The sample was quite well known (Figure 46).

Figure 46. Familiarity of the song 9.

Familiriaty 9.
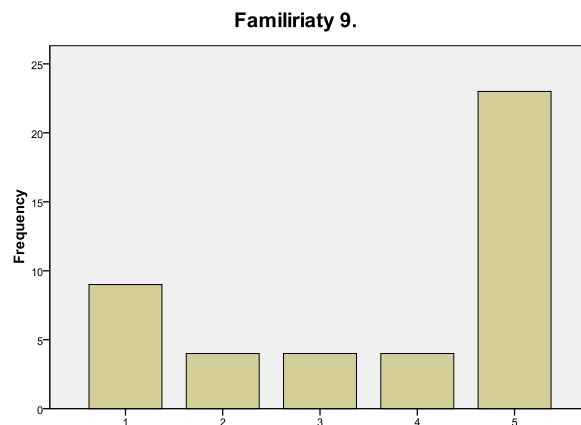
Music Sample 10.0. Moby: *Natural Blues* (Solo part)

**Figure 47. The Eye of Emotions: Total ratings for the song 10.**

Eye of Emotions 10.
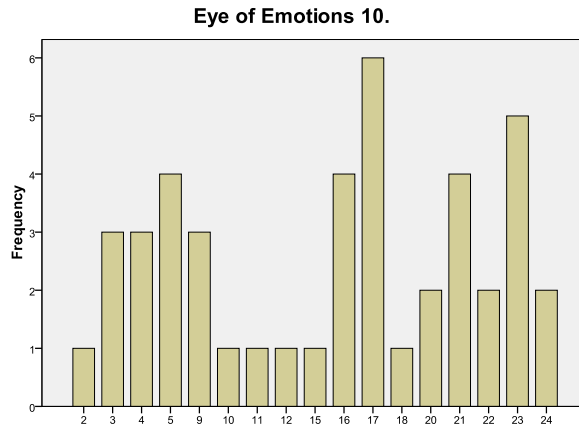
Another sample of Moby's Natural blues (the solo part) was experienced a bit differently than the previous (the intro of the same song), which might tell something about the *dynamics or spectrum of emotions* in the piece. There does not seem to be very strong agreement among the participants on this sample.

The modal value of given ratings for the *solo part* was 17, which is the second highest rating on the scale *sleepy-excited* towards *excited*. This value (17) was given six times and supported four times by the third highest value (16) at the same end of the scale. There can be found two other clusters of ratings on the scale *tense-relaxed* towards *relaxed* and frustrated-*hopeful* towards *hopeful*. Participants rated this sample to be excited, relaxed and hopeful on the model Eye of Emotions (Figure 47).

Figure 48. The Indicator of Interest: Total ratings for the song 10.


Indicator of Interest 10.
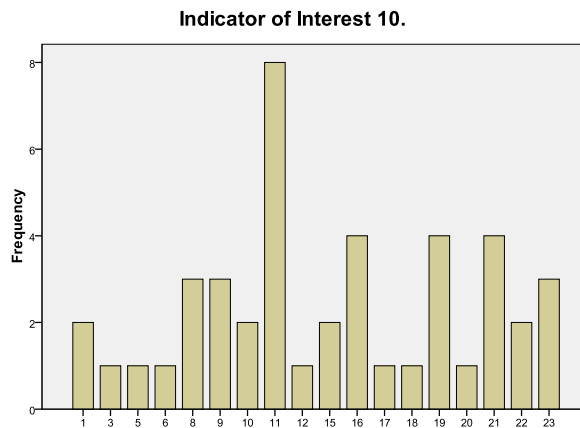
The modal value for the sample on the model Indicator of Interest was 11, which is the second highest value on the scale *boring-fascinating* towards *fascinating*, was given eight times. This value (11) was supported one time with the highest value (12) and two times with the third highest value (10) at the same end of the scale. Another ratings spread pretty homogenously. Participants rated this sample to be somewhat fascinating on the model Indicator of Interest (Figure 48). The sample was poorly recognised (Figure 49).

Figure 49. Familiarity of the song 10.

Familiriaty 10.
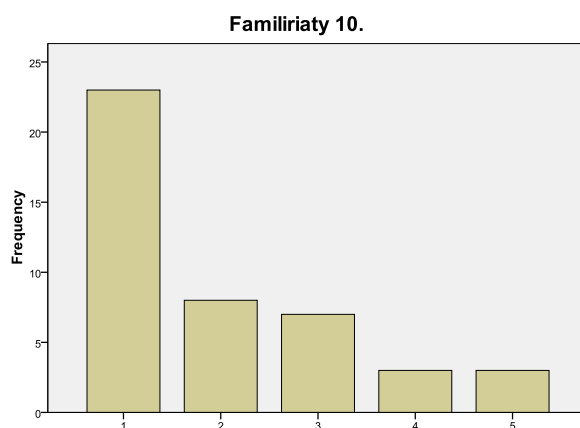
**Music Sample 11.0.** Paola: *Above the Candystore* (chorus)

Figure 50. The Eye of Emotions: Total ratings for the song 11.
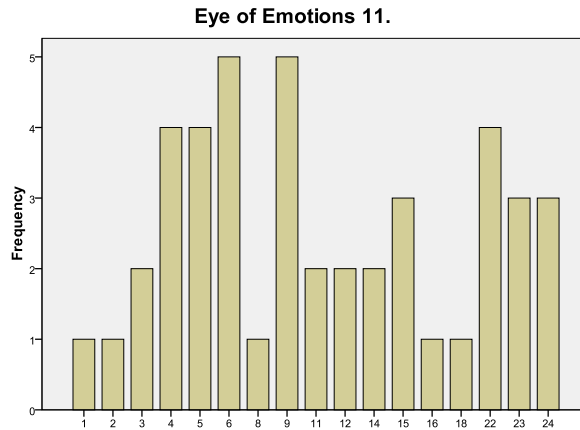
For Paola's *Above the Candystore* the given ratings on the Eye of Emotions were bi-modal. Values 6 and 9 were both given five times. Value 6 is the highest rating on the scale *frustrated-hopeful* towards *hopeful*. This value (6) was supported ten times by the second and the third highest values (4 and 5) at the same end of the scale. The value 9 is the third highest rating on the scale *sad-happy* towards *sad* and was supported only one time with the second strongest value 8 in the same end of the scale.

On the scale *tense-relaxed* can also be seen notable cluster of ratings. Tree highest values (22, 23 and 24) towards *relaxed* were given all together ten times. Participants rated this musical excerpt to be mainly hopeful and relaxed but also a bit sad too (Figure 50).

