KAUNAS UNIVERSITY OF TECHNOLOGY

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FROM MUSIC LISTENING TO EXTRAMUSICAL INTERPRETATIONS: MUSICAL EXPERIENCE AS MULTIMODAL, SEMIOTIC AND PSYCHOLOGICAL PHENOMENON

Doctoral dissertation
Humanities, History and Theory of Arts (H 003)

2020, Kaunas

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ULRIKA VARANKAITĖ

NUO MUZIKOS KLAUSYMO IKI EKSTRAMUZIKINIŲ INTERPRETACIJŲ: MUZIKINĖ PATIRTIS KAIP MULTIMODALUS, SEMIOTINIS IR PSICHOLOGINIS REIŠKINYS

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GLOSSARY OF TERMS

Active music listening – conscious and attentive listening to music.

Affective response – emotional reaction caused by a stimulus, e.g., music.

Creative music listening – "creative thinking in music" (Leman, 1999) or "creative cognition" (Deliège, 2006) related to music listening as one of the (creative) musical activities. Most likely, the best definition is provided by Brattico and Tervaniemi (2006, p. 291): "musical listening can be considered as based on creative mental processes, especially when it requires an effort to extract meaning." In this research, the creative part in music listening is considered to be that 'meaning extraction' in a form of extramusical interpretation.

Extramusical (associations) – something that exists outside music itself but is evoked by a musical stimulus. It may be in the form of visual imagery, emotion or any general thoughts associated to a musical piece.

Interdisciplinarity – a combination of at least two disciplines for a wider approach in research.

Multimodality – a notion that comes from the field of social semiotics. It is a form of communication when two or more modes are combined for the sake of conveying a meaningful message. What concerns multimodality in music, different musical elements can be considered as separate modes, such as: notes, chords, rhythm, melody, harmony, timbre, etc.

Signifier and signified – the two notions belong to the dyadic model introduced by semiotician Ferdinand de Saussure in the late 19th century (1966). According to his framework, a sign in its physical form is the *signifier* and what it stands for is the *signified.* In our research on music, the signifier is a musical element (a mode) that evokes an extramusical association (or an element of it, e.g., a particular color of the induced visual imagery), which is the signified.

Visual imagery – a cognitive sensation without the actual external visual stimulus; seeing with "the mind's eye" (Jourdain, 1997, p. 338).

INTRODUCTION

Relevance of the research topic

Although there is growing interest in music as a phenomenon amongst researchers representing different disciplines (neuroscientists, philosophers, musicologists, semioticians, sociologists, educators, etc.), it seems that still no one can answer the ultimate question "what is music?" and why people find it so important to them. "Music as a 'universal language', as the 'language of love', or as the 'natural expression of feelings', or as an art transcending the sordid social realities of everyday life, or as auditory icing on the verbal-visual-numerical cake of logic and the material sciences…" (Tagg, 2012, p. 43). Even if people do not think of music as one of their prioritized daily or just leisure activities, music is still a part of their lives simply because it exists everywhere around us. Music is used as a sonic background to keep a group of people in a company when they do household chores, when they do sports, when they study or work, or just when they want to relax. Sometimes (or most frequently) people are forced to hear music in the background while eating in a restaurant, while walking along a pedestrian street in a city center full of street musicians, while shopping, etc. Also, music happens to be a common accompaniment to different forms of entertainment. We may wonder whether people can imagine a movie without its musical soundtrack. Furthermore, radio and TV advertisements almost always include music, and that is how music becomes more and more influential, and a fundamentally important part in the visual contexts turns this phenomenon into a specific audiovisual culture which is used to manipulate people's minds. When music is so profoundly integrated within visual contexts, it is little wonder that when one listens to music alone, it may evoke associations that are visual and are derived from mostly cultural, rather than personally-specific, experiences. Therefore, it may seem to be amazing that a simple everyday phenomenon has such a deep impact on people, their personalities, preferences, moods, etc., but at the same time this context raises more questions than provides answers. Music, even though being more and more investigated by a variety of disciplines (musicology, semiotics, philosophy, music psychology, cognitive neuroscience of music, etc.), still remains an unsolved mystery and thus is a popular topic for discussions not only amongst researchers or musicians, but also among common non-professionals.

However, more attention is especially needed for investigating the process of music listening since, according to Reybrouck (2014, p. 193), "[m]usic as experience is not yet established as a major topic of research". As the author suggests, music should be perceived as 'listened-to,' "rather than thinking and conceptualising of music at a merely symbolic level without any actual connection to the music as it sounds. The claim is important as it challenges symbolic approaches which deal with music merely at a mental level" (2014, p. 194). This dissertation approaches music from the following perspective: listeners' experience from the interdisciplinary point of view.

The aim of the dissertation

This dissertation aims to empirically investigate the underlying mechanisms in the relation between music listening and listeners' perception: music-induced extramusical associations from the perspective of the listeners by using the interdisciplinary approach. **The object** of the research is the listeners' extramusical associations evoked by music listening.

Research tasks

- Analyze literature from different research fields on the sub-topics of music listening as a complex musical experience, such as creative music listening, listeners' perception, extramusical associations, and cultural influence;
- According to theoretical findings of the literature review, construct the research methodology for empirical investigation on the listeners' musical perception by focusing on the extramusical outcome;
- Conduct an experiment with Lithuanian listeners in the form of active music listening and qualitative interviewing, as well as analyze the gathered data by using the qualitative and interdisciplinary approach while paying special attention to the following specific tasks and research questions:

  1) What kind of extramusical associations are evoked by music to Lithuanian listeners including visual imagery and/or emotion?

  2) To what extent are those extramusical associations based on the listeners' personal experience and how much are the listeners influenced by the socio-cultural environment?

  3) If music evokes extramusical associations that are more culture-related, are those associations similar amongst other listeners in terms of the meaningful content?

  4) If music contains lyrics, is it the text or the music that exerts more influence on the formation of the listeners' extramusical associations?

  5) By considering that, according to the results of the previous research, fans of sung poetry tended to stand out with the descriptions of their extramusical associations, we aim to check whether the findings can be confirmed in this study by splitting the participants into two groups, target (fans of sung poetry) and control (other listeners), and comparing their descriptions.
- Provide discussion, conclusions to the research, as well as considerations and recommendations for potential future research.

Methods

Various research fields were combined for an interdisciplinary approach on the relation between music listening and its perception regarding the literature review – which constitutes the theoretical background of the dissertation, as well as the preparation, implementation and analysis of the empirical research. The empirical part involved an experiment with 24 Lithuanian volunteers which consisted of music listening to three different musical excerpts and qualitative semi-structured interviews

with each participant separately. All the experimental sessions were recorded with a videocamera of a smartphone, and all the subjects of the research were aware of this by signing a written consent before the experiment. Each participant also had to provide their socio-demographic information by filling an online questionnaire after completing the main experimental part. For the analysis of all the gathered data (from the experimental session and the socio-demographic questionnaire), *MAXQDA* software was used as a tool for processing both quantitative and qualitative data. A very small part of the research outcome is presented in the form of statistics; however, most of the results are qualitative in order to explain (mostly) subjective aspects as mechanisms behind the perception of the Lithuanian listeners.

It was not only the experimenter who interpreted the extramusical outcome: during the experiment, the research subjects themselves were actively involved in trying to explain and understand their own music-induced responses. It is also important to note that all the answers, descriptions and interpretations, originally provided by the participants of the experiment in the Lithuanian language, here are presented as translated in English by the author of this dissertation.

Practical implications

The empirical investigation has revealed many relevant aspects that are involved in the listener's musical experience – the process of music listening and perception. Considering the quality and the quantity of the data gathered during this study, at least the following aspects stand out:

- Music evoked multifaceted extramusical associations that almost always included all of the following elements: affective response to music, visual imagery and associations as references to other existing real-world products in the media, music and/or audiovisual industry and culture. The latter aspect mostly involved associations with other, non-Lithuanian, cultures (countries).
- As it may have been expected based on other authors' studies, most of the music-evoked associations were influenced by the listeners' experience and perception that had been formed by their socio-cultural environment.
- Due to the shared socio-cultural background, the listeners tended to perceive similar meanings and associations evoked by music even if they heard the musical piece for the first time (e.g., the instrumental excerpt that none of the participants was familiar with).
- If a musical piece contained lyrics, it was not the main factor for directing the listener's mind in forming associations.

Scientific novelty

There is a strong and fairly well-developed theoretical background for almost each sub-topic involved in the research of this dissertation (as it shall be demonstrated in the theoretical chapters), also, various empirical studies have already been carried out within the relevant scope. However, most of the studies used a narrow (single discipline) approach compared to the broader – interdisciplinary – perspective. Therefore, a research gap still remained within the topic of the listeners' music

perception, especially if we consider the wider context of all the sub-topics of the research scope taken together. It is worth mentioning other researchers' empirical studies that are similar and most relevant to the research of this dissertation that cover some single specific topic, such as the process of creative listening (e.g., Dunn, 1997; Hargreaves, 2012), visual imagery during music listening (e.g., Küssner and Eerola, 2019), music-to-color perception (e.g., Palmer, Schloss, Xu, and Prado-León, 2013; Whiteford, Schloss, Helwig, and Palmer, 2018), and attempts to investigate the listeners' perception in Lithuania (Piličiauskas, 1984). Of course, the most empirical research domain amongst others involved in this dissertation can be considered as *neuroscience* which generally employs methods of brain scanning and other specific tasks rather than interviewing and interpreting evoked extramusical associations, thus the methods used in that domain are fairly different from the ones used in this study. However, significant neuroscientific findings help to understand more about, for instance, the familiarity factor (e.g., Pereira *et al*., 2011), affective responses to music (e.g., Brattico, 2015; Brattico *et al*., 2016), or how listeners' minds work during music listening in general (e.g., Levitin, 2008). Even though the semiotics of music is the least empirical segment of music research, its investigation still contributes to a number of significant aspects of this research: musical meaning (e.g., Tagg, 2012), music's communication (e.g., Tarasti, 2002), the concept of multimodality (e.g., Kress, 2010; Van Leeuwen, 2005), as well as the importance of the wider context that music belongs to, such as the listeners' socio-cultural environment (e.g., DeNora, 2004; Hargreaves, 2012), etc.

The study of this dissertation has empirically explored the listeners' experience of active music listening (e.g., perception, response to music) while using a multifaceted and interdisciplinary approach towards music-induced extramusical associations that have rarely been (empirically) investigated by other researchers in the same way, especially in the context of Lithuania, where, in fact, no similar (neither theoretical nor empirical) studies have been recently carried out at all (the most similar study by Piličiauskas was conducted in the early 1980s). Moreover, one of the unique features of this study is that the listeners (the subjects of the experiment) during the experimental session themselves helped to decode and understand their own responses to music – they were not left merely for the subjective interpretations of the experimenter. Therefore, the scientific novelty of this dissertation is considered to be not within solely the subject or topic of the research, but more in the methodology and approach towards it.

Structure of the dissertation

The dissertation consists of the following sections: introduction, three main parts (theoretical, methodological and empirical), and conclusions, as well as discussion and considerations for future research. The volume of the dissertation is 112 pages. It contains 16 figures, 17 tables. The list of references features 104 entries.

List of publications

This dissertation was compiled partly based on the data of the following peer-reviewed publications:

Chapters in books:

1. **Varankaitė, Ulrika**. Title influence on musical meaning: a socio-psychological experiment // Readings in Humanities: [monograph] / editors Oana Andreica, Alin Olteanu. Cham: Springer International Publishing, 2018. p. 177–196. ISBN: 9783319669137; eISBN: 9783319669144; DOI: 10.1007/978-3-319-66914-4_12.

2. **Varankaitė, Ulrika**. Music and associations: cultural impact on musical perception // Sounds, societies, significations: humanistic approaches to music: [monograph] / editors Rima Povilionienė. Cham: Springer International Publishing, 2017. p. 47–56. ISBN: 9783319470597; eISBN: 9783319470603; DOI: 10.1007/978-3-319-47060-3_4.

1. THEORETICAL BACKGROUND: MUSIC LISTENING AND LISTENERS' PERCEPTION

This section discusses the theoretical background of the dissertation involving the literature review that aims to address and validate the empirical findings. The material includes not only theoretical models and notions but also additional empirical data and examples, as introduced by different researchers. The theoretical background involves exploration of the following topics: music listening as creative process, music as a coded system, musical meaning, music as a part of the socio-cultural context, listeners' perception, extramusical associations, visual imagery and emotional response to music, etc. In order to investigate the above listed domains more profoundly, a choice was made to set the work within the interdisciplinary framework.

1.1. Interdisciplinary dimension of the research

Interdisciplinarity is here considered as a tool of the utmost importance when it comes to analyzing music as a concrete, real-world phenomenon. Moreover, given its complexity, it seems appropriate that musicology or any other single research field may not be sufficient for in-depth investigation. Interdisciplinarity provides the opportunity to look at the subject from different angles and offers broader perspectives with an overall result that is arguably greater than the sum of its intradisciplinary approaches. The complexity of music has interested researchers from many different fields, such as musicology, music psychology, semiotics, cognitive neuroscience of music, but also philosophy, sociology, psychology, (music) education, (music) therapy, computer sciences, artificial intelligence, etc. With time, the list probably will only get longer since many new research fields are emerging due to the ongoing technological development and its application in the music research.

Because of all the benefits and wider perspectives provided by the interdisciplinary approach, this dissertation is not based only on musicological analysis. There are more interesting and definitely important elements as well as approaches that are highly useful for the research of the listeners' musical experience but that are formally outside the musicological scope. In this case, interdisciplinarity is considered essential and unavoidable. Since creative music listening engages perception and interpretation of signs that are captured by the listener, it is not possible to look at this process only from one perspective. Music psychology and (musical) semiotics as disciplines play key roles in this study. Multimodality, a concept thoroughly developed within semiotics, receives special attention since it describes 'the shape' of music in general: each musical piece is naturally multimodal because it contains different components (such as melody, harmony, rhythm, etc.). Also, cognitive neuroscience of music is integrated in the theoretical overview of the research to provide empirical background for some arguments and theories.

Various thoughts, considerations or important points of view of various researchers were examined and considered in exploring musical styles, meaning, multimodality, visual/ affective/ cognitive response to music, listeners' socio-cultural (musical) environment, etc. A synthesis of the approaches is achieved by integrating

theoretical and practical knowledge, methods, theories or concepts taken from these specific fields of research:

- Musicology – this field shall be crucial in properly identifying the musical structure and elements, styles and/or genres, general items of music theory;
- Social semiotics – this discipline is incorporated in the study in order to understand and explore signs and sign systems, forms of communication, the concept of multimodality, and culturally formed meanings;
- Musical semiotics – a sub-field of semiotics where, basically, essential and general semiotic theories are applied to the context of music. From the perspective of musical semiotics, music can be seen as a form of communication – a meaningful sign system, especially what comes to identifying symbolic musical elements that act as triggers in evoking specific extramusical associations;
- Music psychology – one of the key disciplines of the study which helps to identify and investigate different responses to music (e.g., cognitive, affective, visual), as well as to explore musical meaning and personal associations evoked by music;
- Social psychology – the discipline is mainly used for designing and justifying the methodology of the dissertation's experiment that involves qualitative (and quantitative) research, empirical investigation of human thoughts, feelings, and/or behavior (experimentation);
- Cognitive neuroscience of music – this field helps to understand the mental processes evoked by music, it is quite tightly linked to music psychology since it also explores music perception in general, but at the neural level.

As it can be seen from the explanations of the scientific fields used for the combined approach, there are some topics that tend to overlap (e.g., musical meaning or mental processes of music perception). This indicates that the interdisciplinary approach for the topic of the dissertation is not only beneficial but also inherently natural.

1.1.1. Music psychology

The study of music has gone a long way from the times when it was considered as a simple entertaining activity that a person would choose mostly for the hedonic experience that it can provide. Music is a much more complex phenomenon, it can be seen as something between *objective* or *subjective*, or, as Guerra Lopez puts it, "[the] measurable and the unmeasurable, the tangible and the intangible" (2017, p. 159). According to Elliot (2018, p. 53), "[m]usic is more than a thing or object but its processual vitality is made manifest through objects such as songs." Growing scientific evidence, as well as listeners' personal experience, has shown in time that music may perform many different functions and play various roles on different levels, e.g., personal and/or social. In relation to these levels, "music can have a very powerful impact influencing behavior, emotions and moods in a variety of settings

frequently without our conscious awareness" since music is "able to stimulate us aurally, visually, intellectually, emotionally and physically, simultaneously" (Hallam, Cross, and Thaut, 2009, p. 561).

Music psychology (or psychology of music) is a scientific field and formally a sub-field of psychology that investigates and aims to understand the cognitive mechanisms responsible for perceiving musical information: "how the mind responds to, imagines, controls the performance of, and evaluates music" (Gjerdingen, 2002, p. 956). According to Ockelford, "before the explosion of activity related to music and the cognitive sciences that has characterized the early years of the twenty-first century, music psychology did not function as a single, clear-cut epistemological framework" (2009, p. 539). Numerous theories have been successfully adapted from social psychology and applied to the musical context. A case in point is the mere exposure effect (extensively developed by Zajonc, 1968), which is a psychological phenomenon (also known as the familiarity factor or familiarity principle) that induces a person to develop a preference for, or just simply like, a given item simply because that person has been exposed to it repeated times. This helps to explain some interesting phenomena in music perception, such as when a musical piece is not liked by a listener at first, but with time the more they listen to it, the more they like it: an originally neutral stimulus becomes preferred and liked. Moreover, the mere exposure effect tends not only to be a crucial factor in developing a preference, or liking, for the familiar music, but also engages listeners emotionally with the music (Pereira *et al*., 2011).