Figure 51. The Indicator of Interest: Total ratings for the song 11.

Indicator of Interest 11.
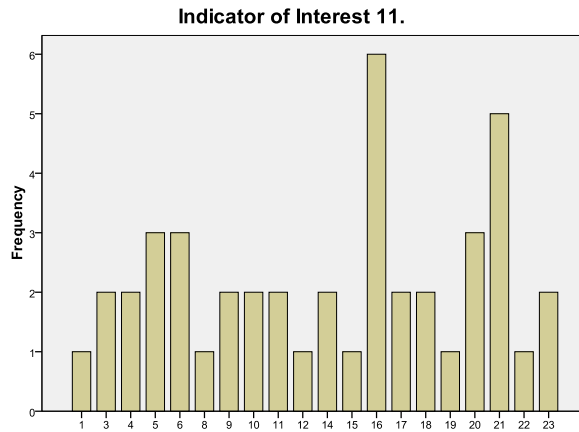
The modal value for this music sample on the model Indicator of interest was 16, which is the third highest value on the scale *interesting-dull* towards *interesting*. It was given six times and supported four times by the second highest and the highest values (17 and 18) at the same end of the scale. Another notable cluster of ratings can be seen on the scale *ordinary-special* towards *ordinary* where the three highest values (19, 20 and 21) were given all together nine times. Participants rated this sample to be something between ordinary and interesting with the model Indicator of Interest (Figure 51). About a half of participants recognised the song (Figure 52).

**Figure 52. Familiarity of the song 11.**

Familiriaty 11.
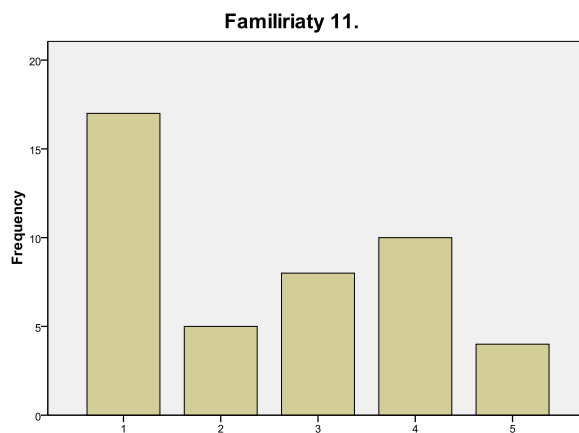
Music Sample 12.0. Radiohead: *Planet Telex* (second verse)

Figure 53. The Eye of Emotions: Total ratings for the song 12.
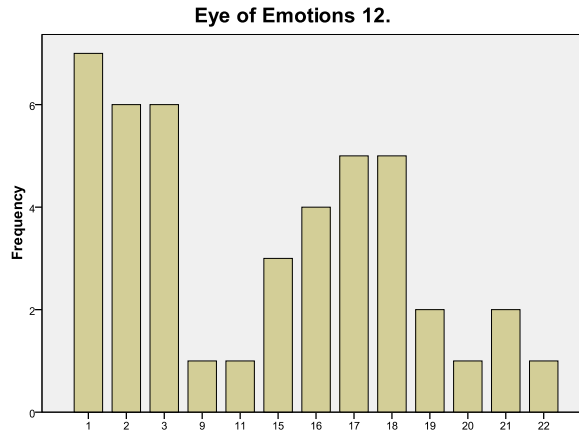
On the Eye of Emotion the modal value of given ratings for Radiohead's song *Planet Telex* was 1, which is the highest value on the scale *frustrated-hopeful* towards *frustrated.* This value (1) was given seven times where as its neighbour values (2 and 3) were given both six times. There can be seen clear cluster of ratings for *frustrated* emotion. Another nearly as strong cluster of ratings can be seen on the scale *sleepy-excited* towards *excited* where the three highest values (16, 17 and 18) were given all together fourteen times. Participants rated this musical sample to be something between frustrated and excited (Figure 53).

Figure 54. The Indicator of Interest: Total ratings for the song 12.
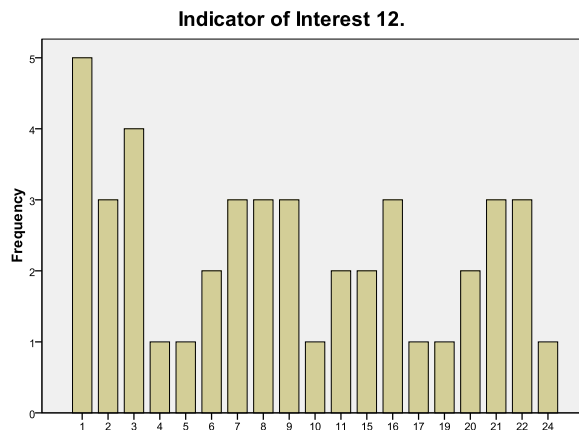
The modal value of given ratings for *Planet Telex* on the Indicator of Interest was 1, which reflects the highest rating on the scale *bad-great* towards *bad.* This value (1) was given only five times so it does not tell all about the issue. In this case participants opinions spread more widely than with any other cases. Values 1, 2 and 3, which are the highest ratings on the scale *bad-great* towards *bad*, were given all together twelve times. These values (1, 2 and 3) were supported by the three highest values (7, 8 and 9) on the scale *boring-fascinating* towards *boring*, which were given all together nine times. This sample seems to capture something that is commonly felt to be bad and boring but might also give some of us completely opposite reflections (Figure 54).
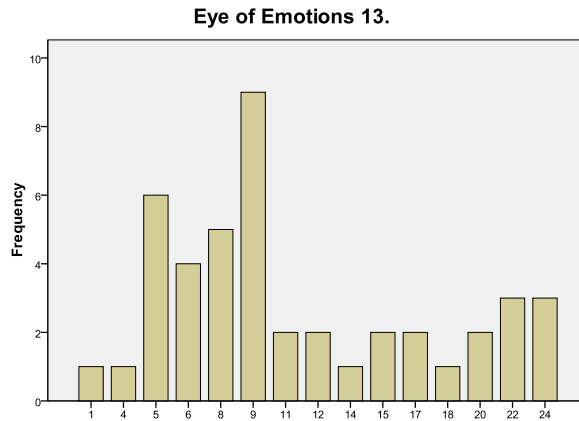
About a half of participants did not recognise the sample at all but on the other hand about ten percent knew the excerpt very well (Figure 55). This might have something to do with the dissonance of the ratings.