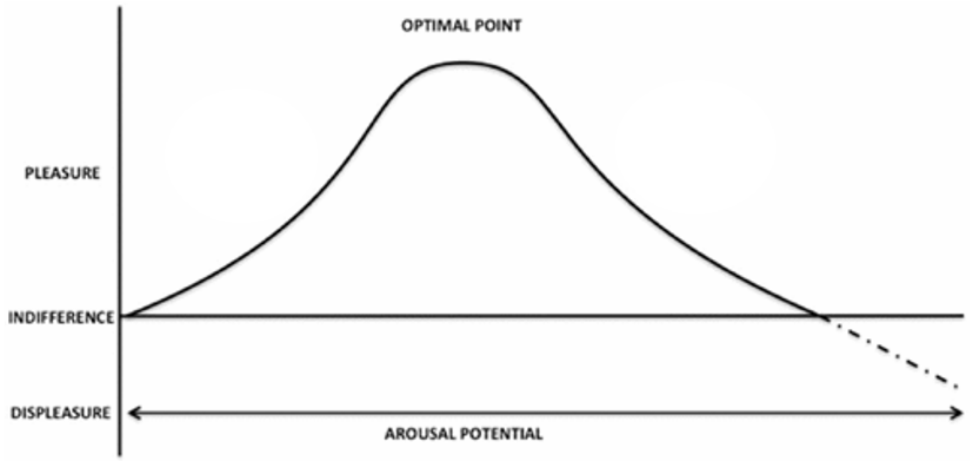


Figure 1. Relationship between preference (hedonic value) and arousal based on Wundt's curve, outlining Berlyne's 'inverted-U' shape, adapted from Chmiel and Schubert (2017)

However, over-repeated exposure to the stimulus can in turn lead to not liking the stimulus anymore. A perfect example would be when the listener has heard the same song too many times that he may get tired of it or even develop negative feelings towards the musical piece. This phenomenon is based on and explained by the 'inverted-U' function developed by Berlyne (1971), although it is also known as 'the Wundt's curve' (Chmiel and Schubert, 2017; Madison and Schiölde, 2017). Here (see

Figure 1), disliking of the piece links to being unfamiliar to the listener (beginning of the curve) and being overfamiliar (the notional ending of the curve). Corrigall and Schellenberg (2015, pp. 270–271) explain that completely unfamiliar stimuli are perceived as somewhat potential threats and disliked because of that, but, with an increasing amount of exposures, liking increases as well because the stimulus becomes more predictable; however, as exposure continues to increase, it may reach a point when the stimulus becomes too predictable, and therefore liking decreases.

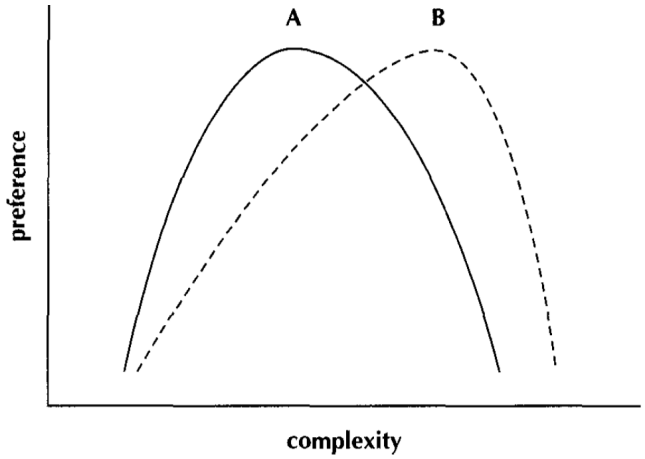


Figure 2. Another example of Berlyne's 'inverted-U' function between preference (hedonic value) and complexity (where familiarity is taken into account as well) of musical material. Here, the two curves represent two different groups of listeners: regular listeners with very little or no musical training (curve A), and listeners with musical training/education (curve B). The difference suggests that musically trained individuals would prefer more complex music (source of the figure: Thompson, 2009, p. 133)

The same 'inverted-U' function is also expected to be manifested in the relationship between liking and the complexity in music: "it will be liked most when its melodic, rhythmic, and metrical structures are not too simple, predictable, and uniform, nor too surprising, unpredictable, and erratic" (Corrigall and Schellenberg, 2015, p. 272). In this case, it may seem that the more sophisticated is the listener (with music/-ological expertise), the more complex musical piece gives pleasure and the more sophisticated preference towards it is developed (see Figure 2). However, according to Corrigall and Schellenberg (2015, p. 273), the preferred level of musical complexity does not depend on the music or the listeners' expertise alone, it is also dependent on the circumstances and situational factors: for instance, listeners may prefer to hear simple music in the background while performing a simple task. According to Fayn and Silvia (2015, p. 41), many empirical studies that investigate musical preference and exploration have resulted in forming two broad factors: pleasingness and interestingness; the latter plays a key role in aesthetic responses to the arts, including music. The authors suggest that "finding something interesting promotes attention, exploration, and learning", and that "interest might be a precursor to more powerful aesthetic emotions": interest is linked to complexity since listeners

appraise music when it is "both novel and complex but comprehensible" (Fayn and Silvia, 2015, p. 41).

Since "music arouses expectations, some conscious and other unconscious, which may or may not be directly and immediately satisfied" (Meyer, 1956, p. 25), Meyer has drawn researchers' attention to the musical expectation, one of the main theories in music psychology. According to Snyder (2009, p. 109), expectation "is a primary mode in which listeners utilize memory in listening to music," and it is considered to be "one of the sources of emotional responses to music." Perhaps the simplest and most classical example of musical expectation could be explained by illustrating chord resolution. Let us imagine that, in a song that is written in *G major*, there is a chorus that each time ends in this resolution: *Dominant to Tonic* (see

Figure ***3***). For the listeners, their expectation would probably be satisfied since this is the most expected resolution in general as the Dominant chord would usually resolve in Tonic. Furthermore, the listener hears the same chorus ending in the same way for a couple of times, therefore, this repetition also forms the expectation. However, let us pretend that the third chorus, just before going to the bridge part, ends not in Tonic, but in Submediant (deceptive cadence) instead. This event would not satisfy the listener's expectation, however, it does not suggest that the listener could not enjoy the musical change as this would actually depend on the listener him/herself.

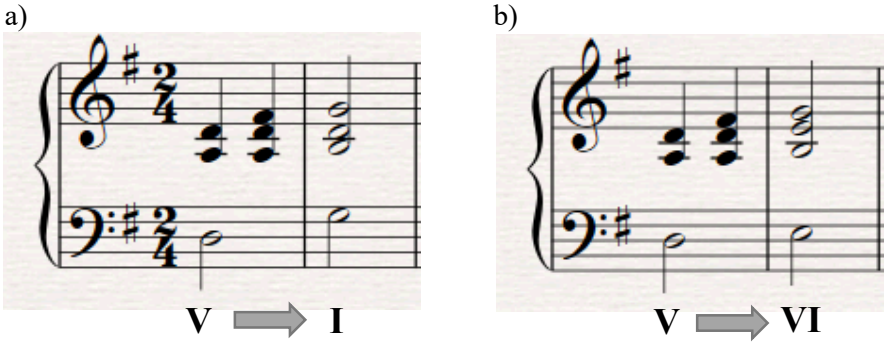


Figure 3. In the first excerpt (a), the chord progression Dominant (V) – Tonic (I) is considered to be an expected resolution by the listener. In the second excerpt (b), the chord progression Dominant (V) – Submediant (VI) violates the listener's expectation. The schemes have been prepared by the author of this dissertation

Meyer (1956, p. 30) notes that expectation is "a product of habit responses developed in connection with particular musical styles and of the modes of human perception, cognition, and response." However, expectation is not a simple reflex since it usually employs "a high order of mental activity" (Meyer, 1956, p. 30), and listeners' musical experience might be an important factor in forming and satisfying expectations when listening to a particular musical piece. The process also involves experiencing pleasure at some level, and the level may be determined by the above mentioned *inverted-U* curve since expectation in a sense is linked to predictability.

Sometimes 'expectation' may be changed by the notion of 'anticipation' (e.g., Huron, 2006), although both terms broadly mean the same. However, some researchers draw a distinction between the two words by explaining their differences: anticipation is more general and coincides with *semantic* memory, while expectation is more specific and coincides with *episodic* memory (Jourdain, 1997, p. 246). The latter, episodic (also known as *autobiographic*), memory is linked to the memories of particular events or situations from the person's past and it is quite specific, while semantic memory is more abstract and relies on the individual's general knowledge and "experience of repeated similar episodes" (Snyder, 2009, p. 108).

On the basis of the expectation theory, Huron (2006) developed and presented a more comprehensive model referred to as *ITPRA* (Imagination-Tension-Prediction-Reaction-Appraisal) consisting of five responses to music in this specific order:

Pre-outcome responses

1) **Imagination response.** In this case imagination, means imagining a possible outcome as it has already happened. In order to make such a prediction, the listener's brain relies on past experiences. This process is the first of the pre-outcome responses.
2) **Tension response**. At this stage, the levels of tension (including attention and arousal) are adjusted so that to prepare for the expected outcome of the stimulus. This pre-outcome response comes second, and, contrary to the previous response, this one "is linked to the period immediately prior to the anticipated moment of outcome" (Huron, 2006, p. 11).

Post-outcome responses

3) **Prediction response**. Immediately after the event has occurred, three post-outcome responses are produced, from which, the first is the prediction response directly linked to the tension and imagination responses. At this stage if the prediction made by the listener's brain was correct, the response will be positively valenced (positive emotional response), and if the outcome does not match the prediction, it will be negatively valenced (negative emotional response).
4) **Reaction response**. The purpose of the response is to undertake a possible worst-case scenario "by generating an immediate protective response" (Huron, 2006, p. 15). This is the second post-outcome, and a very fast (taking less than 150 milliseconds) unconscious response, a reflex that is also immediately followed by a bodily response.
5) **Appraisal response**. The last post-outcome response that is much slower and complex than the previous one. At this stage, the listener's brain makes a more accurate and longer lasting evaluation of the outcome and even the overall experience. "The important point is that appraisal responses can involve conscious thought that often draws on complex social and contextual factors" (Huron, 2006, p. 15).

As Huron claims, with the *ITPRA* model that consists of five response systems occurring at different times, his intention is to provide a general theory of musical expectation that could help interpret all the main psychological processes related to the concept of expectation, especially the elements linked to evoking different emotional states. The researcher also notes that expectation in general is a theoretical concept that is not easy to measure empirically since "theoretical entities are rarely directly observable", however, by defining "measurable quantity that is assumed to correlate with the theoretical construct," some essence of expectation can be captured (Huron, 2006, p. 42).

What comes to musical meaning, there are two main 'sides' of researchers in the music psychology domain who display essentially opposite views: those whom we may call the 'absolutists' believe that musical meaning exists only in the closed context of the musical work itself; whereas those whom we may call the 'referentialists' claim that music also conveys additional meanings which "in some way refer to the extramusical world of concepts, actions, emotional states, and character" (Meyer, 1956, p. 1). We may also look at this point through the semiotic perspective while using other terms: "music refers only to music (the intrageneric notion) and music is related to society (extrageneric)" (Tagg, 2012, p. 46). However, Meyer (1956, p. 3) adds even more complex elements to the issue:

> "[…] the distinction just drawn between absolute and referential meanings is not the same as the distinction between the aesthetic positions which are commonly called "formalist" and "expressionist". Both the formalist and expressionist may be absolutists; that is, both may see the meaning of music being essentially intramusical (non-referential); but the formalist would contend that the meaning of music lies in the perception and understanding of the musical relationships set forth in the work of art and that meaning in music is primarily intellectual, while the expressionist would argue that these same relationships are in some sense capable of exciting feelings and emotions in the listener. […] One might, in other words, divide expressionists into two groups: absolute expressionists and referential expressionists. The former group believe that expressive emotional meanings arise in response to music and that these exist without reference to the extramusical world of concepts, actions, and human emotional states, while the latter group would assert that emotional expression is dependent upon an understanding of the referential content of music."

It is worth highlighting that the findings of the empirical study illustrated in this dissertation show significant evidence of extramusical associations being induced by music listening and influenced by the cultural environment, and the latter aspect proves that music is, by default, extrageneric. Therefore, the most relevant theory for the research of the dissertation is the one proposed by the referential expressionists.

Although the musical meaning is a central topic in the scope of music psychology, at the same time it can still be investigated through the semiotic perspective. For this reason, the concept will be approached from music psychology and semiotics together; therefore, the musical meaning shall be discussed separately in the following sections after the field of semiotics has been introduced.

At the end of this chapter, it is useful and definitely important to introduce cognitive neuroscience of music since this research field is inherently connected to music psychology. In fact, it has become "an integral part of music psychology, its research efforts and the knowledge base of the biology underlying music behaviour" (Thaut, 2009, p. 556). Although (cognitive) neuroscience of music does not play any leading role in this study's interdisciplinary approach, its relevance lies in allowing a view at some mechanisms involved in music listening at the neural level. According to Seeley (2015, p. 26), cognitive science in general is an interdisciplinary approach which allows us to learn and gain superior understanding of organisms' behavior that involves information acquirement, representation and manipulation. It also applies to the neuroscientific research of art, since, as the scholar continues, "[a]rtworks are stimuli intentionally designed to trigger a range of affective, perceptual, and semantic responses in consumers constitutive of their artistically salient expressive, formal-compositional, aesthetic, and cognitive content" (Seeley, 2015, p. 26).

Perhaps the best and, essentially, crucial aspect in cognitive neuroscience is that neuroscientific theories are mostly based on the practical approach and yield much empirical rather than theoretical evidence. Different experiments involve not only musical, cognitive, behavioral and/or other tests, but also participants' brain scanning that is executed by using sophisticated (and, on top of that, fairly expensive) equipment and methods, such as (functional) magnetic resonance imaging (f/MRI), electroencephalography (EEG), magnetoencephalography (MEG), positron emission tomography (PET), etc. Experiments might involve not only healthy people but also patients with different diseases or disorders where music can be tested as a tool in aid of defeating serious medical conditions or at least make everyday life of the patient easier (Hurt-Thaut, 2009). This can also be achieved not necessarily through the active involvement of patients in music making or performance, but music listening also serves as a very powerful means, for example, in bringing forth the patients' memories related to music or enhancing the memory function in general. This is because the so-called musical memory seems to be processing differently from the general memory, therefore, even in the cases of neurodegenerative diseases, the musical memory may remain (relatively) preserved (Matrone and Brattico, 2015; Peck, Girard, Russo, and Fiocco, 2016), although researchers still cannot fully explain this phenomenon, and further research is deemed to be required. However, it is not only about the technical use of music in the therapy, but enjoyment and experience itself is very important, and this aspect, of course, concerns healthy people as well in any musical activity, including listening.

What comes to the role of (general) memory in music listening, Levitin (2008, pp. 166–167) notes that it plays an important part in affecting the musical experience by saying that "without memory there would be no music" since "music is based on repetition." The author elaborates on the thought by explaining why music exists or works for people in general: listeners remember the tones they have just heard, e.g., a moment ago, and relate them to the new ones being played at the present moment.

According to the scholar, those sets of "tones – phrases – might come up later in the piece of variation or transportation that tickles our memory system at the same time as it activates our emotional centers" (Levitin, 2008, p. 167). Moreover, according to Stewart (2016, p. 6), music listening incorporates a procedure where "low-level 'building' blocks of sound are encoded, integrated and represented as higher order features such as melodic contours and rhythms." Thus even though music listening might seem to be a simple and effortless process for the listener, "it is only because of the brain's capacity to a) integrate incoming sound with the memory of the previous phrase and b) anticipate what will come next, that we are able to discern structure and (in most cases) aesthetic appeal from the pattern of vibrations arriving at the eardrum" (Stewart, 2016, p. 6).

More neuroscientific research examples and the more general thematic background shall be presented in the subsequent chapters on specific topics where it shall be useful to overview some essential neural processes and extend the view on the issue.

1.1.2. Semiotics and multimodality in music

Semiotics as a field that explores signs and their relations is denoted by an intrinsically-eclectic nature that can be applied to any context and any other field. The major statement of semiotics is that people live in a world "perfused of signs" (to employ Charles S. Peirce's elegant expression), and that "we have no way of understanding anything except through signs and the codes into which they are organized. Through the study of semiotics, we become aware that these signs and codes are normally transparent and disguise our task in reading them" (Chandler, 2007, p. 11). As St. Augustine's original formulation of the concept of sign recites, a sign could be anything that "stands for something else" (*aliquid stat pro aliquo*), it may be found in different forms: "words, images, sounds, gestures and objects" (Chandler, 2007, p. 2). Music is a perfect object to investigate through the lens of semiotics since it is full of different signs: a researcher may investigate textual musical signs in a score, sound cues in audible music, or even a musician's body language during a performance. The two latter examples illustrate that signs may be quite subtle and indirect for the conscious mind. Nattiez adds that "[t]he thing to which the sign refers is thus contained within the *lived experience* of the sign's users" (1974, p. 7).

Not only signs as separate elements are studied by today's semioticians (who mainly focus on the signs' relations, meaning-making and representation of reality), but also wider contexts, for example, in the musical context – the musical genre, which, in semiotic terms, produces a 'sign-system' (Chandler, 2007, p. 2). According to Tarasti (2002, p. 65), a sign seems as a code that represents a 'symbolic system' that is designated to transmit the sender's information to its receiver. Monelle (2000, p. 11) explains that "[w]ithout a theory of signification, music becomes merely an infinitely ramified continuum, impossible to divide into smaller units. A grasp of signification enables us to find meaningful items in this continuum and thus to begin the process of analysis. Analysis engages with signifier and signified together, and thus reveals the musical text, which is a great deal more than merely the score." Therefore, through the perspective of semiotics, music is seen rather as a form of

communication than art, and, therefore, there is need for a separate research field, i.e., musical semiotics, which may be considered "relatively independent of both semiotics and musicology" (Tarasti, 2002, p. 57).

Interestingly, music is considered to be "the least representational of all arts" (Tarasti, 2002, p. 3), yet "we seem to agree that music signifies" (Tarasti, 2002, p. 65). The main question at this point is what music actually stands for. Tarasti (2002, p. 65), for instance, explains that "[f]or modern cognitive science, music represents a mental process, to such an extent that the sign itself fades from sight and what remains is only the simulation and modeling of neural network – a solipsistic situation in which neural cells 'communicate' with each other." In the terms of Saussure (1966), according to his dyadic model, a sign (its physical form that can be heard, seen, touched, etc.) is a *signifier*, and what it stands for is the *signified*. In the research of music-evoked (extramusical) associations, it would mean a musical element (e.g., melody, rhythm, major/minor scale, dynamics, timbre, a part or even the whole musical piece) being a signifier, and an evoked extramusical element (visual image, emotion, color, or even all together) – a signified. Levitin (2008, p. 55) mentions composers Scriabin and Ravel as examples of seeing their own works as "sound paintings, in which the notes and melodies are the equivalent of shape and form, and the timbre is equivalent to the use of color and shading." The author notes the main difference between painting and music: the latter changes in time, it is dynamic, and the musical elements responsible for this movement are the rhythm and meter.

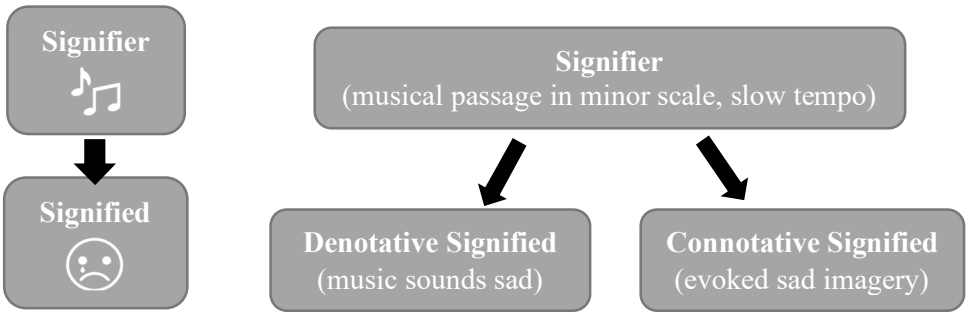


Figure 4. On the left, Saussure's signifier-signified model is shown. On the right, the same model is shown with two types of signifieds. The scheme illustrates an example of slow tempo and minor music (signifier) being perceived as sad-sounding (denotation) and evoking an association of a sad visual image (connotation). The latter type of the signified is extramusical association. The schemes were made by the author of this dissertation

The two other terms – *denotation* and *connotation* – are related to Saussure's model since they describe the relationship between the signifier and the signified. There are two types of signifieds for analytical distinction: the denotative signified and the connotative signified, and both are involved in meaning-making (Chandler, 2007, p. 137). In general, denotation means more literal description of the sign (signifier), or, in Tagg's (2012, p. 164) words, "the lexical type of meaning associated with dictionary definitions." Connotation, on the other hand, is *associated* with the sign; therefore, it is not direct. In music, it basically means extramusical associations that are common outcomes as responses to music listening, especially since music is

considered to be "highly connotative" (Tagg, 2012, p. 165). As Monelle (2000, p. 14) explains, "symbolic signs depend on learned cultural codes; thus, the word 'tree' has nothing in common with a tree, but is understood by a speaker of English to carry this signification."

Multimodality as a notion and topic is most connected to and derives from the field of semiotics as well. It is a "combination of different semiotic modes – for example, language and music – in a communicative artefact or event" (Van Leeuwen, 2005, p. 281). A mode is a medium of communication or, as explained by Kress (2010, p. 79), "a socially shaped and culturally given semiotic resource for making meaning." In the scope of music alone, multimodality represents the set of layers, components (or *modes*) that shape a musical piece. Those layers can be melody, harmony, rhythm, tempo, timbre, dynamics, musical form, etc. Even if it is one-instrument music, it would still have at least three components (e.g., melody, timbre and rhythm). These various elements may not be as powerful separately, but, perhaps, this specific synthesis of these music elements makes a particular musical piece so special. Kress and Van Leeuwen (2001, p. 77) provide an example of how only one mode – timbre – makes difference in meaning-making and inducing extramusical associations of the musical piece:

> "The rough voice (think of Louis Armstrong) is the vocal equivalent of the weather-beaten face, the roughly plastered wall, the faded jeans, the battered leather jacket. The smooth voice is the equivalent of the umblemished young skin, the polished surface, designer plastic, the immaculate tuxedo. How this is valued depends on the context. In Western classical music perfection and polish are highly valued."

Since music itself is multimodal, it can be assumed that music-induced extramusical associations are multimodal as well. In this sense, music contains different signifiers that trigger different signifieds in the extramusical associations because "different modes offer different potentials for making meaning" (Kress, 2010, p. 79). For instance, a passage of a sad pop song evokes emotional and visual response: musical components, such as a slow and sad-sounding melody and harmony, expressed an emotion that the listener perceives as sad and, perhaps, nostalgic, while lyrics guide the listener's visual imagery. Of course, this is one of the simplest examples of the process, therefore, it may not always be easy to determine which mode in music evokes which association, or if there are any cases that many signifiers evoke only one signified or vice versa. For example, in the above mentioned example of the sad pop song, both harmony and melody, and even the slow rhythm, might contribute to the perception of the sad and nostalgic mood – which is considered to be not two separate emotions but a mix of both that count as one ambiguous mood; therefore, in this case, it takes three musical modes to be responsible for inducing one mode in the entire evoked association. What is more complicated is that it depends on many different factors whose mode(s) in music would trigger specific mode(s) of extramusical associations. In order to be able to find these links, the listeners must be

conscious and attentive when interpreting their extramusical associations. Furthermore, according to the findings of the research of this dissertation, the listener may not even be able to identify single signifiers in music if they are too strongly connected together, and in this case the listener may simply explain that the whole musical piece (the whole combination and interplay of its components) has evoked that specific association. However, luckily, most of the listeners were able to analyze their interpretations and name specific links between the signifieds (extramusical associations) and their signifiers (musical elements), even including those participants who were not educated musically. These interpretations shall be thoroughly discussed separately in the dissertation's section on the analysis of the results of the empirical research.

Another question may be asked "if and how much the associations change during the flow of music." Since music is a time-based continuum, it operates in the "syntactic dimension" (Nattiez, 1974, p. 127), and it can be considered to narrate "its story" to the listener. This case would mean that music evokes dynamic associations. However, Nattiez (1974, p. 128) states that, in music, "connections are situated within the sonorous discourse, not on the level of a story that this discourse is said to narrate." The researcher defines people as "symbolic animals" that "confronted with a trace they will seek to interpret it, to give it meaning" (1974, p. 128), and this, according to the scholar, is what occurs in the musical domain as well. The scholar explains his statement by saying that music itself is not a narrative but rather a provocation to make a narrative, as well as to comment or analyze: "We could never overemphasize the difference between music, and music as the object of the metalanguages to which it gives rise" (Nattiez, 1974, pp. 128–129). Therefore, it is not music *per se* that 'tells' a story to the listener, but the listener him/herself creates a story in his/her mind that has been triggered by specific signifiers within the musical piece. However, it does not mean that different listeners perceive totally different stories from the same musical stimuli (although this is also a common case). A listener has to be able to understand the signs within the musical material in order to form a meaning that actually makes sense to the listener as a "musical message" – therefore, the listener has to be familiar with those signs and know what they mean, which is a cultural matter as those signs become universally recognizable within the culture.

1.1.3. Musical meaning

The combination of semiotics and music psychology is highly useful for the synergic approach to exploration of meaning in music. According to Reybrouck (2014, p. 195), "[t]he process of 'sense-making', finally, implies a shift from *ontological* (what is music?) to 'epistemological questions' (what is music cognition and how can it be acquired?) with a major claim the 'construction' of meaning out of the perceptual flux." The author states that "a semiotisation of the sonic world" is involved in the process demanding the listeners to be not passive, but instead active receivers who act as organisms trying "to build up semiotic linkages with the world" and, during this process, each "organism can rely on innate and acquired mechanisms of information 'pick-up' and information 'processing'" (Reybrouck, 2014, p. 195).

According to Grimalt (2017, p. 235), "[i]f a musical sign refers to an object, a gesture or a concept, it tends to be a part of a semantic field." In addition, as Tarasti (2002, p. 75) explains, "the musical message itself can be interpreted as a model, as a microuniverse whose elements stand in various relationships to each other."

There are different opinions as to where musical meaning is actually coming from, or, in other words, what factors are involved in the process. For instance, Nattiez (1974, p. ix) states that "[t]he essence of a musical work is at once its genesis, its organization, and the way it is perceived", while Dougherty (2014, p. 80) explains: "Composers use signs, but musical signification results from the play of interpretants." Furthermore, compared to the above mentioned Saussurean dyadic framework, there are two more complexes – triadic relationship models (see Figure 5) that are different, yet seem to be somewhat similar to each other. One is explained in the context of music psychology by Meyer (1956), while the other, the semiotic triangle, comes from the field of semiotics as proposed by Peirce. The latter model was not intended to specifically explain musical meaning since it is a more general theoretical framework coming from social semiotics and aimed for explaining the perception of any kind of message. However, both models are easily applicable for the theoretical understanding of the meaning in music, and both represent relationships of three factors which are equally important in generating the musical meaning. Although some factors are different (or at least not identical) in the models, they point to a very important general aspect – it is not only the stimulus or the listener who/that is responsible for forming the musical meaning. It is the relationship among all the factors that brings the meaning that the frameworks represent. Both models also hint at extramusical associations that arise from the musical meaning; that is, the musical meaning is not only an internal message of music, it is not only "understanding of music" but also what the music is about, what kind of stories it is trying to tell the listener that leads to connotations outside the music.

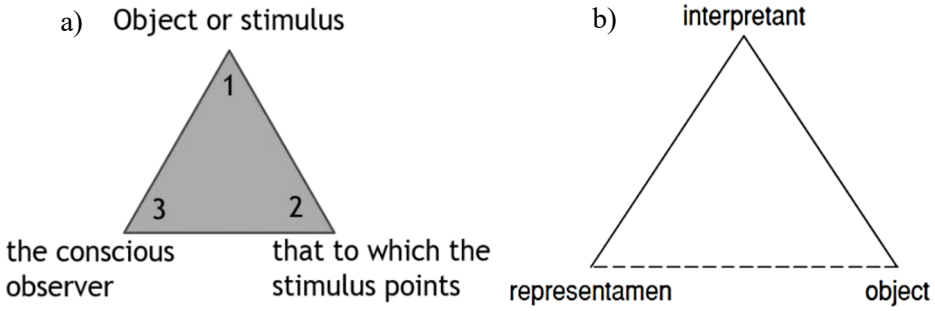


Figure 5. On the left (a), the triadic relationship model as explained by Meyer (1956; source of the Figure: Varankaitė, 2017, p. 54), and Peirce's semiotic triangle is shown (b) on the right (source of the Figure: Chandler, 2007, p. 30). Chandler (2007, p. 30) notes that the bottom line of the triangle is presented broken for the indication that there might not be any noticeable or direct relation between the representamen and the object

Although the schemes presented in Figure 5 do not represent exactly the same factors, nor do their angles actually coincide (e.g., the 'object or stimulus' from Meyer's relationship does not stand for the 'interpretant' in Peirce's model), nevertheless, it can still be seen that both scholars see the meaning as deriving from a similar relationship that involves three main factors. If we compare these factors in both schemes, it can be assumed that the "object or stimulus" could stand for 'representamen' (or 'sign'), then, 'that to which the stimulus points' would stand for the 'object', but 'the conscious observer' cannot be directly linked to the 'interpretant' because it does not mean a (human) being (it would be called the *interpreter* instead); it is rather an interpretation or "the *sense* made of the sign" (Chandler, 2007, p. 29). Therefore, the main difference here is that Meyer focuses on the individual, whereas Peirce emphasizes the aspect of the overall interpretation.

Compared to Saussure's model, the model of Peirce "explicitly features the referent – something beyond the sign to which the sign vehicle refers (though not necessarily a material thing)" (Chandler, 2007, p. 63). Nattiez (1974, p. 7) states that Peirce's theory suggests the object of the sign being "a *virtual* object, that does not exist except within and through the infinite multiplicity of interpretants, by means of which the person *using* the sign seeks to *allude to* the object". Dougherty (2014, p. 70) thoroughly explains advantages of the triadic model:

> "First, a sign is a genuine triad or gestalt that cannot be broken down: no one of its three members can be defined or understood without reference to the other two. Consequently, while specific analyses require an examination of each component separately, all components must ultimately be analyzed in relation to the integrated whole. Second, the central emphasis in Peirce's semiotic is on interpretation. Throughout his voluminous writings, Peirce steadfastly and consistently maintains that a sign is a sign only if it is interpreted: to be a sign is ipso facto to determine an interpretant. Third, the interpretant is a translation into another (potential) sign that can take the form not only of thoughts (logical interpretants), but also of actions (energetic interpretants) and feelings (emotional interpretants)."

In the music research, music is quite often compared to language, and there can be many similarities found (e.g., Lerdahl, 2003; Patel, 2008). Furthermore, music may be considered to be "meaningful due to its language-like features" (Tolbert, 2001, p. 85); however, these two domains, music and language, are not that easily comparable (Cook, 2001). Jourdain (1997, p. 293), for instance, names music as "language of emotions" and explains that, after all, music is not much similar to language "either in form or in neurology" because language is used for presenting events of the world "beyond our skin", while music allows us to have experiences within our own bodies. Furthermore, as the author continues, music, if it is programmatic, mimics the experience in contrast to language that symbolizes it (1997, p. 296). In addition, Nattiez (1974, p. 9) states that musical meaning could involve some "verbal translation", however, it cannot be limited to that: "[t]he temptation to do so is often difficult to resist, doubtless because we are never so *aware* of what the meaning of

something in nonlinguistic domain may be as when we attempt to explain that nonlinguistic domain in verbal terms." Of course, as a part of a musical piece (most probably, a song), there can be words that may influence the listener's perception of the overall meaning of the piece. However, according to Monelle (2000, p. 9), a song's lyrics "can prove a useful clue to musical semantics," but the musical meaning itself is "independent of words, and is of a different kind from linguistic meaning."

> "The problem of musical meaning and its communication is of particular interest for several reasons. Not only does music use no linguistic signs but, on one level at least, it operates as a closed system, that is, it employs no signs or symbols referring to the non-musical world of objects, concepts, and human desires. Thus the meanings which it imparts differ in important ways from those conveyed by literature, painting, biology, or physics. Unlike a closed, non-referential mathematical system, music is said to communicate emotional and aesthetic meanings as well as purely intellectual ones" (Meyer, 1956, p. VII).

Musical meaning, as a part of the whole musical experience, remains not entirely solved since it involves many different factors, e.g., kinds of musical stimulus, or listeners' expertise, and their relationships. According to Cross and Tolbert (2009, p. 32), both empirical and theoretical research on meaning in music "is still at an early stage within the cognitive sciences." However, there are different interpretations and theories developed by various scholars that help to understand the process from different angles, especially from (musical) semiotics and the psychology of music. Furthermore, music, which is considered to be "a meaningful system of sonic representation" (Tagg, 2012, p. 5) in general, can be explored even at a deeper level of human mental processing by using the neuroscientific approach towards the object of this research.

This chapter has introduced specific scientific fields and theories that are involved in the interdisciplinary analysis of the subject of the dissertation. Different theories and evidence from empirical research have been considered in order to better understand various components (mental, behavioral, social, etc.) that are involved in music listening as a complex and creative musical experience. The following chapters and sections shall discuss the essence of the dissertation still on the theoretical level, but more in-depth, while focusing on extramusical associations as a product of creative music listening, as well as factors that influence music-evoked responses in listeners.

1.2. Music listening and extramusical associations

According to Mora (2015, p. 11), music as a form of art "is a uniquely human activity associated with emotion as well as abstract and symbolic cognition. Art is in fact knowledge and pleasure." Therefore, appreciation of art, in this case – specifically music – brings different responses and even interpretations, i.e., extramusical associations. Not only is music a subjective matter, but the process of evoking extramusical outcome in the listener is also complex: it depends not only on the musical piece but also on the listeners, their experience, socio-cultural background,

musical preferences, and other influential factors. Therefore, as DeNora (2004, p. 61) explains, music is not just a stimulus that acts upon listeners, the musical effects derive from "the ways in which individuals orient to it, how they interpret it, and how they place it within their personal musical maps, within the semiotic web of music and extra-musical associations."