**Figure 55. Familiarity of the song 12.**
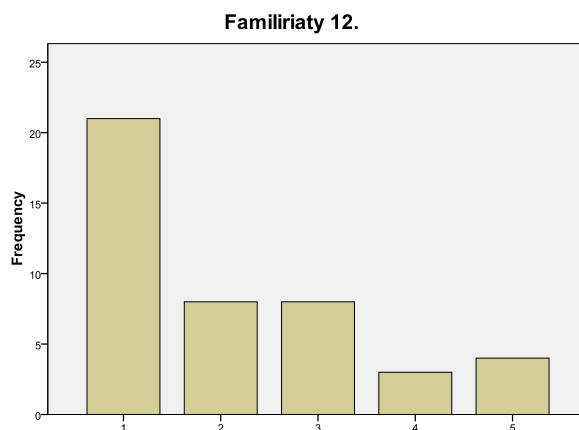
Music Sample 13.0. Elliot: *The Real Thing* (intro)

Figure 56. The Eye of Emotions: Total ratings for the song 13.

Participants gave ratings for Elliot's song *The Real Thing* mostly with the scales *sad-happy* and *frustrated-hopeful*. The modal value was 9, which is the third highest rating on the scale *sad-happy* towards *sad*. This value (9) was given nine times, which is approximately 20 percent of the participants, and supported five times by the second highest value (8) at the same end of the scale. Values 5 and 6, which are the two highest ratings on the scale *frustrated-hopeful* towards *hopeful*, were given together ten times. Four of the participants considered this sample to be happy. Participants rated this music excerpt to be sad and hopeful on the Eye of Emotions (Figure 56).
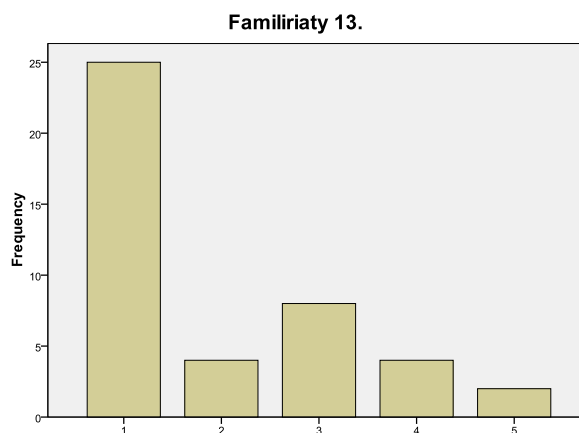
Figure 57. The Indicator of Interest: Total ratings for the song 13.
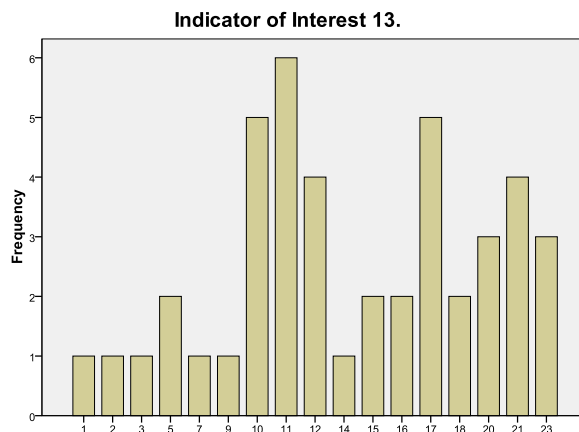
On the model Indicator of Interest the modal value of given ratings was 11, which is the second highest value on the scale *boring-fascinating* towards *fascinating*. The value was given six times and supported by its 'neighbour' values (the third highest and highest value at the same end of the scale) together nine times. Value 17, which reflects *interesting*, was given five times. Also values 20 and 21, which reflect *ordinary*, were given together seven times.

Most of the ratings fall in to the sectors between *ordinary* and *fascinating* emphasizing towards *fascinating.* There was not much power at the ends *bad* and *great* and so participants rated this sample to be a bit better than average on the Indicator of Interest (Figure 57). This music sample was poorly recognized (Figure 58).

**Figure 58. Familiarity of the song 13.**

Music Sample 14.0. Giovanni T. Albinoni: *Adagio in G minor* (main theme)

Figure 59. The Eye of Emotions: Total ratings for the song 14.
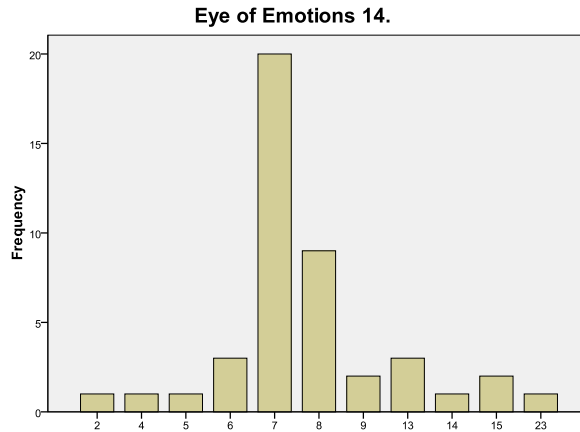
The modal value of given ratings for *Adagio in G Minor* was 7, which is the highest rating on the scale *sad-happy* towards *sad*. This value (7) was given twenty times and supported nine times by the second highest value (8) at the same end of the scale. Participants rated this sample to reflect sad emotion (Figure 59).

**Figure 60. The Indicator of Interest: Total ratings for the song 14.**
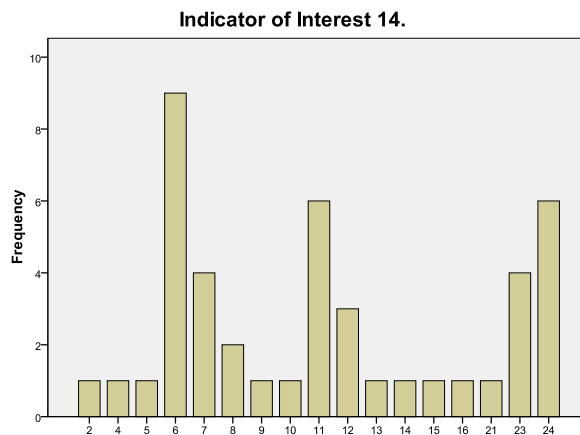
The model Indicator of Interest shows four clusters of ratings for *Adagio*. The highest peak is on the scale *bad-great* towards *great* where the highest value (6) was given nine times. The second highest peak can be seen on the scale *ordinary-special* towards *special*, where two highest values (23 and 24) were given together ten times. Third and

fourth peak can be found on the scale *boring-fascinating*. Third highest peak is at the end *fascinating* where two highest values (11 and 12) were given together nine times. Surprisingly there is also a tiny peak at the opposite end of the same scale where values 7 and 8 were given together six times. This sample clearly raises extreme reflections mainly in positive ways. Participants rated this musical excerpt to be great, special and fascinating on the Indicator of Interest (Figure 60). Participants recognised this music sample well (Figure 61).

Figure 61. Familiarity of the song 14.

Familiriaty 14.
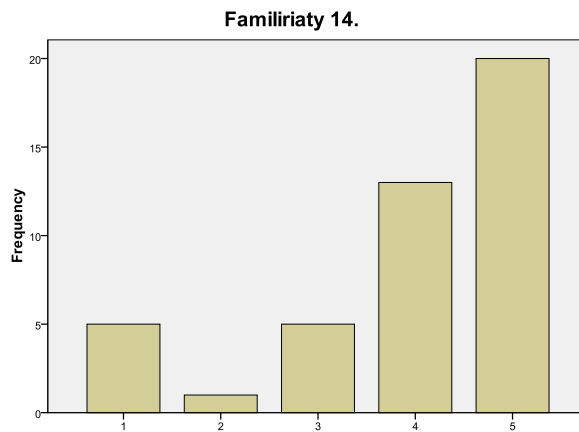
**Music Sample 15.0.** Garl Orff: *O. Fortuna* (first twenty seconds)

Figure 62. The Eye of Emotions: Total ratings for the song 15.
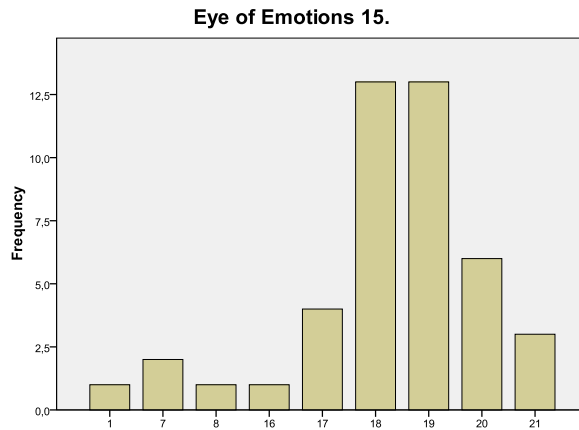
The given ratings For *O. Fortuna* stand out to be bi-modal. Values 18 and 19 were given both thirteen times. The value 18 represents the highest value on the scale *sleepy-excited* towards *excited* and were supported by 'neighbour' value (17) four times. Value 19 reflects the highest value on the scale *relaxed-tense* towards *tense* and was supported by the 'neighbour' value (20) six times.

These two peaks of ratings cover approximately 80 percent of participants' opinions. Although ratings spread between two different scales it is probably because the conceptual difference between *tense* and *excited* might be difficult to recognise. Participants' rated this sample to be tense and excited by the Eye of Emotions (Figure 62).

**Figure 63. The Indicator of Interest: Total ratings for the song 15.**

Indicator of Interest 15.
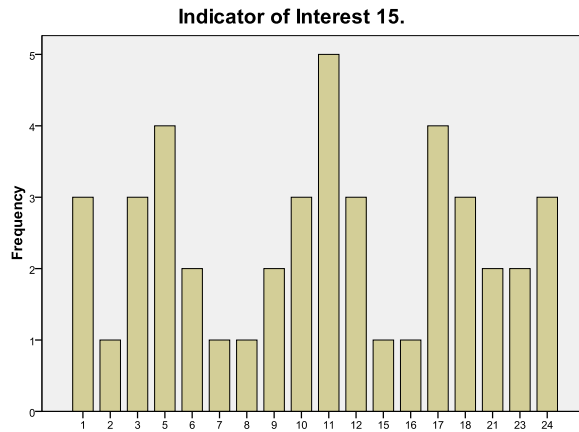
There can be seen three peaks of ratings by Indicator of Interest for *O. Fortuna.* The modal value of given ratings is 11, which is the second highest rating on the scale *boring-fascinating* towards *fascinating*. It was given only five times but supported by its 'neighbour' values (10 and 12) together six times. There can also be seen a peak on the scales *bad-great* towards *great* and *interesting-dull* towards *interesting*. Participants rated this musical excerpt to be somewhat fascinating, interesting and great on the Indicator of Interest (Figure 63). About a half of participants recognized this music sample (Figure 64).

Figure 64. Familiarity of the song 15.


Familiriaty 15.
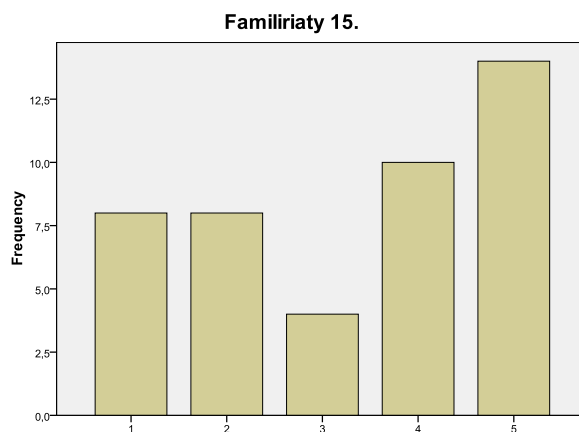
Music Sample 16.0. J. S. Bach: *Cello Suite No.1* (first twenty seconds)

Figure 65. The Eye of Emotions: Total ratings for the song 16.
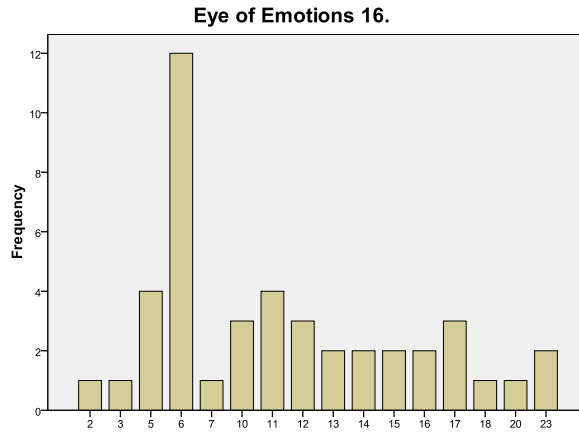
The modal value of given ratings for *Cello Suite No.1* by Johan Sebastian Bach was 6, which is the highest rating on the scale *frustrated-hopeful* towards *hopeful.* It was given twelve times and supported four times by its 'neighbour' value (the second highest at the same end of the scale) 5. Values 11, 12 and 10, which reflect happiness was given all together ten times. Participants rated this music sample to be happy and hopeful on the model Eye of Emotions (Figure 65).