From the perspective of neuroscience, music listening is not a simple process on the neural level, either. In fact, perhaps, it is even more complex. Recent neuroscientific findings have rejected the old theory of the brain hemispheres being divided for different tasks (for instance, the claim that art and music are processed in the right hemisphere, whereas, e.g., language and mathematics – are processed in the left) as, in reality, processing of music is distributed throughout the human brain (Levitin, 2008, pp. 8–9). According to Levitin (2008, pp. 85–86), musical activity (composition, improvisation, performance, and also music listening) incorporates almost every part of the brain that is known to neuroscientists, including almost every neural sub-system; the processing path of music listening starts with the sub-cortical structures (the cochlear nuclei, the brain stem, and the cerebellum), and then it goes up to the brain's both auditory cortices. Stewart (2016, p. 8) explains the perception of audible music as a process of "minimizing prediction errors between higher-level 'prediction units' and lower-level 'error units' in the hierarchically organized brain," and such interaction between the predictable musical structures and 'predictive brain processing' is the decisive factor of the listener's musical perception and cognition.

Since today music is available almost anywhere and anytime, we are virtually always surrounded by music, especially in the modern society. Depending on the musical works people *choose* to listen to, the preferred music is an active factor in forming the listeners' perception and even identity (MacDonald, Hargreaves, and Miell, 2009), as the chosen music may reflect and even communicate their personality and values (Corrigall and Schellenberg, 2015, p. 265). For instance, listeners may choose particular musical genres for "their external meaning, their social symbolism" (Jourdain, 1997, p. 262), and those musical preferences may also "play an important role in physical and psychological well-being" (Lamont and Greasley, 2009, p. 166). At the same time, the experience of music listening is not always intentional, or conscious, or 'attentive' (Rösing, 1984, p. 134). This type of listening (or active musical activity in general) is considered an aesthetic experience which produces emotional and evaluative effects (Hargreaves and North, 1999, p. 74); however, only 2–12% of the total time spent while listening to music is devoted to intentional music listening (Brattico, 2015, p. 303). When music is played in the background, it is passively heard rather than actively listened to (Jourdain, 1997, p. 245). According to this dissertation's socio-demographic survey, ~37% of the respondents claim that they usually listen to music unconsciously, or passively, and ~54% listen to music consciously, that is, actively. It suggests that the latter group of participants pays attention and listens to the music carefully even if it may be playing in the background (e.g., at home, in a restaurant or a shop). According to Jourdain (1997, p. 238), non-intentional music listening that is so common in the modern world leads to being surrounded by music more, but, in turn, listeners participate, or get actively involved, in music less. The researcher adds that so easily accessible music today has become

"a mood enhancer" rather than "a source of pleasure" (1997, p. 245). However, passive, or incidental, music listening should not be understood as a negative phenomenon, it is also a natural real-world process occurring in its own context when a task is more important and requires most of the individual's attention while music goes into the background, although, still influencing at some level, e.g., enhancing the primary activity "by affecting a psychological state which impacts on desired outcomes" (Sloboda, Lamont, and Greasley, 2009, p. 431), or slowly developing familiarity (Corrigall and Schellenberg, 2015, p. 271). For instance, "[j]ust as importantly, music operates as an unchosen catalyst, stirring up unbidden memories as a song is fortuitously heard, perhaps in the midst of a morning radio show when we're engaged in cleaning windows or driving our car" (Pickering, 2018, p. 191).

From the neuroscientific point of view, active listening to music involves the cerebral cortex, the brain area that, during the music listening process, searches for "familiar devices and patterns in music" (Jourdain, 1997, p. 246). This process also explains why, when listeners are being faced with an unfamiliar piece, they usually do not struggle to perceive it: this is because the human brain searches for familiar aspects in the music to make it as familiar as possible in that sense. That is why the memory, musical and cultural experience are important so that listeners can '*re*-cognize' (Jourdain, 1997, p. 246) musical patterns in new musical pieces.

1.2.1. Creative listening to music

"Creativity is a famously elusive subject, and never more so than when dealing with the ephemeral and seemingly immaterial facts of musical sound," according to Zbikowski (2018, p. 6). Before investigating what specifically creative music listening is, an attempt to define what creativity is in general is called for. As such, creativity is a rather abstract concept since it can be found in diverse contexts and forms (Hargreaves, 2012, p. 546); however, it is also a very important component in everyone's life. Creativity is needed not only for the creation of something specific, but also as a tool in everyday activities, especially in problem-solving. In different epochs, and within different paradigms, creativity has been defined in multiple ways, and that alone is testimony to its complexity: "Creativity itself is seemingly a mystery, for there is something paradoxical about it, something which makes it difficult to see how it is even possible" (Boden, 2003, p. 11). From the perspective of neuroscience, we encounter the following description by Mora (2015, p. 13):

> "Creativity, like ethics, beauty, decision-making, or the ability to think or reason, is not located anywhere in the brain. To create means having the ability to get excited and think, learn, remember, imagine, and all these are brain functions whose processing is distributed in areas, neural systems, and specific networks functioning within codes of time, not space. Creativity is an important ingredient in any artistic activity. […] It has been speculated that the artistic creativity may emerge from that clash between the abstractions created by the brain, with its emotional component, unique and personal, and the concrete sensory objects of the world from which precisely those same abstractions have been constructed."

Additional definitions that are worth of mention within the scope of the present research include the following:

- "Creativity is the ability to come up with ideas or artefacts that are *new, surprising and valuable*" (Boden, 2003, p. 1); "Someone who comes up with a bright idea is not necessarily less creative just because someone else had it before them" (Boden, 2003, p. 2);
- "[…] the concept of creativity is considered to be a kind of continuum of emerging innovations that appear in the midst of the daily activities of an average individual" (Deliège, 2006, p. 63);
- "A creative attitude is present in subjects able to freely use their knowledge, without repeating what they have learned in excessively automatic ways. On the other hand, without some form of knowledge, no creativity can be developed." (Baroni, 2006, p. 83);
- "[…] creativity is only one facet of a much broader phenomenon, the central core of which is imagination. We need more precise distinctions between the internal mental processes and the behavioural manifestations of 'creativity'; between these behavioural manifestations and the social-environmental influences involved; and between creative production and creative perception" (Hargreaves, 2012, p. 546);
- "[…] creativity does not happen inside people's heads, but in the interaction between a person's thoughts and a sociocultural context. It is a systematic rather than individual phenomenon" (Csikszentmihalyi, 1996, p. 23).

As for music, there are different notions used amongst researchers as well, such as: "creative thinking in music" (Leman, 1999), "creative cognition" (Deliège, 2006), or "musical creativity" and, specifically for music listening – "creative music listening" (Brattico and Tervaniemi, 2006) or, simply, "creative listening" (Dunn, 1997). A definition provided by Leman (1999, p. 285) suggests that "[m]usical creativity is not a property of musical products but of persons that are involved with musical information processing."

When we think of creativity in music, the first thoughts are not usually related to music listening but rather to music performance, and especially music improvisation or composition, from which the latter, in fact, is the most naturally identified as a creative musical activity (Baroni, 2006, p. 85; Brattico and Tervaniemi, 2006, p. 290). Furthermore, a lot of research on creativity as the main factor has been done in the field of music education where music listening may or may not be a part of it (Kratus, 2017; Peterson, 2006). Somehow within the creativity context, listening to music as such can often be left aside because it may be perceived as a less creative activity compared to the above mentioned musical activities although a number of researchers point out that music listening should receive more attention (Baroni, 2006; Dunn, 1997; Hargreaves, 2012). Partly, this may occur because it is not very clear in which way researchers can think of music listening as a creative process since no adequate theoretical framework has been developed as of yet that many researchers could agree upon. The conventional perception of music listening, according to Dunn (1997, p. 42), is that the process is considered to be passive because "the listener's

role is to contemplate and respond to the creativity of both the composer and performer."

However, whenever extramusical experience is involved, the process is more likely to be understood as musically creative since it involves "different networks of association" (Hargreaves, 2012, p. 540). Therefore, "musical listening can be considered as based on creative mental processes, especially when it requires an effort to extract meaning," according to Brattico and Tervaniemi (2006, p. 291). The neuroscientists add that the process of music listening can be considered as "an act of creation when it involves, apart from auditory abilities, imaginative, representational, attentional, and emotional behaviours in order for the listener to reach the composer's meaning or to create their own" (Brattico and Tervaniemi, 2006, p. 293). Music listening and its interpretation is also seen as a creative activity by Almén (2014, p. 28) who explains that, according to his research experience, phenomenological and neuroscientific evidence leads to "pragmatic and functional distinctions in human approaches to creative tasks like the interpretation of music or other narrative phenomena."

According to Reybrouck (2014, p. 199), even though music "is a sounding art which is actualised in its sonorous articulation through time and which can be objectified by providing means for portraying the continuous acoustic signal. Making sense of music, however, must go beyond a mere acoustical description of the sound." Reybrouck explains that it is not the physical level of sound that is important in the process of music listening, but the listener's perception, or, as he puts it, "how human listeners structure the acoustic flow" (2014, p. 199). The process may also seem to involve personal, inner reflections and experiences inside the listener. If one wants to experience music as an inner journey, explore reflections of oneself, the listener must be open and honest in this process (Girdzijauskas, 2012, p. 33). Music listening is always a fairly subjective process, therefore, each listener finds musical meanings according to his or her experience and understanding, as Meyer (1956, p. 41) explains:

> "But though the listener participates in the musical process, assuming the role which the composer envisaged for him, and though he must, in some sense, create his own experience, yet he need not take the attitude of the composer in order to do so. He need not ask: How will someone else respond to this stimulus? Nor is he obliged to objectify his own response, to ask, How am I responding? Unlike the composer, the listener may and frequently does 'lose himself in the music'; and, in following and responding to the sound gestures made by the composer, the listener may become oblivious of his own ego, which has literally become one with that of the music."

However, in the manner Girdzijauskas (2012, p. 68) explains this process, after all, it may be not the subjective opinion of the listener to be in the center of attention, but it is rather the musical material and the meaningful references that direct towards the implied sense of the musical piece and may even trigger imagination. Music is able to put the listener's mind into the mode of wondering, dreaming, and fantasizing.

In this case, imagination may be considered as "the essence of the creative perception of music", according to Hargreaves (2012, p. 539).

In his study, Burkholder (2006) presents a model entitled 'the associative model' which helps to understand the process of music listening that evokes the associative response in listener. The associative model consists of five stages, which, according to the author, may happen in various order combinations. At the same time, Burkholder (2006, pp. 78–80) presents the process by using the following logical order:

1) **Recognition of familiar elements**. The listener recognizes one or, usually, many musical characteristics that sound familiar: timbre, melody, rhythm, genre, etc.
2) **Recall of other music or schema that make use of those elements**. Since the listener can recognize many different elements in just one musical piece, it follows that many associations can be evoked at the same time. This is the first level of the primary associations. It may be perceived by the listener as references to other musical pieces or genres. "At an even simpler level, when an event is recognized as belonging to a particular category of reality, an analogy can be drawn to the denotative meaning of a word in language: the sound of a sitar *exemplifies* 'sitar' and thus 'sitar music' " (Burkholder, 2006, p. 78).
3) **Perception of the associations that derive from the primary associations**. This is the second level of the associative process where another association comes from the first one and reveals a wider context. For example, a song reminds the listener of a specific genre (the first level), and that specific genre may be associated with particular artists or concerts attended by the listener, or with anything that comes as a natural association deriving from the person's (musical) experience. Because of different experiences, especially if they are not shared within a society, a cultural group, the listener may come up with any individual association that is possible for him or her.
4) **Noticing what is new and how familiar elements are changed**. At this stage, the listener analyzes how familiar musical characteristics are modified with the new ones and how altogether the mix of both brings a fresh association, a new meaning in general.
5) **Interpretation of what all of this means**. Here, all the previous stages are taken into account, and the listener makes a 'final' general interpretation of the whole musical piece and associations stemming from it.

Burkholder admits that although the model has shed some light on the process of evoking associations during music listening, it is not ideal in the endeavor of interpreting associations as such. It is more as if complex and individual analysis than the associative model itself. Another theory concerning music listening comes from Peterson (2006) who considers the listener to be a "creative music maker" at once as

the listener makes creative choices of *how* to listen to music at the moment of music listening. The researcher explains the concept and its process in more detail:

> "During music listening, the listener constructs mental objects that not only correspond to auditory events presented by a performance, but also legitimately differ from the mental representations of other listeners. In accordance with the skills, background knowledge, attitudes, and goals of the listener, and through a process that can involve creative musical decisions on the part of the listener, these aural mental objects are selected, categorized, organized, related to other memory objects, transformed in various ways in combination with those memory objects, and incorporated into a mental model that becomes the listener's unique perception of that musical work. The thinking in and with sound that generates such a mental model is the music making carried out by listeners, just as the thinking in and with sound that generates a composition is the music making carried out by composers" (Peterson, 2006, p. 18).

By introducing this theory, Peterson considers music listening to be central of all forms of musical activity since, in her opinion, "musical activity of any kind invariably involves attention to sound through listening" (2006, p. 15). At this point, it is also important to note and conclude at once that music listening is an active and creative process which involves "unique, individual cognitive and affective response to listening to music that extends beyond listeners' technical understanding of the music" (Dunn, 1997, p. 42).

1.2.2. Music-induced emotions

"Since ancient times, music has been used to modulate the emotional state of an individual, to shape the collective mind of a group of people, and to manage one's self-identity and interpersonal relationships," according to Yang and Liu (2013, p. 1304). Many listeners may perceive emotion as a natural outcome of music listening. When they are asked why music is so important to them, the most common answer is that *it evokes emotions*. Many of them claim that they listen to a particular musical piece to induce a specific emotion, as well as "regulate behavior" (Herbert, 2011, p. 12). "People use music to change emotions, to release emotions, to match their current emotion, to enjoy or comfort themselves, and to relieve stress" (Juslin and Västfjäll, 2008, p. 559). According to Corrigall and Schellenberg (2015, p. 274), in their capacity of affective response to music, positive emotions are more frequently experienced by listeners than negative ones, and listeners themselves seem to prefer musical pieces expressing positive emotions, e.g., joy or happiness, over those conveying negative emotions, e.g., melancholy or sadness.

For listeners, the process in general may appear as an easy equation: music listening induces emotion, whatever that may be. However, at the scientific level, matters become more complicated. First of all, researchers have not yet agreed whether music *induces* or *conveys* emotion (*induction* or *perception* according to Juslin, 2009, p. 131) as for now both views are recognized and used, and, secondly, emotion is only one of the possible types of affective response: mood, feeling, etc., and all of them are denoted by their own qualities. However, for the objectives of the present dissertation, a choice has been made not to engage in such nuances: the words

'emotion', 'mood' and 'feeling', although they mean different categories (especially prominent difference lies between *emotion* and *mood*), the three terms shall be considered under the same semantic umbrella and will be used interchangeably throughout the text. Besides the complexity of the matter as such, the choice was made also – perhaps mainly – because the participants themselves did not seem to display any differentiations among such concepts in their responses.

Moreover, music is usually considered to be an aesthetic art; therefore, music-induced emotions are usually not the same as basic everyday emotions. This is because they are rather associated with the aesthetic experience in general; therefore, these emotions have a separate term – *aesthetic emotions* (Brattico *et al*., 2016; Vuoskoski, 2012). These emotions are a part of the of the overall aesthetic musical experience, according to the framework discussed by Brattico and Pearce (2013). The researchers identify three outcomes of aesthetic experience: 1) emotions (a listener recognizes the emotion expressed in a musical piece and, as a response, an emotion is induced in the listener, e.g., nostalgia or enjoyment), 2) judgements (for instance, the listener perceives the musical piece as beautiful) and 3) preferences (the listener decides whether s/he likes the musical piece or not). According to Corrigall and Schellenberg (2015, p. 263), the latter state is considered to be the most basic emotional response to music.

According to Scherer (2001), the main mechanism behind the process of emotion induction is cognitive appraisal. The author explains the notion in the following terms:

> "The organism constantly processes *information* about events (external stimulation and changes in its internal milieu). The result of this processing, *knowledge* in the widest sense, is stored in short-term memory. The organism constantly *evaluates* all this information (or the knowledge about facts that it represents) with respect to its implications for well-being. This evaluation or *appraisal process* consists of determining the overall *significance* of the stimulus event for the organism […]. The result of this *appraisal process* – the appraisal *outcome* – produces *emotion episodes*" (Scherer, 2001, p. 369).

To put it simply, this theory conveys the general idea that emotion involves a cognitive evaluation of a stimulus. Emotional reaction is not provoked only automatically by a specific stimulus or event: first, an individual would process and assess the given event, and then, according to that assessment, a corresponding emotion would be evoked. In addition to the cognitive appraisal theory, another theoretical framework was introduced by Juslin and Västfjäll (2008). Their framework comprises six psychological mechanisms that, according to the two researchers, are responsible for the induction of emotions in listeners when listening to music:

1) **Brain stem reflex.** This is an instant automatic response relying on the early stages of auditory processing. In this case, emotion is music-induced because "one or more fundamental acoustical characteristics of the music are taken by the brain stem to signal a potentially important and urgent event. All other things being equal, sounds that are sudden, loud,

dissonant, or feature fast temporal patterns induce arousal or feelings of unpleasantness in listeners" (2008, p. 564).