Figure 66. The Indicator of Interest: Total ratings for the song 16.
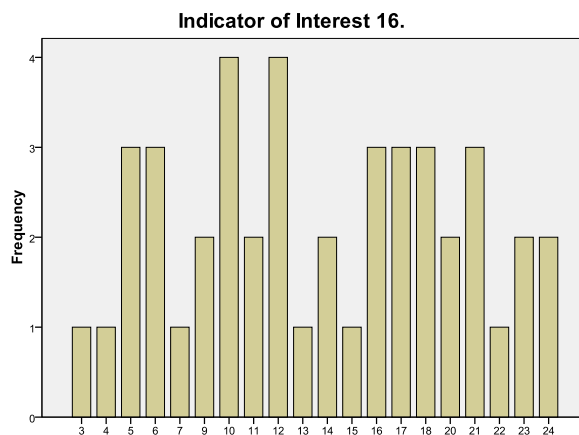
Indicator of Interest reveals two modal values (10 and 12) on the scale *boring-fascinating* towards *fascinating.* They were both given four times and supported two times by the value 11 at the same end of the scale. 22, 7 percent of participants rated this sample to be fascinating. Values 16, 17, and 18 those reflects *interesting* was given all together nine times. 13, 6 percent of participants rated this excerpt to be great. Participants rated this sample to be fascinating, interesting and great (Figure 66). About a half of participants recognized this sample (Figure 67).

Figure 67. Familiarity of the song 16.

Familiriaty 16.
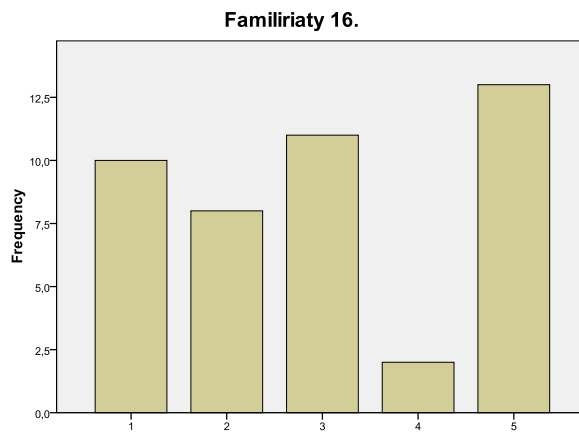
Music Sample 17.0 Coldplay: *Clocks* (intro)

Figure 68. The Eye of Emotions: Total ratings for the song 17.

Eye of Emotions 17.

There can be seen two clear peaks in the ratings of the model Eye of Emotions for Coldplay's song *Clocks.* Strongest peak is on the scale *frustrated-hopeful* towards *hopeful* where two highest values (5 and 6) where given together eighteen times. The modal value of ratings was 6. Another peak can be found on the scale *tense-relaxed* towards *relaxed* where two highest values (23 and 24) were given together eleven times. Participants rated this musical sample to be hopeful and relaxed by the Eye of Emotions (Figure 68).

Figure 69. The Indicator of Interest: Total ratings for the song 17.

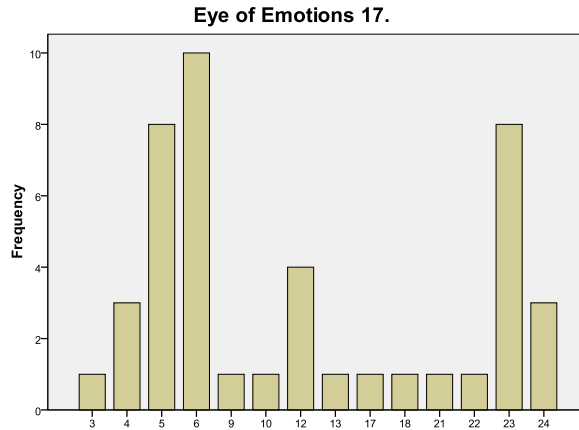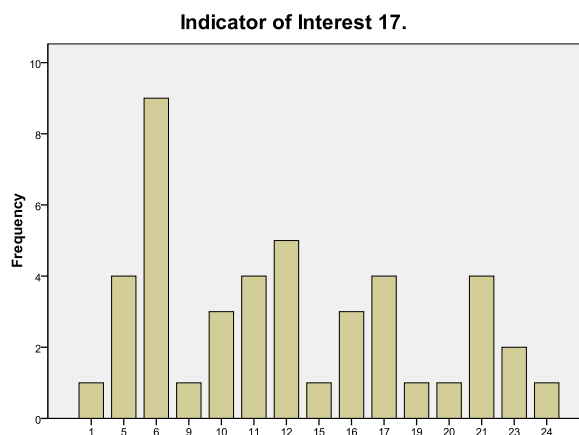Indicator of Interest 17.

29, 6 percent of participants rated this sample to be great on the model Indicator of Interest. The modal value was 6, which is the highest value on the scale *bad-great* towards *great*. 27, 3 percent of participants rated this sample to be *fascinating.* Values 10, 11 and 12, which reflects *fascinating* were given all together twelve times. Participants rated this sample to be great and fascinating on the model Indicator of Interest (Figure 69). This sample was pretty well known (Figure 70).

Figure 70. Familiarity of the song 17.

Familiriaty 17.
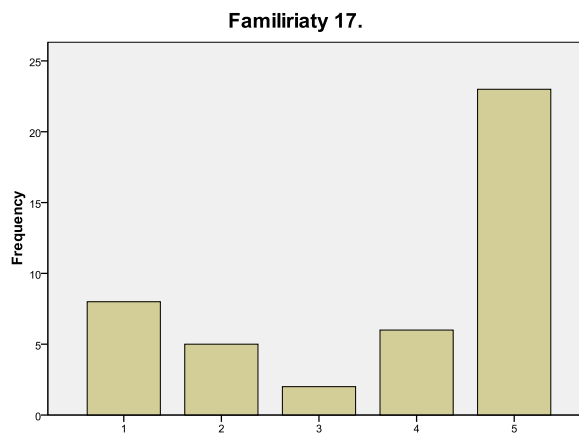
Music Sample 18.0. Coldplay: *Life in Technicolor* (intro)

Figure 71. The Eye of Emotions: Total ratings for the song 18.
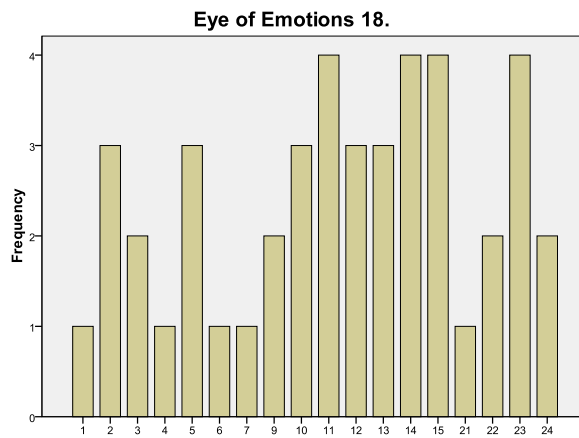
Ratings on the model Eye of Emotions can be found four modal values for Coldplay's song *Life in Technicolor*, which tells about a wide dispersion among the participant's opinions. 25 percent of participants considered the song to be sleepy. 22, 7 percent of participants felt the song to be happy and 18, 1 percent perceived mostly relaxed emotions. Participants rated this musical excerpt to be relaxed, sleepy and happy (Figure 71).

Figure 72. The Indicator of Interest: Total ratings for the song 18.
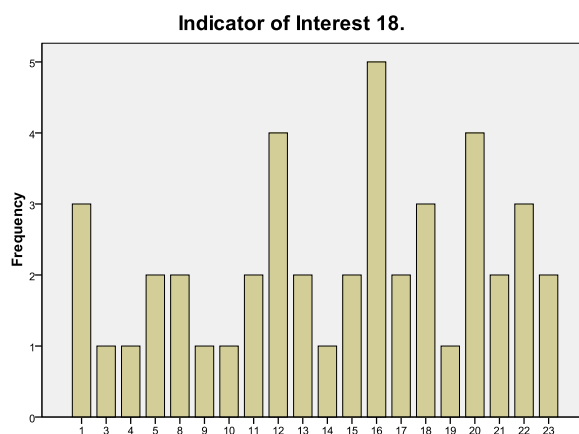
There was also strong dispersion among the ratings on the model Indicator of Interest for this sample. The modal value for this excerpt was 16, which is the third highest value on the scale *dull-interesting*

towards *interesting*. This was supported by the highest values (18 and 17), at the same end of the scale, together five times. 22, 7 percent of participants considered this sample to be interesting. 13, 6 percent of participants considered this sample to be somewhat fascinating where as 15, 9 percent of participants felt this excerpt to be ordinary (Figure 72. The sample was poorly known (Figure 73).

Figure 73. Familiarity of the song 18.

Familiriaty 18.
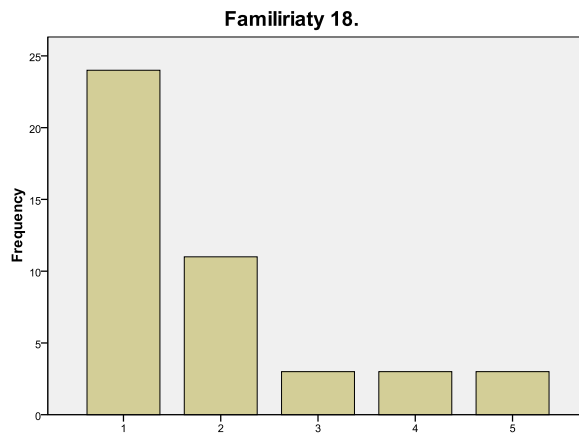
Music Sample 19.0. Black Sabbath: *Sabbath Bloody Sabbath* (solo part)

Figure 74. The Eye of Emotions: Total ratings for the song 19.
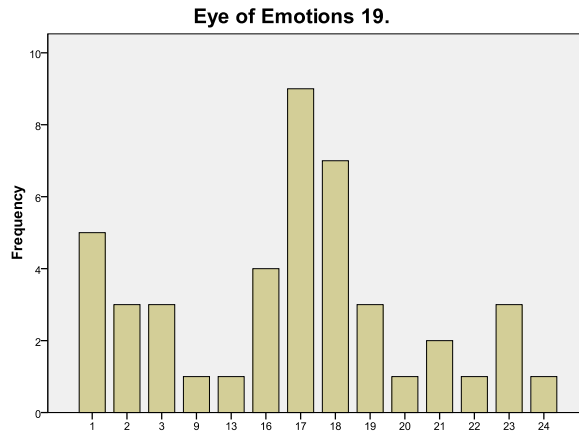
The modal value of given ratings on the model Eye of Emotions for Black Sabbath's song *Sabbath Bloody Sabbath* was 17, which is the second highest value on the scale *sleepy-tense* towards *tense.* It was given nine times and supported by its 'neighbour' values (16 and 18) together eleven times. 45, 5 percent of participants considered this sample to be tense. 25 percent of participants felt this song to be frustrated. Participants rated this excerpt to be tense and frustrated on the model Eye of Emotions (Figure 74).

Figure 75. The Indicator of Interest: Total ratings for the song 19.
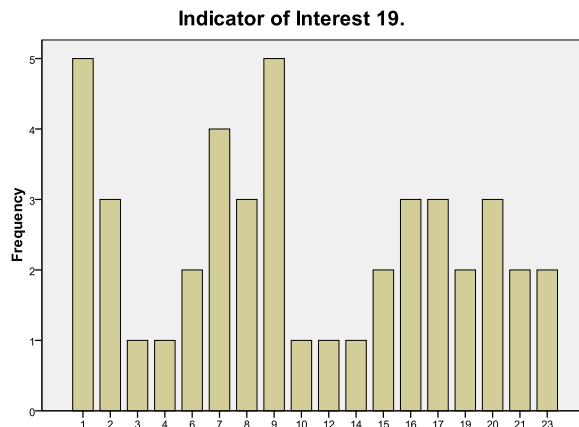
There can be seen two modal values in the ratings of the model Indicator of Interest for this music sample. Value 9, which is the third highest value on the scale *boring-fascinating* towards *fascinating* and value 1, which is the highest rating on the scale *bad-great* towards *great* were given five times. 20, 3 percent of participants considered this sample to be bad and 27, 3 percent of participants felt the song to be frustrating. Still 13, 6 percent experienced this song to be interesting and 15, 8 percent considered the sample to be just ordinary. Participants rated this musical excerpt to be mainly bad and frustrating (Figure 75). The sample was poorly known (Figure 76).