2) **Evaluative conditioning**. Here, emotion is evoked by music because over time through repeated pairings (musical stimulus is paired with another positive or negative stimulus, an event – e.g., a specific song is paired with a motivational feeling when jogging – music has become the main stimulus that, on its own, is able to evoke the emotion of the event. In other words, the original event is not needed anymore because its emotion has been 'attached' to the musical stimulus. According to the authors' review on some studies, in the case of evaluative conditioning, the responses amongst listeners are mostly "highly personal and idiosyncratic" (2008, p. 565).
3) **Emotional contagion**. Juslin and Västfjäll explain this as a process when listeners by perceiving the 'emotion', or expression, of a musical piece are affected by that music's emotion internally. For example, the musical piece conveys a joyful, happy, merry expression, and the listener may perceive this information from such musical elements as fast tempo, major scale, high pitch, etc. In this case, the music-evoked emotion would be something like joy, or feeling of happiness. The authors, relying on specific scientific studies, suggest that mirror neurons play an essential part in this process.
4) **Visual imagery**. In this case, music listening evokes visual mental images in the listener's mind which induce an emotion associated with the imagery. For instance, an instrumental musical piece evokes an image of the morning sun in a forest, and the listener perceives the mood of that image. "The emotions experienced are the result of a close interaction between the music and the images" (2008, p. 566). Visual imagery may involve episodic memory (past events), although the listener may come up with images that were never experienced or seen in his/her life using only imagination guided by the musical piece.
5) **Episodic memory**. As mentioned above, this psychological mechanism is similar to and may be a part of the visual imagery mechanism, however, here only already experienced past events – memories – are evoked by music, and the emotion comes from that specific memory. The authors claim that empirical research shows memories being often evoked by music listening, and one of the most common emotional reactions is nostalgia (2008, p. 568). Depending on the type of the memory, the evoked emotions may be very intense.
6) **Musical expectancy**. This notion is probably best known from the theory developed by Meyer (1956) With this psychological mechanism, an emotion is induced by music when a particular musical feature "violates, delays, or confirms the listener's expectations about the continuation of the music. For instance, the sequential progression of E-F# sets up the musical expectation that the music will continue with G#. […] Musical expectancy refers to those expectancies that involve *syntactical*

relationships between different parts of the musical structure" (Juslin and Västfjäll, 2008, p. 568).

In some specific cases, it may not be easy to distinguish among these psychological processes, especially when the authors suggest that different mechanisms may be involved simultaneously. On the other hand, this theoretical framework in general offers better understanding on how and in what specific ways emotions can be induced by music. Furthermore, it clearly shows that there is no single universal mechanism responsible for all the music-induced emotions, and this process depends on many factors, e.g., the type of music, associations with the particular musical piece, the listener's past experiences (especially the cultural and musical ones). As the two researchers state: "[w]hat is unique about musical emotions is not the underlying mechanisms or the emotions they evoke, but rather the fact that music – unlike most other stimuli for our emotions in everyday life – is often intentionally designed to induce emotions, using whatever means available" (Juslin and Västfjäll, 2008, p. 572). However, Corrigall and Schellenberg (2015, p. 263) argue that, while focusing on how music induces emotions in listeners (such as joy or sadness), Juslin and Västfjäll ignored the aspect that the emotional response to music occurs on two levels: "[o]ne is evaluative – whether the listener likes the music or considers it to be good," and the other level is that of a specific feeling, e.g. joy or sadness, which is expressed in music and/or induced by music in the listener.

Even if we understand the mechanisms behind the emotion induction by music listening and that those are specific – music-induced – emotions, it may still not be clear what exactly is induced in listeners since it is not always possible to describe it verbally. The empirical part of this dissertation also provides evidence of the common situations in which listeners cannot find exact words for describing music-induced emotions that they experienced during music listening. This kind of phenomenon raises a question whether it might be a unique emotion that there is no term for, or whether listeners themselves cannot fully understand and identify the experienced emotion. Furthermore, according to Meyer, "it may well be that when a listener reports that he felt this or that emotion, he is describing the emotion which he believes the passage is supposed to indicate, not anything which he himself has experienced" (1956, p. 8). This becomes more complicated as it is possible to feel different emotions at the same time (e.g., negative and positive ones). However, even these mixed feelings can be enjoyed, especially by sophisticated listeners with musical training (Corrigall and Schellenberg, 2015, pp. 277–278). What is even more interesting is that empirical evidence shows that there is such a phenomenon of actually liking sad music (e.g., a fMRI study by Brattico *et al*., 2016) demonstrating that "music that expresses a negative feeling can nevertheless be evaluated positively" (Corrigall and Schellenberg, 2015, p. 275). This enjoyment of negative emotions is called, as suggested by Aristotle, "the paradox of tragedy" (Brattico *et al*., 2016).

According to Girdzijauskas (2012, p. 56), it is not only difficult to convey the musical experience and perception in words: probably it is not possible at all because it will always and only be a text *about* music – one, that is, that cannot represent the

real musical experience in full accuracy. Girdzijauskas continues by stating that this happens because music is a phenomenon that expresses human experience in a deeper way than whatever verbal expression allows (Girdzijauskas, 2012, p. 56). Tagg (2012, pp. 74–75) argues that what he calls 'emotion words', the keywords that describe musical moods (such as joy, joyful, joyfully, etc.) are one of several possibilities to label a musical mood or emotion, and this fact "may partly be due to the audiovisual contexts in which silent film and library music are used, but that is certainly not the whole story." The researcher continues by stating that the underlying problem with those words when music is being spoken about is that "they denote states of mind *in abstracto*. They are not like music which culturally packages an emotion or affect into a performance, live or recorded, through the process just described. Instead they do what words are particularly good at: as signifiers they lexically denote their signifieds" (Tagg, 2012, p. 75).

1.2.3. Listeners' visual imagery

It seems that music cannot be perceived as a closed piece of art that is designed only for cold-minded listening. That does not only mean that emotions are not present, and that there is no other extramusical content, such as visual mental images. On the other hand, we may wonder whether music should be enjoyed only for the sake of enjoyment without any extramusical outcome. Even so, we may ask whether it is possible for music to be a pure experience that does not trigger any mental wondering of a listener that ends up astray from the music itself. Reybrouck poses a similar question from the semiotic perspective: "Should we conceive of 'internal' or 'external semantics', or is it possible to bring both approaches together in a framework that goes beyond this dichotomy?" (Reybrouck, 2014, p. 197). As nowadays music is interwoven into something else, it usually plays (an important) part in different audiovisual projects. There are many music video clips, movies, musical backgrounds in theatre, etc. Even if one attends a concert, almost always one is also exposed to some kind of visualizations to make the show even more effective emotionally. Therefore, there is no wonder that when people are exposed to music only, their minds also tend to create these additional 'visualizations'. "Acoustic information is overwhelmingly accompanied by visual information, and powerful associations between the two modalities naturally develop through their contiguous occurrence" (Thompson, 2009, p. 137). The music-induced visual outcome might be based either on the listener's experience (memory) or a fantasy, imagination, or it even might be a synthesis of both. At this point, music can also be thought of as a peculiar time machine – it can bring listeners back to their past – specific (and very old) memories, or it can take them to what they think could be their future in the listeners' fantasies (imagination).

Although it is known that music has the ability to set the mind for wandering within the visual context, on the other hand, it seems amazing that an audible stimulus in the listener's mind can be converted into a visual output. It can be a specific or vague memory, a freshly produced mental image, fantasy (imagination), or a synthesis of both. Understanding of the context plays an important role, according to Sartre (2012, p. 9), "[t]he imagination, or knowledge of the image, comes from the

understanding; it is the understanding, applied to the material impression produced in the brain, that provides us with a consciousness of the image." "The precise nature of this visual imagery process remains to be determined, but listeners seem to conceptualize the musical structure through a metaphorical nonverbal mapping between the music and so-called image-schemata grounded in bodily experience" (Juslin and Västfjäll, 2008, p. 566). It is worth mentioning that visual imagery should not be confused with such terms as *auditory imagery* (e.g., Jourdain, 1997), or *musical imagination* (e.g., Seashore, 1938) that describe the process of imagining or even hearing music in one's mind, which is more related to music composition or performance rather than music listening.

An important component of visual imagery is the color scheme that includes uncolored (black and white) content as well. At this point, it is important to note that in music research there are many cases of investigations involving not the above mentioned color associations that go together with the music-evoked visual imagery, but rather the so-called *synesthesia* which "is a rare and interesting neurological phenomenon in which listening to music automatically and involuntarily leads to the conscious experience of color" (Whiteford *et al*., 2018, p. 2). In this specific case, only a relatively small number of people are able to 'see' a specific stimulus (e.g., taste, numbers, music, etc.) in colors, and they are called *synesthetes* (Ramachandran and Hubbard, 2001). Therefore, this kind of research should be excluded in this study. Fortunately, there have been other empirical studies carried out in order to investigate the connections between music and color perception in non-synesthetes as well. According to Whiteford *et al*. (2018), there are two general hypotheses to explain the so-called music-to-color associations that can be applied to both synesthetes and non-synesthetes: emotional mediation and direct links. The latter notion suggests that "musical sounds and visual colors are related via direct correspondences between the perceived properties of the two types of stimuli," for example, color saturation maps to timbre or size – to duration, or "higher pitched tones are associated with lighter, brighter colors" (Whiteford *et al*., 2018, p. 2). The hypothesis of emotional mediation asserts that "music and color are linked through shared emotional associations" (Isbilen and Krumhansl, 2016, p. 150), and this may be considered to be one of the most important and consistent findings in the music-to-color research (e.g., Bresin, 2005; Lindborg and Friberg, 2015; Palmer *et al*., 2013): darker colors are usually associated with minor scales (as well as negative emotions), whereas brighter colors are linked to major scales (as well as positive emotions) thus indicating the existing additional link of emotional associations. Some specific study examples shall be analyzed and compared to this research in the methodological part of the thesis.

As Girdzijauskas states (2012, pp. 18–19), probably, a categorical separation of emotions from visual imagery (imagination) is hardly possible since emotions do not exist apart from the listeners' world, which is in turn full of images and visual representations. Furthermore, according to the author, those emotions are experienced as a tool of reality evaluation, and thus it is natural that similarities to other emotions (and experience of them) evoke associations with events, situations and states which are not a part of the artistic reality. To put it in the words of Vuoskoski and Eerola (2015, p. 263) "[t]he idea of music listening as a narrative process is closely related

to the phenomenon of music induced visual imagery, which has been proposed as one of the mechanisms through which music can induce emotions in listeners." Thompson (2009, p. 137) also links visual imagery to emotion: "the attributes of music need only be vaguely related to the visual images to act as triggers of visual imagination, which then unfolds creatively and often induces an emotional experience." The scholar here adds an example of music evoking a wonderful image of a natural landscape in the early morning that, in turn, may evoke positive emotions, such as joy and optimism.

Girdzijauskas (2012, p. 10), for instance, explains a case of 'musical representation': sometimes, even abstract instrumental music can direct the listener's imagination by providing some more or less clear analogies from the listener's environment, outside world, its processes and phenomena. Of course, as the researcher continues, musical representation as a method of music interpretation cannot be applied to all music since many instrumental pieces are far from direct depiction or imitation of real life. Monelle (2000, p. 17) mentions a few examples of the most common musical icons, such as waves, clouds, storms and horses, that, according to him, "are not at all 'pure', but are dependent on well-known conventions." This means that the socio-cultural environment plays an important role in influencing the listeners' musical perception including understanding and decoding musical signs as well as forming and interpreting music-evoked extramusical associations.

1.3. Cultural influence

Girdzijauskas (2012, p. 48) defines cultural environment as a multidimensional and polysemous ocean of different significations, a general background and context where artistic representation makes sense. Since "[m]usic does not exist separately or in isolation from the society or culture that produces it" (Mills, 2012, p. 2), this section is quite important for the exploration of that influential context that lies behind music but at the same time it is where music belongs to as a form of art, entertainment, and even social or cultural communication. Important questions are addressed, such as "how can a musical message be perceived by many people identically or at least similarly?", "how and why are musical pieces, especially unknown, associated with non-musical context, e.g. existing (audio-)visual products?" and "how and what social and/or cultural stereotypes are formed that influence music listening and perception in general?"

1.3.1. Socio-cultural environment of the listener

Another question that may be asked is whether music listening is a personal and unique experience, especially when it comes to extramusical associations. It may seem that specific episodes evoked by music listening are highly intimate, personal and individual, especially if they are specific memories from the listener's past.

> "On a basic level, autobiographical memory can be seen as the building block of more complex collective and cultural memories. These shared memories often help shape our

histories and the tangible and intangible things we think of as heritage. Music especially has the capacity to elicit affect within individuals, which often becomes a shared affect or bond between music fans globally" (Istvandity, 2018, p. 199).

This means that even specific memories from the listener's past that have arisen as responses to music might be influenced by the listener's experience in his/her socio-cultural context. Therefore, music may not be significant on its own as it seems to be highly dependent on the contexts it happens to be encountered in. In addition, DeNora (2004, p. x) implies that "it is probably impossible to speak of music's 'powers' abstracted from their contexts of use, though, within certain settings and in relation to particular types of actors, music's effects on action may be anticipated to varying degrees." The researcher also notices that music has a strong power that it may impact such human factors as how they "compose their bodies, how they conduct themselves, how they experience the passage of time, how they feel – in terms of energy and emotion – about themselves, about others, and about situations" (DeNora, 2004, p. 17).

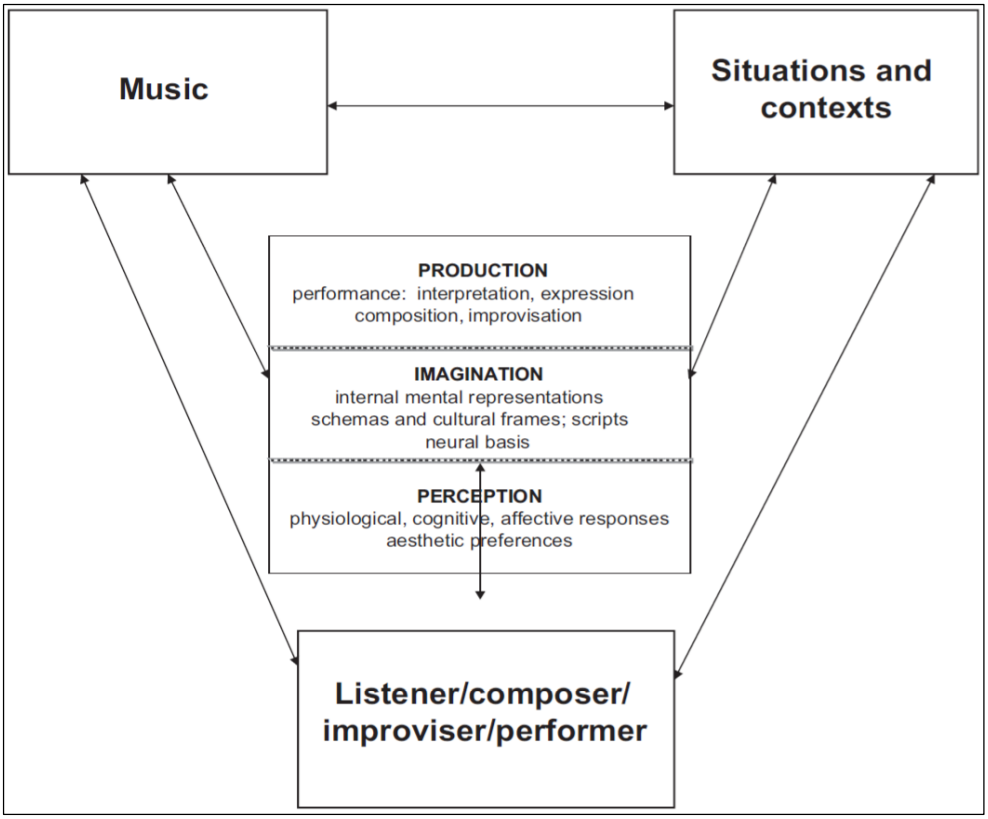


Figure 6. The reciprocal feedback model as revised and presented in the work by Hargreaves (2012, p. 554)

Hargreaves (2012, p. 546) points out that imaginative listening is "a creative activity which is inextricably linked with and influenced by the social and cultural

environments in which it takes place." The author continues by explaining the links between socio-cultural and personal associations: "individuals combine their networks of musical and cultural associations to include their corresponding associations with the people, situations and events that they have experienced in their lives: these are effectively *personal* networks of association, which are subject to constant change as new pieces or styles are experienced in different social-cultural situations" (Hargreaves, 2012, p. 547). Here, Levitin (2008, p. 38) brings a classic example when listeners associate major scales with happy, joyful or even triumphant emotions, and minor scales are associated with sadness or melancholy thus explaining that the reasons for these associations are cultural: "[s]ome studies have suggested that the associations might be innate, but the fact that these are not culturally universal indicates that, at the very least, any innate tendency can be overcome by exposure to specific cultural associations." Reybrouck (2014, pp. 201–202) argues that responses to music are not only "direct reactivity to the sounding stimuli," as in this process, cognitive mediation is also involved, and, according to the author, "the shaping of the human-environment interaction" is central in the process since people are not "programmed to react upon stimuli in a simple causal way (stimulus-response) but in a way that is mediated by mediating instance."