Figure 76. Familiarity of the song 19.
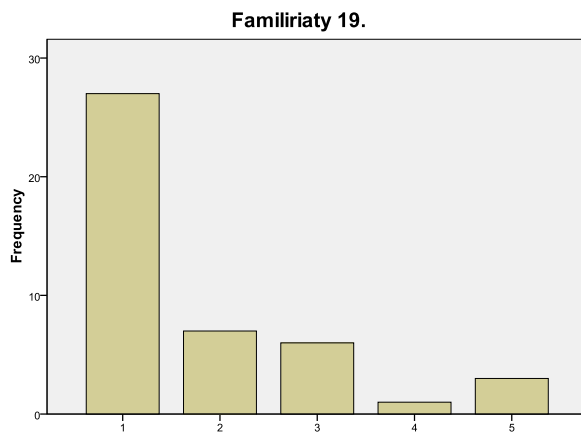
Music Sample 20.0. J. Denver: *Take Me Home - Country Roads* (Chorus)

Figure 77. The Eye of Emotions: Total ratings for the song 20.

Eye of Emotions 20.

The modal value of given ratings on the model Eye of Emotions for John Denver's song *Take Me Home – Country Roads* was 6 and it was given thirteen times. This value (6) is the highest rating on the scale *frustrated-hopeful* towards *hopeful.* 40, 8 percent of participants experienced this sample to e hopeful. 22, 7 percent of participants considered the sample to be mostly relaxed. Participants rated this musical excerpt to be hopeful and relaxed on the model Eye of emotions (Figure 77).

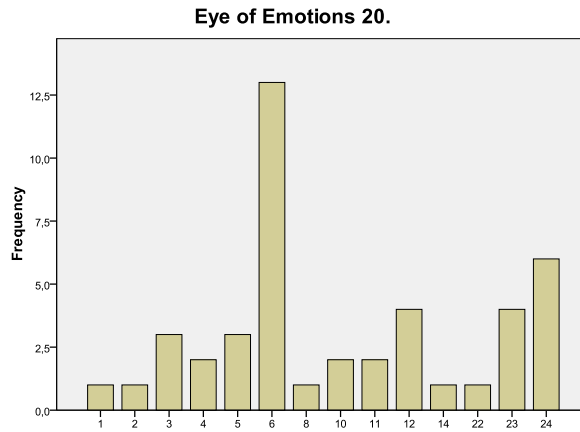**Figure 78. The Indicator of Interest: Total ratings for the song 20.**

Indicator of Interest 20.
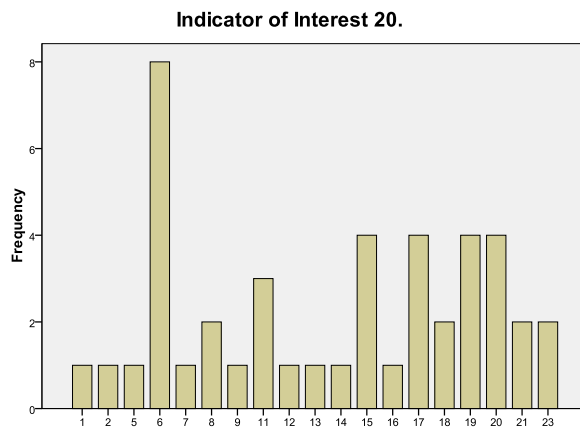
The modal value on the model Indicator of Interest for this musical excerpt was 6, which is the highest rating on the scale *bad-great* towards *great.* It was given eight times. 20, 5 percent of participants experienced this sample to be great. 22, 7 percent of participants considered this sample to be mostly ordinary where as 13, 7 percent of participants felt this song to be dull (Figure 78). There was pretty wide dispersion among the participants' opinions about this song. This might be due to participants' age distribution and familiarity of the song. About a half of participants recognised this musical excerpt pretty well (Figure 79).

Figure 79. Familiarity of the song 20.

Familiriaty 20.
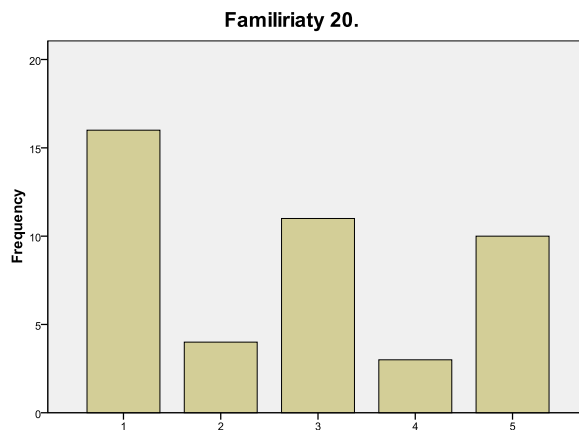
6.0 CONCLUSION

Before the listening test took place, the participants answered to some questions on a scale from one to five about their musical backgrounds, preferences, emotional states etc. Nearly all participants reported that they regulate their emotional states with music. According to the current research, music has profound role in the participants' everyday emotional life.

The first aim of this research was to test two new models, *the Eye of Emotions* and *the Indicator of Interest*, in practice. These indicators were used for the first time in the current research (See chapter 4.2).

The idea of merging together categorical and dimensional model-structures of *basic emotions*, which have been commonly used in music-related emotion research, and forcing participants to choose only one value at the time from all of the possible dimensions of the used models (*the Eye of Emotions and the Indicator of Interest*) worked as planned.

Participants reported that they had very similar emotional experiences while listening to the same musical excerpts. With most of the music samples there were strong clusters of ratings on the certain dimensions of the scales. Most of the time, when more than one modal value was found, the newly given values were in the adjoining scales. This shows that the emotions and adjectives were in the correct order in the models. In practice, these both models *(the Eye of Emotions* and *the Indicator of interest)* one supporting each another, revealed to be well working, strict and useful tools in capturing and analyzing the data concerning participants' emotional experiences towards music.

The second aim of the current research was to find out if participants' *aesthetical distance*, for example musical history, age, gender and preferences, would be related to emotions experienced during the test. In most cases participants reported very similar emotional listening experiences despite of the differences in their current emotional state or musical background.

I expected that participants who share similar *aesthetic distance* would give similar emotional responses to music in such a way that, for example, musical backgrounds and preferences would clearly group the participants. This presumption turned out to be true and false at the time.

Participants who, for example, reported to be happy before the listening test gave a bit stronger responses to positive emotions but the differences were barely noticeable. Happy participants reported also negative emotions very similar to participants who reported to be sad or feel hopelessness. Participants with strong musical background gave also similar responses to participants who had not, for example, studied music. However, participants who recognised the music samples well did occasionally give also a bit stronger emotional response than average. Nevertheless the quality and dimension of emotion evoked by the piece remain the same with other participants, so that the results would stay even if those responses would be ignored.