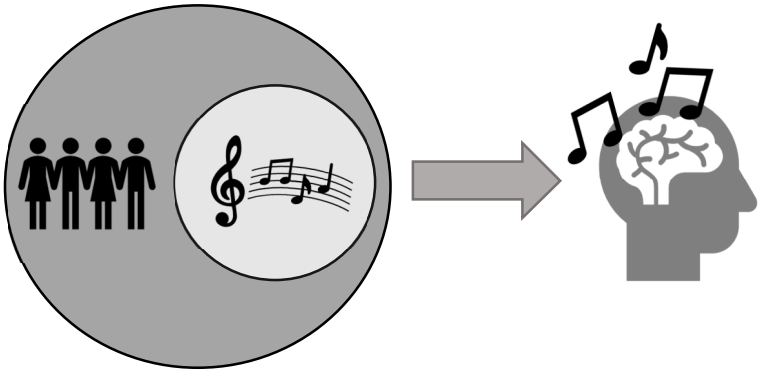


Figure 7. Music represented as an integral part of a wider context – socio-cultural environment – that influences the listener's extramusical associations and musical perception in general (the scheme is made by the author of this dissertation)

The concept of music, according to Tagg (2012, p. 53), describes specific "sets of non-verbal sound produced by humans and associated with certain other forms of symbolic representation, sounds which relate enough to physical and emotional aspects of human experience to be considered disconcerting by ascetic clerics." At this point, the researcher raises an important question: "which 'sets of humanly produced sounds' relate to which other forms of symbolic representation? One answer to that question is provided by theories of human evolution" (Tagg, 2012, p. 53). Meyer adds that those symbolic representations are learned: "Some of those who have doubted that referential meanings are 'real' have based their scepticism upon the fact that such meanings are not 'natural' and universal. Of course, such meanings depend upon learning" (1956, p. 2). Indeed, learning seems to be one of the central aspects in forming culturally, or even universally, recognized musical meanings. For example,

listeners learn that slow tempo minor music is associated with melancholy and sadness, and from Western (Hollywood) movies they learn that the double harmonic major scale is associated with the Arabian culture. These associations are, of course, learnt due to repeated exposure to similar examples that maintain the same or at least very similar patterns. This case is illustrated by Levitin (2008, p. 108):

> "Perhaps the ultimate illusion in music is the illusion of structure and form. There is nothing in a sequence of notes themselves that creates the rich emotional associations we have with music, nothing about a scale, a chord, or a chord sequence that intrinsically causes us to expect a resolution. Our ability to make sense of music depends on experience, and on neural structures that can learn and modify themselves with each new song we hear, and with each new listening to an old song. Our brains learn a kind of musical grammar that is specific to the music of our culture, just as we learn to speak the language of our culture."

On the other hand, since, according to Monelle (2000, p. 15), "musical topics are general types, capable of being represented by particular tokens," the author also notes resistance, that is mostly common among musicians, to the ideas of generalized musical meanings: "According to the popular view, each musical piece, each melody and figure, is essentially unique. This is to envisage a kind of signification in which everything – the sign, the code, the signified – is irreplicable, and every detail of the signifier is mapped on to the signified."

According to Levitin (2008, pp. 230–231), already by the age of two, children begin to show a preference for music that is from their culture, and the teen years are indicated by scientists as "the turning point for musical preferences": children that are about ten or eleven years old accept music as a real interest, even those who had not been interested in music earlier. The author adds that, when in adulthood, the music that was listened to during those early years becomes nostalgic to them, and can even bring such feeling like it is *their* music. Furthermore, according to a review (Corrigall and Schellenberg, 2015, p. 267) of already existing research on associations between specific personality dimensions and music preferences, their findings provide interesting and consistent results: for instance, openness-to-experience is linked with linking musical genres, such as classical music, jazz and rock, while extraversion is associated with preferring energetic and upbeat music, such as dance, pop, hip-hop/rap, and similar musical styles. The dimension of openness-to-experience consists of six facets that are listed and explained by Corrigall and Schellenberg (2015, p. 267): "imagination (being prone to fantasy), artistic interests (appreciating poetry, art, music, and beauty in nature), emotionality (awareness of one's feelings), adventurousness (eagerness to try new things), intellect (receptiveness to new ideas), and liberalism (readiness to challenge authority, convention and tradition)." Music preferences often reflect the listeners' personality traits and their social behavior. As DeNora (2004, p. 44) puts it, "[m]usic is active within social life, it has 'effects' then" because music can be and is used as a resource that "provides affordances – for world building."

1.3.2. New media and audiovisual culture

Sibilla (2006, p. 160) explains that new media is a significant phenomenon influencing the musical domain since it changes the ways people listen to songs and also "the stories in which we insert artists in order to understand their music," and, according to the author, it especially concerns pop-music: "[b]y redefining the roles of the players in pop-music production, those media are changing the way music reaches our ears as narrative and sonorous messages." Because of the technological development, listeners can listen to precisely the same musical performance since it is recorded, not live. Mills (2012, p. 2) notices: "Recording technologies have allowed the 'capture' of the momentary and made it permanent. This has changed the dynamics of the human relationship with music and our own creativity." Furthermore, DeNora (2004, p. 13), for instance, suggests that music used in different audiovisual contexts is usually intended for commanding people's attention, especially when it comes to the domain of advertisement:

> "In our own day, despite the range of compositional and reception practices, music is still used to signal plot and mood within the film and television industries and, there, catalogues of musical materials are still employed. If anything, these industries have only multiplied the kinaesthetic music – image associations to which we are exposed, and which the advertising industry draws upon to sell us everything from cars to bars of chocolate."

Therefore, DeNora (2004, pp. 17–18) states that music is not only "a 'meaningful' or 'communicative' medium," but it is capable of doing "much more than convey signification through non-verbal means. At the level of daily life, music has power." The author explains that it has a 'social power' since the source of it comes from "the control over music in social settings" (DeNora, 2004, p. 20). Today, control over music usually comes by using the latest technologies – digital media – where music is usually 'wrapped' in audiovisual forms since "music occurs frequently in the context of other arts" (Cohen, 2009, p. 449), such as films, (music) videos, etc.

The audiovisual context, to which the listener is exposed, plays a key role, especially when it concerns visual imagery as extramusical outcome of music listening. When a musical piece evokes a memory from the listener's past, it may be not only a specific personal experience. Music may also evoke visual references to other existing audiovisual products, such as live music or theater performances, music videos, movies, TV advertisements or any other audiovisual experience that the listener has been exposed to. Of course, each evoked visual story is unique – probably it would not be possible to find exactly the same image or visual narrative in another listener's story because at least one detail would be different (this can be referred to, for example, the triadic model of Peirce); however, the outcome still can be put into some kind of categories that unite the visual interpretations and become a tendency. These tendencies might reveal that there are some similarities in understanding music as a sign system amongst listeners from the same culture. Those categories, perhaps,

might be better understood as topics which are induced by specific music and are linked to some cultural experience, for example, a scene from a previously seen movie or a movie that had not been seen by the individual might be evoked. We may wonder how an unseen movie can be involved in this process. According to the above mentioned Burkholder's (2006) associative model (see p. 34 of the dissertation), it is possible that listeners make associations that are linked not to specific movies, but rather to more generalized aspects, such as the film genre or scenes of a similar 'general mood'. Sometimes, the listener's mind might be tricked that the music is from the movie s/he has actually seen, but it is not – this is evidenced by this study's empirical investigation; however, usually, the listeners understand that the evoked visual episode is a *possible* scene for a movie of a specific genre because the music sounds like a piece from similar film genres as they share the same (or similar) pattern. Or, in the words of McNelis and Boschi (2013, p. 89), "parallels are often drawn between combination of music and visuals in film and audiovisual perception during other listening experiences." Levitin points out that composers are aware of this kind of associations, and they use them intentionally: "our brains know them, too, through a lifetime of exposure to musical idioms, patterns, scales, lyrics, and the associations between them. Each time we hear a musical pattern that is new to our ears, our brains try to make an association through whatever visual, auditory and other sensory cues accompany it; we try to contextualize the new sounds, and eventually, we create these memory links between a particular set of notes and a particular place, time, or set of events" (Levitin, 2008, p. 39). In the same way, listeners learn from audiovisual products what something should sound like and what music should represent visually.

Of course, music in audiovisual contexts is also used for the emotional response that creators expect to provoke. This may be, for example, an emotional scene in a movie or a live theatrical performance, or it may be used for creating the right mood, or the atmosphere for an advertisement to sell a product. In these and, probably, any other cases "[m]usic is being used to manipulate our emotions, and we tend to accept, if not outright enjoy, the power of music to make us experience these different feelings" (Levitin, 2008, p. 9).

1.4. Lithuanian sung poetry

Although the Lithuanian sung poetry as a genre sounds to be unique, it is not encountered only to Lithuania: similar examples of even world-wide known musicians can be found in other countries as well (e.g., Bob Dylan). Lithuania is among those countries that gave this genre a name of its own, along with the likes of Poland, Italy, France, or Russia. Sung poetry in Lithuania emerged around the 1970s thanks to actor and singer-songwriter Vytautas Kernagis (1951–2008) who, actually, did not like the name *sung poetry* at first (Papečkytė, personal communication, May 13, 2016)[1]. However, it became officially referred to as *sung poetry* (lit. *dainuojamoji*

[1] This and all the following citations in this section on Lithuanian sung poetry are translated from Lithuanian by the author of this dissertation.

poezija) which is the exact translation of the Polish name of their sung poetry – *poezja śpiewana* (Žitkauskas, 2012, p. 12), although the tradition also comes from Russia where the genre is called *avtorskaya pesnia* (eng. *author song*) or *bardovskaya pesnia* (eng. *bard song*); in Lithuania, the word *bard* is also used instead of the *singer-songwriter* in sung poetry (Žitkauskas, personal communication, October 29, 2015).

The genre is essentially associated with the pre-dawn and dawn of the second Independence of Lithuania (from around 1970 until 1990, when the Independence was restored) since it matched the vision of the Independence restoration movement. Thus the circumstances that were the main causes of the emergence of this genre in Lithuania were not only aesthetic but also political since the genre allowed to express thoughts more freely than in other ways during the regime of the Soviet Union (G. Kuprevičius, personal communication, March 18, 2016); thus the genre served as some kind of a musical protest against oppression, and, that is why, it had a parallelly used name at the same time – *political song* (Papečkytė, personal communication, May 13, 2016). During that period, the most significant singer-songwriters were Vytautas Babravičius, Vytautas Kernagis and Virgis Stakėnas, all of whom were pioneers of the genre in Lithuania and helped to spread it. Vytautas Kernagis was not only a pioneer of the Lithuanian sung poetry, but also the most influential and famous singer-songwriter, representative of the genre of all time.

"What is sung poetry? It is that poetry which is sung. Even Kernagis himself said that no one can say exactly what is sung poetry, but all feel it. There is the feeling" (Žitkauskas, personal communication, October 29, 2015). Sung poetry at some levels can actually fit in many genres as it is quite synthetic, especially if we look at today's Lithuanian sung poetry. However, the traditional perception of the genre is that there is a singer-songwriter performing his (her) own songs (at least the music is original) with quite complex and 'deep' lyrics and playing one instrument – usually the acoustic guitar (G. Kuprevičius, personal communication, March 18, 2016). It is very important to convey the right emotion as it plays the most important part of broadcasting the right message to the audience (Papečkytė, personal communication, May 13, 2016). Singers-songwriters of Lithuanian sung poetry usually were non-professional musicians, most commonly they were (professional) actors; "and Kernagis said, that the person has to be an actor" (Papečkytė, personal communication, May 13, 2016). The main reason might be that it is not about musical professionalism, but what and how the artist expresses, what is the actual quality and effect, influence of those expressions (G. Kuprevičius, personal communication, March 18, 2016).

Paradoxically, the genre has not been extensively investigated academically in Lithuania. "I think there is a simple reason for that. First of all, what is this genre? Music or literature? Musicologists do not want to do this as it is not plain music, and, for the literature researchers, it is important to understand at least a little about music. And what there is more of, music or poetry in this genre – it depends on each performer" (Žitkauskas, personal communication, October 29, 2015). According to

singer-songwriters, performers and even the listeners of Lithuanian sung poetry, the most important role goes to the lyrics (poetry), not to the music. And, actually, it can be easily noticed that even if we find the music very beautiful, it is still quite simple (or sometimes even outright primitive) as its role is to accompany the text creating the right emotional atmosphere. However, music can help to convey what has been hidden in the lyrics: "No one has ever wondered why Kernagis in the culminations of most of his songs needed to pull back from the text and improvise only with his guitar and voice. He dives in between the lines into the undercurrents which cannot be expressed in any words. Dare to understand what is not written" (Oginskaitė, 2009, p. 266). Topics are quite different in Lithuanian sung poetry; however, there is always a relation with the social (political) reality involved, "it is in the nature of sung poetry" (G. Kuprevičius, personal communication, March 18, 2016).

The reason why Lithuanian sung poetry is included in this research and may play an important part is that a hypothesis has been suggested of this genre's influence on creative musical listening based on accidental findings of the previous empirical research conducted by the author of this dissertation (Varankaitė, 2017, 2018). In order to check the hypothesis, there should be more focus and involvement of Lithuanian sung poetry in this new research. Furthermore, the genre is definitely special to Lithuanians, and it is highly appreciated by the nation; it can be measured by the number of festivals (national and international ones) dedicated only to this specific genre, such as *Akacijų alėja*, *TAI – AŠ*, *Purpurinis vakaras*, and others. However, another, and perhaps more important, reason is that the texts in sung poetry are not simple, they are 'deep' and require full attention of the listener to actually understand what the song is about. Thus, at some level, listening to songs of Lithuanian sung poetry can contribute to Lithuanians' musical perception. According to the famous Lithuanian composer and professor Giedrius Kuprevičius, "isn't it obvious that it is not pop music that educates our thinking, but sung poetry" (Kuprevičius, n.d.). It is not only an opinion of a professional, this is also what regular listeners think about sung poetry as a genre in general: "it is a highly cultural music", "it makes you think", "simple, pure and beautiful", "deep thought", "to analyze and interpret the text", "soul music", "when you listen to it, you can think about life and meaning", "very beautiful and emotional, sensitive", "it is real", etc. (the quotes are taken from the sociodemographic questionnaire's answers provided by participants of this research). It can be seen that the listeners (the audience, or the *receiver*) understand the purpose of the genre, and that it actually requires more thinking and even feeling in order to be able to understand the musical message to the highest possible extent.

After having considered the currently available and most relevant theoretical background on the research topic of this dissertation, it is evident that all the sub-topics discussed in the theoretical sections are important. Moreover, although they may be taken from different disciplines, they are intrinsically connected to each other

as all of them are significant factors and components of the overall music listening experience. This, again, proves that the process is a complex one and requiring a wider approach. For this reason, interdisciplinarity was a useful choice and a tool that incorporated different perspectives on the subject. The insights gathered from different researchers that represent various fields of study (e.g., music psychology, semiotics, and neuroscience of music) helped to understand various hidden mechanisms that are involved in the musical processes, such as the listeners' musical perception, their responses to music including extramusical associations, even the influence of the socio-cultural environment within which the music exists, etc. The following chapters shall introduce the methodology and results of the empirical study of this dissertation.

2. METHODOLOGY

This section introduces the methodology employed to design the empirical research of this dissertation. The aim is to investigate the relation between music listening and personal interpretations that are specific to each listener individually, while at the same time looking for general tendencies across the participants' descriptions by using the qualitative approach.

The analyzed literature from different research fields provided a wide perspective on the topic of music listening as a complex experience. Unfortunately, only a few similar empirical studies on extramusical outcome have been found that could be applied as an example for this dissertation, especially regarding the aspect that concerns the methodological part with the wider – interdisciplinary – approach. Therefore, the experiment was designed while mainly relying on general qualitative research methods, and by keeping focus on the main objective of the study as well as on what kind of data the researcher would like to gather, in this case – music-evoked extramusical associations.

Although to the best of the author's knowledge this kind of empirical studies involving the same methods and aim has never been carried out before, it is worth discussing some specific studies that are similar to some extent to the present one. Still, it should be noted that there are not many of them, either. They differ in various aspects, from the marginal ones, such as the sample size and the musical (or merely sound) stimuli and their length, to more fundamental ones, such as the object of the study, the type of research (qualitative or quantitative), the specific research methods and approaches (including the field of study itself), and the forms of data analysis. Most empirical studies that may consider extramusical associations and (creative) music listening, come from the domain of (music) education where teachers usually incorporate their students as subjects. Therefore, they mostly concern children and adolescents. For example, in order to address creativity in music listening, Dunn (1997) asked his 29 students to provide 'figural maps' that were visual representations of the listeners' intuitive perception, or, in the author's words, "musical sense" of the given musical excerpt – Delibes' *Waltz* from Coppelia. The students also had to provide verbal responses on the assignment as their overall experience. The researcher concluded that the listening experience was creative since all the figurative maps, despite some commonalities, were different in the general sense.

When it comes to the exploration of extramusical associations deriving from music listening, Shevy (2008) conducted a quantitative on-line study with 284 participants (university students, USA) involving country music and hip-hop excerpts as stimuli that would evoke extramusical associations in order to see the differences of the genre perception. Significant differences were found as the concepts associated with the two genres were extremely different. Shevy conducted another quantitative study on extramusical associations together with his colleague Kristen (2012), where, in addition to the hip-hop and country genres, folksy and punk were involved, and the recruited 106 listeners were university students as well, but they represented two different countries, Germany (n=61) and the USA (n=45). The musical stimuli were 5–6 seconds long and contained only instrumental musical parts (no lyrics or vocals

in general), therefore, “there were no musical events that would elicit strong iconic musical meanings in the recordings” (Kristen and Shevy, 2012, p. 769). The findings revealed that there were tendencies of perceiving consistent meanings across different countries/cultures, mainly due to the global media where some musical genres get to be spread and recognized worldwide. However, it is important to note that, in both studies, the extramusical concepts were predetermined by the researchers as options in the questionnaires.

A qualitative study on extramusical associations (specifically, autobiographic memories) was conducted by Baumgartner (1992). There were 73 university students recruited, however, no actual music listening was involved. Instead, the participants had to think of the instances when a particular musical piece would evoke specific memories, and then they had to evaluate both the musical piece and the memory emotionally, as well as to describe the overall experience of the instance. The researcher reported that only three subjects could not provide a musical piece and its association(s). In general, the results showed that listeners tend to associate a piece of music with a particular event that later would become a memory which would be evoked each time they would hear the same musical piece, and most of those memories would be related to romantic experiences, although some of the participants reported unpleasant situations as well. Emotional evaluations correlated between the musical piece and the associated episode.

There was a neuroscientific study conducted by Painter and Koelsch (2011) that involved electroencephalographic (EEG) measuring. It aimed to investigate whether out-of-context sounds can elicit extramusical associations. The researchers employed 24 subjects for the first experiment and 20 for the second one, and they used very short (2 second) sounds of different timbres to check if there is any meaningful relationship between them and the provided adjectives (words). According to the findings, the authors concluded that sounds, even outside the wider musical context, can evoke representations of meaningful concepts without involving emotional valence. There have been other similar neuroscientific studies (e.g., Koelsch *et al*., 2004) investigating the semantic aspect of music that involved the method of music (sounds) priming with words, however, they did not explore the natural process of induction of extramusical associations since the words presented for the subjects are predetermined by the experimenters. Of course, the neuroscientific field (as well as music psychology) is rich in empirical research on emotional responses to music, from which, the most relevant studies have been overviewed in the theoretical part of this dissertation.

A recent study by Küssner and Eerola (2019) investigated visual imagery experience during music listening. The results showed that 77% of 500 subjects (of a wide age range from 18 to 79) had at least once experienced visual imagery during music listening before. The study was carried out by using an online 24-item survey developed by the authors. They also separately analyzed musically trained and untrained subject groups and concluded that although there were some differences found, however, most participants reported that they use visual imagery to control their emotional arousal (to energize or, to the contrary, to soothe themselves) during music listening. Furthermore, the described visual images were diverse, and, in most

cases, they were autobiographic memories. Similar to the dissertation's research outcome, visual imagery involved vivid images as well as more abstract ones. Although the study investigated music-induced visual imagery, however, differently from the study presented in this dissertation, no actual music listening was involved in the process of research, and the approach was mainly quantitative since the online survey was based on the participants' general past experiences concerning their music-induced visual imagery.

What concerns color perception in music listening, a few examples of mainly quantitative analysis could be mentioned; however, these investigations should not be treated as cases aiming at synaesthesia (see p. 40 of the dissertation). For instance, a study by Palmer *et al*. (2013) explored color associations that would "suit best" classical music examples. 37 colors were available for the participants to choose from. As the results showed, the subjects from the United States and Mexico tended to choose more yellow, saturated and lighter colors as the better suitable ones for fast tempo major music, whereas more blue, desaturated and darker colors were associated with the slower music in the minor scale. As the authors claim, these tendencies supported the emotional mediation hypothesis although the subjects represented two different cultures. Another study by Isbilen and Krumhansl (2016) had a similar objective. It also employed classical music – preludes from J.S. Bach's *Well-Tempered Clavier*. The results, again, supported the emotional mediation hypothesis. The music-to-color study by (Whiteford *et al*., 2018) also aimed at emotional mediation, however, in this case, the subjects were not exposed to classical music. The musical material of the experiment consisted of 34 genres (short instrumental excerpts), such as hip-hop, jazz, salsa, heavy metal, country-western, etc. Another unique feature of the experiment should be highlighted – there was a set of musical features considered, e.g., complexity, loudness, harmony, distortion, beat strength, etc. The methodology was very similar to the above mentioned two studies – the participants had to associate specific colors (out of the same 37-color palette used in the study of Palmer *et al*., 2013) with particular musical examples, and also to separately rate music and the 37 colors on emotion-related scales. According to the authors, the results showed that "essentially the same emotion-related effects are evident when using a wider range of linguistically labeled scales" (Whiteford *et al*., 2018, p. 21). One of the essential differences between the above mentioned examples of music-to-color investigations and the research presented in this thesis is that in this particular study there was no aim to test emotional mediation (although some correlations can be found), and, more importantly, no colors were presented to the participants as predetermined categories; hence the colors naturally derived as components of the subjects' visual extramusical associations during this experiment. The latter aspect concerns another important difference – the above discussed and other studies explored by the author of this thesis on relations between music and color do not investigate color as an element of the music-evoked visual context, which is the case of this particular research.

It is important to highlight a study carried out in Lithuania in the 1980s by Piličiauskas (1984) who employed university music students (different academic musicians, musicologists, theorists, etc.) in listening to five musical pieces (including

two Lithuanian academic musical pieces, one classical, and one by Elton John) and writing their answers. The descriptions included mostly intellectual and musicological analysis of the given musical pieces; however, some of them also contained information of the participants' extramusical experience, emotion, and visual imagery. Due to the different students' approaches towards the musical pieces, the researcher divided the listeners into the following categories so that they indicate different means of music cognition: intellectual (rational), intellectually (rationally) visual, emotionally visual and complex (harmonious). However, there was no deeper analysis of the extramusical outcome itself that happened to be a part of the listening experience. The purpose of the study was to empirically explore the listeners' perception and approach towards music in order to improve the methods used in education. Therefore, there are more Lithuanian publications that at some level explore the listeners' perception and cognition, and those mostly happen to be methodological textbooks aimed at helping to train musical and creative thinking, as well as to develop better communication with children and adolescents.

Finally, the precedents set by the author herself should be mentioned (Varankaitė, 2017, 2018). These were aimed to explore the extramusical outcome as a response to music listening. One of the most interesting, however, unexpected results was that, after paying some special attention to the more creative descriptions of the musical excerpts which would stand out from other answers, a very interesting link between Lithuanian sung poetry and creativity was found. The results implied that the genre might have an impact on developing creative musical perception for its listeners. Also, the study showed that unfamiliar instrumental music tends to evoke extramusical associations, especially what comes to affective response. The new experiment, illustrated in this dissertation, is more interactive, concentrated and focused specifically on exploring the natural live reaction and first impressions – extramusical associations evoked by music listening during the experiment in front of the experimenter as opposed to the previous study where the subjects provided written answers mostly via the internet without the actual presence of the experimenter. Nevertheless, this research also aims at some point to investigate and check whether fans of sung poetry are really otherwise-minded (more creative, according to the previous study), compared to the listeners (or fans) of other musical genres. However, the main focus of the research concerns the listeners' perception and interpretation of different musical genres that were presented in the experimental session to all the subjects: pop-music, sung poetry (both of which contain lyrics), and instrumental music, including not only 'reading' and understanding the coded context in each piece, but also visual imagery and affective response, as well as the influence of the wider – socio-cultural – context that the listeners belong to.

The research consisted of two main parts that involved subjects: an online socio-demographic questionnaire and an interactive musical experiment in the form of qualitative interview. The questionnaire was designed to gather social and cultural information about each subject including their musical preferences (this also helped to determine and put each subject into the right group – the target group, fans of Lithuanian sung poetry, or the control group), and the actual experiment involved listening to music and interactive discussion – a semi-structured interview. Since the

online questionnaire involved specific questions about Lithuanian sung poetry, it had to be filled in after the experimental session in order to avoid any implications from the questions.

Below are the presented steps of the empirical research preparation and implementation process:

1. create an online questionnaire (social);
2. create a questionnaire for interviews (experimental session);
3. prepare premises, equipment and musical material for the experiment;
4. perform pilot tests;
5. conduct the experiment with up to 30 subjects;
6. analyze verbal answers (and, if needed, recorded behavior);
7. compare the responses between the participants and musical excerpts, as well as between the two groups *fans of sung poetry* and *control group*;
8. analyze results by using the interdisciplinary approach;
9. draw conclusions.

2.1. Experimental session and participants

The qualitative approach was chosen as the analytical tool and crucial element of the entire experimental design. Although it may seem as an arguable aspect, however, in a sense this research can be considered as *arts-based research* (ABR), an emerging and developing genre of the qualitative research domain. ABR "involves adapting the tenets of the creative arts in a social research project" (Leavy, 2017, p. 9), and it is an appropriate and useful approach when the researcher's intention is "to describe, explore, or discover social, emotional, and other meta-cognitive experiences" (Chilton and Leavy, 2014, p. 407). In order to explore the listener's musical experience in-depth, qualitative interviewing (or, as Schostak puts it, "inter-view"; 2006, p. 1) was the main form of gathering data from the participants: interactive conversation based on open-ended questions with each participant separately. Of course, when using this type of data gathering, also, extensive additional and usually needless information is provided by the subjects, however, it gets filtered out during the stage of data analysis, or, on the other hand, that unnecessary information might appear to be unexpectedly interesting and useful. According to Brinkmann (2013, p. 3) "conversations are therefore a rich and indispensable source of knowledge about personal and social aspects of our lives." The researcher continues his thought by explaining why qualitative interviewing can be found very useful and important: "[c]ontrary to widespread criticisms that qualitative research is too subjective, one might argue – given the picture of the conversational reality painted here – that qualitative interviewing is in fact the most *objective* method of inquiry when one is interested in qualitative features of human experience, talk, and interaction (at least if objectivity means being adequate to a subject matter)" (Brinkmann, 2013, p. 4). Furthermore, the study aims to investigate musical experience through the perspective of listeners. That is why their personal interpretations are very important to understand the wider context that music listening might trigger and reveal.

The experimental session consisting of music listening and interactive interview was conducted in a formal environment, in one of the classrooms of the Faculty of Social Sciences, Arts and Humanities of Kaunas University of Technology, where the experimenter led a conversation face-to-face with each participant separately. Each experimental session was recorded with a video camera of a smartphone, and the audiovisual material was kept as proof of the subjects' authentic responses. It also allowed the experimenter to observe and analyze each session as many times as needed for the most detailed investigation. At the beginning of each session, every participant was informed about the process of the experiment and also that the sessions would be recorded; the subjects then signed a consent form.

There were two main criteria for the participants to be eligible to take part in the experiment: all subjects had to be Lithuanians and aged between 20–30 years old. It was especially important to have only Lithuanians in the experiment for two main reasons: (1) even if the participants were not fans of Lithuanian sung poetry, they must have been aware of the genre since one of the musical pieces used in the experiment belongs to the genre and is sung in the Lithuanian language, and (2) the research was conducted in the Lithuanian language in order to let the subjects feel comfortable as much as possible and fluent while expressing their thoughts and interpretations in their native tongue. All the participants were randomly selected young people who fell into either group – 'fans of Lithuanian sung poetry', or 'control' – depending on the social information which they provided by filling in the online questionnaire after the actual experiment which was the same for every subject.

The empirical study was based on the methodology of qualitative research where the sample size (the number of subjects) is not predetermined since it depends on each study individually. According to Gilgun (2014, p. 661), "[t]he more depth and breadth each case in a study has, the smaller the sample size can be." Therefore, compared to the quantitative research domain, "qualitative and arts-based approaches favor smaller sample sizes" (Leavy, 2017, p. 77). Furthermore, in qualitative research, where the qualitative aspects are more important than the quantity, the researcher should not try to employ more subjects simply for the sake of more since it may result in generating needless information (Leavy, 2017, p. 78). Therefore, taking into account the resources including time, especially, no more than approximately 30 subjects were expected to participate in this study. After a reasonable number of responses was collected (the ratio 1:1 between the two groups of subjects – 'fans of Lithuanian sung poetry' and 'control' – was reached), the next stage of the research – qualitative comparative analysis – could be started.

The age category was also quite important, and the range of age, from 20 to 30 years old, was chosen mainly due to the following practical reasons: university students were considered to be easier to reach, and they were seen as more willing to participate in a scientific research where live participation is required. Furthermore, the relatively narrow age range was considered as responses and results would be more concentrated and thus more reliable when compared with each other, as opposed to the above mentioned previous study of the author of this dissertation where the age range was fairly wide: there were 42 participants, 19 to 74 years old.

It was also very important to make sure that the presence of the experimenter had no significant impact on the participants' answers. However, it was not a very difficult task since there were no 'right' or 'wrong' answers that the experimenter might be expecting from the subjects, and, perhaps, unconsciously directing the participants towards them. In this case, all the participants' interpretations and descriptions were the 'right' answers, their first impressions of the experience being exposed to specific musical material that was selected for this study. For this reason, it was explained and stressed to each participant not only once that there were no 'right' or 'wrong' answers that the experimenter would like to hear from them, instead, they should be honest to tell what they really think of each musical excerpt in order to understand their unique experience of *their* music listening process and musical perception.

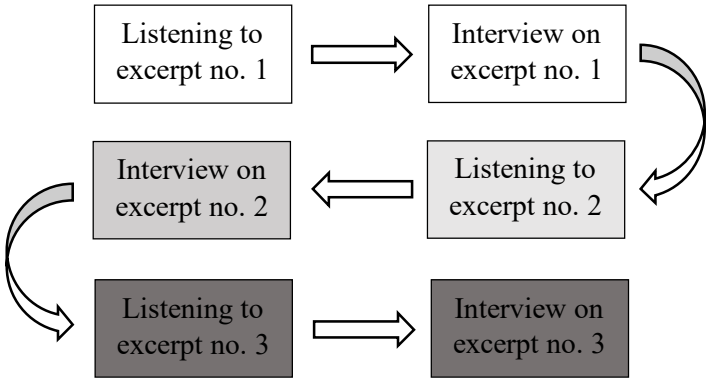


Figure 8. The logical scheme of the experimental session which consists of 6 stages per participant: 3 pairs of music listening and interviews. The order of musical excerpts was randomly different for each participant

The experimental session consisted of listening to three musical excerpts (mainstream pop-music, Lithuanian sung poetry, and instrumental music) by using headphones, and an interactive conversation after each excerpt. The participants could listen to each musical excerpt only one time since it was important to have in mind the idea of the first impression (or thought) being critical and also to present equal conditions to all the participants. Each experimental session – music listening and interview – took approximately 25 to 45 minutes depending on each subject's musical experience and openness, and also on the willingness to talk as well as their ability to provide more detail.

2.2. Musical material

There were three musical pieces selected for this experiment, each of them was approximately 1-1.5-minute-long, and they represented different musical genres: mainstream pop-music, Lithuanian sung poetry, and contemporary instrumental

music. The electro-pop song *Blank Space*[2] (performed by Taylor Swift; length of the experimental excerpt was 00:01:00) was chosen for the mainstream pop-music (*POP* excerpt) category as it was one of the recent and best well-known hits of that time when the experiment was being conducted. For the category of sung poetry (*DP* excerpt; as from *dainuojamoji poezija*), the selected song was *Lietaus kambarys*[3] (*Room of Rain*, performed by a Lithuanian singer-songwriter Domantas Razauskas; length of the experimental excerpt was 00:01:11), and for the contemporary instrumental music (*INST* excerpt) category a piece entitled *Odenall Pi*[4] (composed by E.S. Posthumus; length of the experimental excerpt was 00:01:37) was chosen as the main musical target of the experiment. The instrumental piece was distinguished as more important than the other two excerpts since it was the only one that contains no lyrics, thus there was no verbal impact on the visual imagery and affective response, and thus the mind of the subjects was not attached to or limited by the lyrics; thus the subjects' imagination could run free.

Since the *POP* and *DP* excerpts contain verbal information, it is useful to present a brief analysis of the songs' content. Taylor Swift's *Blank Space* reflects electro-pop features (e.g., electronic instruments), it is written in F major (four-chord harmonic progression: I-VI-II-IV), 4/4 time signature with a moderate tempo (96 BPM). The sharp beat and low sounds give an impression of some aggressiveness, however, since the song is in the major scale, generally it sounds quite upbeat and cheerful. The lyrics are quite straightforward in portraying the crazy side of a girl who is glamorous but mad and manipulative at once (*'Cause darling I'm a nightmare dressed like a daydream*), and the general context allows to perceive that she is a 'man-eater'. The text is sung in the first person addressing a man that happens to be her new love interest.

Since the *DP* excerpt belongs to the genre of Lithuanian sung poetry, it is no wonder that the lyrics of *Room of Rain* by Domantas Razauskas request more thinking and analysis of what is being said in the song. This indicates that it is not completely clear what the piece is actually about mainly due to the numerous metaphors used in lyrics, such as "*so we have been sitting for a year or three, you, me, and the room of rain*" or "*I will be blown away by the wind from the East if I burn down earlier than you*", etc. However, the general mood can be sensed – separation and melancholy. Furthermore, the symbolism of rain can be identified, which makes sense in the given context: rain is usually associated with sadness and other similar types of mood. Although it is only the male vocal that sings the text, the words reveal that there is a dialogue between a man and a woman who may be, according to the song's context, a couple. The song sounds quite peaceful, there are no drums or percussion, and the most common sung poetry set of instruments, i.e., the acoustic guitar and the author's vocals can be heard. In addition, there is the flute, a female back vocal, a delicate bell-like sounding instrument (the celeste?), and even some sound effects of rain at the beginning and at the end of the song. The piece is composed in B flat major (there are three different chord sequences used for each part: introduction – I-IV-VI-IV-II-IV-

[2] The musical piece can be found on Youtube (https://www.youtube.com/watch?v=e-ORhEE9VVg).
[3] The musical piece can be found on Youtube (https://www.youtube.com/watch?v=522UlJX_NiA).
[4] The musical piece can be found on Youtube (https://www.youtube.com/watch?v=d8IvnUSVXXA).