According to the current research, music seems to capture emotions that participants recognize homogenously. *Aesthetic distance* does not noticeably have an effect on how participants experience the music samples or in which particular emotions they connect the music with.

Participants recognized most of the musical excerpts poorly and in such cases when the samples were more familiar to them there was greater

dispersion in the responses. This may be due to personal memories and associations connected to the music which disturbed the authentic listening experience, or then again just a coincidence. This issue needs more attention.

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8.0 APPENDIX 1: STUDY PLATFORM

Age:

Gender: Male O Female O

Answer to the following questions by marking one circle from the scale.

1. How much do you generally like music?
Not at all   O O O O O Very much

2. Do you manage your emotions with music?
Not at all   O O O O O Very much

3. How much have you studied/practiced music in general?
Not at all   O O O O O Very much

4. How strongly you feel following emotions at the time.

A. Hopeful   Not at all   O O O O O Very much
B. Frustrated Not at all   O O O O O Very much
C. Happy   Not at all   O O O O O Very much
D. Sad   Not at all   O O O O O Very much
E. Excited   Not at all   O O O O O Very much
F. Sleepy   Not at all   O O O O O Very much
G. Tense   Not at all   O O O O O Very much
H. Relaxed   Not at all   O O O O O Very much

5. Mark a circle which best describes your likings in different music genres.

A. Classical   Not at all   O O O O O Very much
B. Pop/Rock   Not at all   O O O O O Very much
C. Folk   Not at all   O O O O O Very much
D. Dance/Techno Not at all   O O O O O Very much
E. Jazz   Not at all   O O O O O Very much
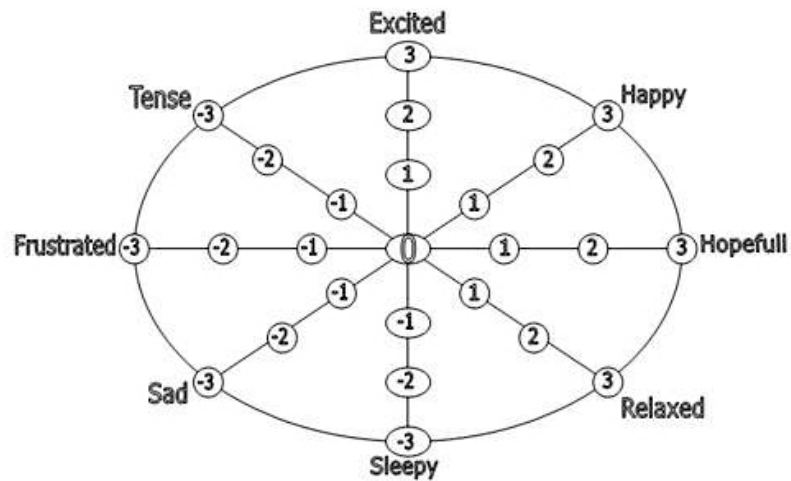F. Heavy/Metal   Not at all   O O O O O Very much
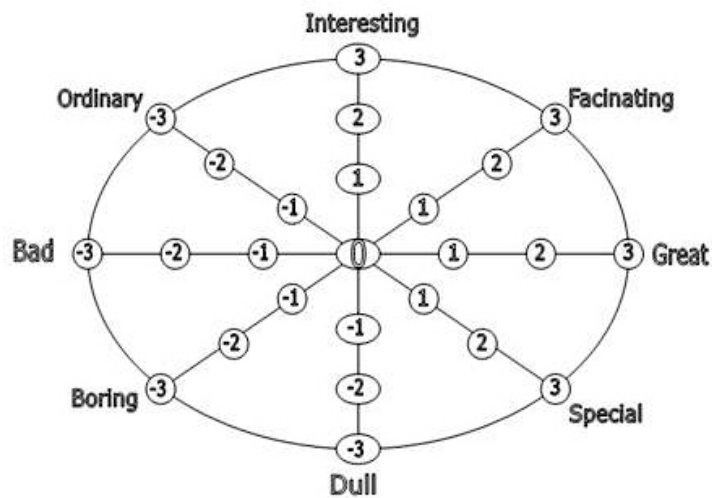G. Gospel   Not at all   O O O O O Very much

You will now hear 20 music samples. Select one ball/value in both scales after each music sample that in your opinion describes the sample most and then answer the question below. You will have 20 seconds for answering after every sample.

Sample: 1.

Scale: 1.

Scale: 2.

How familiar are you with the heard sample?

Never heard   O O O O O   I know the piece very well

8.1 APPENDIX 2: USED MUSICAL SAMPLES

1. John Mayer: *The Heart of Life* (Continuum, Sony BMG 2006)

2. U2: *Fez Being Born* (No Line on the Horizon, Universal Music 2009)

3. Elliot: *Requiem* (Unreleased)

4. Crowded House: *Private Universe* (Together Alone, EMI Records 1993)

5. Radiohead: *Pyramid Song* (Amnesiac, EMI Records 2001)

6. Moby: *Natural Blues* (Play, EMI Records 1999)

7. U2: *One* (Achtung Baby, Universal Music Group 1991)

8. Aquila Rose & Idana: *Hotel Buena Vista* (Universal Music, 2006)

9. The Verve: *Bitter Sweet Symphony* (Urban Hymns, EMI Records 1997)

10. Moby: *Natural Blues* (Play, EMI Records 1999)

11. Paola: *Above the Candystore* (Stockcity Girl, EMI Records 2002)

12. Radiohead: *Planet Telex* (The Bends, EMI Records 1995)

13. Elliot: *The Real Thing* (The Sparkling Hour, Edel Records 2004)

14. Giovanni Tomaso Albinoni: *Adagio in G minor* (Romo Giazotto 1958)

15. Garl Orff: *O. Fortuna* (Carmina Burana 1937)

16. Johan Sebastian Bach: *Cello Suite No.1* (By John Michel)

17. Coldplay: *Clocks* (A Rush of Blood to the Head, EMI Records 2002)

18. Coldplay: *Life in Technicolour* (Viva la Vida or Death and All His Friends, EMI Records 2008)

19. Black Sabbath: *Sabbath Bloody Sabbath* (Sabbath Bloody Sabbath, Castle Records 1973)

20. John Denver: *Take Me Home - Country Roads*, (Poems, Prayers and Promises, RCA Records 1971)