V; verse – I-VI-II-IV-V; refrain – IV-I-IV-I-IV-I-II-V) in 4/4 time signature at a moderately slow tempo (65 BPM).

Table 1. Parts of the lyrics that are audible in the excerpts *POP* and *DP*. The text of the latter piece has been translated from Lithuanian by the author of this work

***POP* excerpt**	***DP* excerpt**
Cherry lips, crystal skies *I could show you incredible things* *Stolen kisses, pretty lies* *You're the king baby I'm your Queen* *Find out what you want* *Be that girl for a month* *Wait the worst is yet to come, oh no* *Screaming, crying, perfect storm* *I can make all the tables turn* *Rose gardens filled with thorns* *Keep you second guessing like* *"Oh my God, who is she?"* *I get drunk on jealousy* *But you'll come back each time you leave* *'Cause darling I'm a nightmare dressed like a daydream* *So it's gonna be forever* *Or it's gonna go down in flames* *You can tell me when it's over* *If the high was worth the pain* *Got a long list of ex-lovers* *They'll tell you I'm insane* *'Cause you know I love the players* *And you love the game*	*It could have been that the day dawned,* *the clock hit 3:00 of the night* *It hit so that she went away alone* *And I opened my eyes only because of this thought* *So we have been sitting for a year or three,* *You, me, and the room of rain.* *Like the toys that no one will hear* *With burning wires next to the heart* *Laughter sounds deep in the well* *I am, whereas you live* *I will be blown away by the wind from the East* *If I burn down earlier than you* *You say, there are no endings or beginnings,* *And I believe you although I almost can't hear, so* *Look at the light, don't look at me, they say he went away, and that's all*

The lengths of the musical excerpts were slightly different from each other (from 1 minute to 1 minute and 37 seconds) in order to avoid cutting the musical thought when it is not finished yet. At this point it is also important to explain the reason why not the entire musical pieces were presented to the participants: it was important to capture the listeners' first impressions and thoughts before they would start overthinking. According to Shevy (2008, p. 491), even the "first few seconds of a piece can cue a music-genre schema that may affect the way subsequent extramusical information is perceived."

To avoid any (cognitive or affective) influence of one musical piece on another – whatever is the order, the sequence of listening to the three musical examples was randomly different for each subject (since there were 24 subjects in total who participated in the experiment, the equal number of sets was used: there were six possible different sets of sequences, thus there were four participants that would get the same sequence; see Table 2).

Table 2. Six different sequences of musical excerpts (all the possible combinations involving the three musical excerpts) assigned to each participant randomly.

Sequence	1) INST-DP-POP	2) DP-INST-POP	3) INST-POP-DP
Subject no.	1, 11, 16, 22	2, 10, 13, 19	3, 8, 14, 23
Sequence	4) DP-POP-INST	5) POP-INST-DP	6) POP-DP-INST
Subject no.	4, 9, 18, 20	5, 7, 15, 21	6, 12, 17, 24

2.3. Questionnaires

For this experiment, there were two sets of questionnaires prepared: an online questionnaire, and a set of questions for the interview. The former was designed to collect socio-demographic information about the participants, which also helped to discover which group category – fans of sung poetry (target) or control group – each participant falls into in order to check the hypothesis of the fans of sung poetry being more creative, especially in terms of their descriptions. The form had to be filled in online (via the internet), and, most importantly, after the experimental session: otherwise, the questions might have revealed the purpose of the experiment, and therefore the experimental data might have been distorted. The listeners had to provide not only the socio-demographic information (such as their age, education, etc.) about themselves, but also about their cultural (especially musical) background and experience, favorite music, composers, performers, and other aspects important for this research which are presented in the list below. The cultural environment is a fairly important aspect to know about as it plays a significant role in influencing the listeners' musical perception.

The questionnaire[5] consisted of the following 14 questions listed below. Most of them were open-ended, and some of them had scales or options to choose from:

1. Hometown (city)
2. Permanent residency (city)
3. Gender
4. Age
5. Education
6. Musical education
7. Musical instrument(s) that you can play (including vocals)
8. Musical genres/styles that you like to listen to the most (list 1–3 of them)
9. Your favorite composers/music authors/performers (list 2–5)
10. How do you usually listen to music?:
    - TV (musical channels)
    - Radio
    - YouTube
    - Spotify
    - Personal playlist on computer, MP3 player or smartphone without using the internet

[5] The questionnaire in its orginal form (in the Lithuanian language) online can be accessed via this link: http://goo.gl/forms/0GXnK80NYL.

- Other (please name)

11. Where do you usually listen to music?
12. In your opinion, most often you listen to music consciously or unconsciously?
13. What do you know about Lithuanian sung poetry?
14. How important/interesting/favorite genre is Lithuanian sung poetry for you? (on the scale from 1 to 10)

Another set of open-ended questions was presented in the form of an interactive conversation with each participant (a semi-structured interview[6]). Live individual face-to-face interviews investigate the subjects' interpretations and may slightly vary with every other participant, but, in general, the preset questions were followed (see the list below). The set was the same for all the musical excerpts and was discussed right after each listening session. In the experimental session-interview, the open-ended questions were crucial because the aim was to explore each subject's mind individually, and the music might often be understood as a reflection of the inner 'self' (Girdzijauskas, 2012). As Almén (2014, p. 16) puts it, "[i]nterpretation always manifests itself through the lens of that observer, with all the socio-cultural, experiential, rhetorical, and cognitive refractions of the image that such a lens would create." In this case, the approach of qualitative interviewing was applied to music since this domain is a relatively abstract subject which also may induce perceptional, imaginative and emotional interpretations that happen to be individual to every person but at the same time might be influenced by different associations or preconceptions and/or culture in general. The following list represents the set of main questions for the experimental session-interview with subjects that includes questions of limited answer choice (question Nos. 6, 7 and 9):

1. Are you familiar with this music?
2. What is the musical genre?
3. Did you like the musical piece (on the scale of 0–10)?
4. What is the music about (main idea)?
5. Are there any images/emotions/associations? What kind are they?
6. Are they from your past (experience) or is it your imagination?
7. Are they more personal or culture-related (picked up)?
8. What musical elements evoked each specific emotion/image/association?
9. *(Only for musical pieces, POP and DP, which contain lyrics)*: Are you referring more to music or to lyrics?

2.4. Data analysis

Since the experiment was designed to analyze the gathered data qualitatively, this type of analysis involved as much as possible detailed investigation of each subject's response by focusing on the individual content of a particular answer and

[6] "Compared to structured interviews, semi-structured interviews can make better use of the knowledge-producing potentials of dialogues by allowing much more leeway for following up on whatever angles are deemed important by the interviewee. Semi-structured interviews also give the interviewer a greater chance of becoming visible as a knowledge-producing participant in the process itself, rather than hiding behind a preset interview guide" (Brinkmann, 2013, p. 21).

comparing it to the other respondents' descriptions. Special focus was laid on the analysis of *what* and *how* musical aspects were linked to forming or influencing specific extramusical associations and musical perception in general. As the interviews were based on open-ended questions and recorded, the gathered data is rich in individual verbal descriptions as well as in non-verbal communication, although the latter is not analyzed specifically in depth. The recorded audiovisual material allows the experimenter to analyze many multimodal aspects of each participant's personal experience in detail and in a qualitative way.

The main data of what the author of this dissertation was looking for was the extramusical outcome of the music listening experience that was based on specific open-ended questions. However, any other additional information that would derive from the musical experience and the participants of the experiment would like to share would only enrich the research. The reason is that the experimenter was not looking for very specific 'answers' that the participants had to provide, but rather looking forward to exploring the natural (as much as possible) process of music listening resulting in the induction of extramusical associations that would involve emotional responses as well as visual imagery, whether that would be specific past memories, or imagination. The information provided by each participant was not interpreted only by the experimenter herself, instead, the experimental session involved analysis of the subjects' interpretations together with them. Of course, not every detail was discussed; however, this helped to better understand the listeners' perception and their responses to music, as well as to learn how they understand and evaluate different musical genres and what factors may influence specific music-evoked associations. Therefore, it is not mainly experimenter's (subjective) analysis of the music listening experience, but rather exploration through the perspective of the listeners. On the other hand, this method may also be considered to involve its own risk – when the data of the experiment is based on the listeners' perception, it may not reveal the actual, real conditions that may be involved in the process. For instance, a subject in his/her description of music-evoked association provides a clear reference to a well-known movie, or even a specific part of it, however, when s/he is asked to think whether the associations are based on his/her own personal experience or there might be some socio-cultural influence involved, s/he chooses the first option without hesitation although his/her own description clearly indicates some kind of cultural influence. However, it is not considered to be a 'wrong answer' because this is also valuable and useful information that reveals the perception of the listener that may be somewhat different from the real situation.

Another angle of looking at the results involves a possible link between the genre of Lithuanian sung poetry and its listeners having more creative mind compared to the listeners of other genres. This hypothesis is supported by the results of the above mentioned previous research (Varankaitė, 2017, 2018) where the participants were exposed to unknown excerpts of instrumental music and had to fill in a questionnaire which consisted of different open-ended questions and categories, such as *feelings*, *images* and *associations*. According to the results, music tended to be described as emotional and/or visual images by most of the subjects. And, as descriptions were compared to each other, outstanding descriptions were treated as creative. The aspects

defining the subjects' creative descriptions were unusual specific words/ sentences/ phrases that caught attention and were not common in other subjects' descriptions of emotion, images and any other experiences induced by music listening. The fans of Lithuanian sung poetry who participated in the experiment tended to describe the experimental musical pieces in a more poetic and vivid manner compared to the other subjects' answers. In contrast to the previous research, in order to explore the possible differences between the groups, the experiment subjects in this specific study were divided into two groups: the target group of the experiment – the subjects who regularly listen to Lithuanian sung poetry and are fans of the genre, and all other participants who belong to the control group.

In addition, the cultural (musical) experience of each participant was also considered in order to discover what external influences came from their environments. According to Alcorta and colleagues (2008, p. 577), "many of the emotions evoked by music are culturally specific, suggesting an important role for learning in the development of musico-emotional associations." Another important aspect is that we live in the digital age surrounded by new media which can control our musical choices and perception in general – that even may change the ways we listen to songs (Sibilla, 2006, p. 160) and, for instance, DeNora (2004, p. 163) describes music as not just a form of art but also as a "medium of social order." At this point, the researcher of the dissertation also had to take into account the references to the real-world audio(visual) products that were mentioned by the participants in their interpretations of the extramusical outcome.

Although the analysis of the collected data could have been managed manually, for this specific study, software *MAXQDA* was used. The program offers many advantages that help the user organize, analyze and categorize the gathered qualitative (as well as quantitative) data. It is also very convenient for showing the results visually and comparing them in different ways.

The first step after all the needed data was gathered was to extract the information from audiovisual recordings and notes taken by the experimenter during the experimental sessions. The result of this process was the written text (transcripts) for each participant, and each musical excerpt (3 musical excerpts per one participant) thus making in total 72 transcripts, or 72 *MAXQDA* documents. In *MAXQDA*, each document was coded with many different codes (or categories, such as 'emotion/mood', 'memory', 'cultural (influence)', 'signifier' and 'signified', etc.) depending on what kind of aspect each document contains. Since there were three extremely different musical pieces employed in the experiment, the responses about them tend to have different codes (categories) as the participants perceived the excerpts differently in general. The coding process allowed to extract the most useful information by categorizing it at the same time; this way, it was much easier to compare the participants' answers through the active code (category) system and see the exact data that needed to be investigated (see Figure 9).

Figure 9. Example from data analysis process when using *MAXQDA* software. Here, a document's information is presented as a dialogue, transcript. Vertically, on the left of the text, there are various codes assigned to the parts (text lines) that provide useful data while at the same time putting the data into the right categories for comparison at the next stage of our analysis

The categories derived from the interviews as tendencies are results stemming from generalizing the data (interviews) and have been neither predetermined nor implied to the participants during or prior to the experiment as the questions asked for the associations (what kind, color, visual, emotion/mood) were open-ended. Of course, some categories are based on the specific questions asked (e.g., cultural influence, or personal experience, or both?). The outcome of the analysis and of the research overall shall be presented and discussed in the next section.

3. RESULTS AND DISCUSSION

3.1. General information about the participants

24 Lithuanian participants, aged between 21 and 30 (mean age 24.5), voluntarily participated in the experiment. More than half of the subjects were females (around 67%), and the majority (almost 80%) of the participants were from Kaunas (see **Table *3*** below). The socio-demographic data shows that most of the experiment subjects had a Master's degree, a quarter had bachelor degree qualifications, and almost a third had secondary education (i.e., they graduated from high school), the majority of whom were bachelor students at the time the experiment was being conducted. There were not many subjects with professional musical education (~29%), however, almost a half were amateur musicians, and a quarter would define themselves as mere listeners with no musical education or even amateur musical activity.

Table 3. Representation of the main socio-demographic data about the participants. The table also features musical experience factors, such as musical education. The row 'musical instruments' displays whichever and how many musical instruments the respondents can play. The last row ('musical instruments per person') shows how many instruments the participants are able to play excluding vocals, except for the very last row ('only vocals') which indicates that there are two subjects that do not play any instruments: they can only sing

		No. of subjects	% of all subjects
Gender	Females	16	~67%
	Males	8	~33%
Permanent residence	Kaunas	19	~79%
	Vilnius	2	~8%
	Other	3	~13%
Education	Secondary education	7	~29%
	Bachelor's degree	6	25%
	Master's degree	11	~46%
Musical education	Music school	7	~29%
	Amateur singers/players	11	~46%
	Just listeners	6	25%
Musical instruments	Piano	10	~42%
	Guitar	6	25%
	Vocals	5	~21%
	Other	11	~46%
Musical instruments per person	None	9	~38%
	One	6	25%
	Two or more	7	~29%
	Only vocals	2	~8%

Perhaps unsurprisingly for Lithuania, Table 3 shows that the most popular instruments played by the participants are the piano and the guitar; vocals also scored high in the category. Other instruments include the violin (2 participants), the flute (2), the accordion (1), and the percussion (1). More unusual instruments mentioned were the kalimba (2), the ukulele (2), the Jew's harp (*dambrelis;* 1). There were nine participants who identified themselves as not playing any instrument (excluding vocals, however, there were only two participants who would not play any instrument but just sing). Six participants answered that they play only one instrument (again, excluding vocals), and seven indicated that they can play two or even more musical instruments.

Table 4. Representation of the musical genre preferences for music listening of the participants. Each subject could single out up to 3 different musical genres which they would perceive as their favorite

Rock (including indie rock, pop rock, and metal)	~67%
Sung poetry	50%
Popular music (including indie pop and Latin pop)	~42%
Electronic music (including house, trance and chill-out/-step/wave)	~42%
Classical (including modern classics)	~21%
Instrumental	~13%
Jazz/ soul/ blues	~29%
Hip-hop/ rap	~13%
Other	~13%

The musical experience of the participants includes their favorite musical genres that they prefer for music listening. The data shows that most of the subjects (67%) enjoy listening to rock music (including its several sub-genres), half of the participants named sung poetry (mostly the Lithuanian school) as one of their favorite genres, and the same number of subjects (~42%) mentioned popular music (including mainstream pop, indie pop, and, in one case, Latin pop as well) and electronic music (including house, trance, chill-out, chill-step and chill-wave). Such genres as jazz, soul, blues or hip-hop/rap were only mentioned by a few subjects.

The participants were also asked to think of their everyday habits and instances related to music listening, such as how, where or when they usually listen to music. The questions also included investigation regarding what platforms were used for music listening and whether, in their opinion, they would consider themselves as exposed to music listening consciously or unconsciously. The data gathered in Table 5 shows that the most popular platform used for music listening is *YouTube* (only one participant did not mention the platform). Slightly more than a half of them listened to personal playlists of downloaded musical pieces on personal devices without using the internet, and more than a third also listened to the radio. On the contrary, only one participant named TV (musical channels) as a medium employed for music listening. A quarter of the participants were making use of *Spotify.* The subjects were also asked to identify where or on what occasions they usually listened to music. The majority did that at home, over a half of them were listening to music in their car (while

driving), a third were doing that while commuting (in public transportation), a third were exposed to music at parties, and a quarter listened to music at work. Only a few participants identified relaxation or, to the contrary, taking sports as occasions for music listening. As for conscious/unconscious music listening, over a half (~54%) thought that their music listening is conscious, about 38% claimed the process to be unconscious, and only two participants could not tell which condition would occur more often.

Table 5. Representation of how and where (when) the participants usually listened to music. One participant could identify more than one platform or places (occasions) for music listening, except for the last part regarding conscious/unconscious music listening where participants had to indicate only one option

Platforms used for music listening	YouTube	~96%
	Personal playlist (on computer, MP3 player or smartphone without using the internet)	~54%
	Radio	~38%
	Spotify	25%
	TV (musical channels)	~4%
Places (occasions) where, usually, music is listened to	At home	~88%
	In a car/driving	~54%
	Commuting/public transport	~33%
	At parties	~33%
	At work	25%
	Other (doing sports, ~13%; for relaxation, ~8%)	~13%
Conscious or unconscious music listening	Conscious	~54%
	Unconscious	~38%
	Equally conscious and unconscious	~8%

The following sections introduce and discuss what is possibly the core of the empirical research results that present the most significant aspects amongst all the gathered data. They shall reveal the outcomes of the experiment while focusing on the listeners' perception, their cognitive evaluation of the musical excerpts, the evoked extramusical associations, the visual and affective responses, as well as the influence of the socio-cultural environment including Lithuanian sung poetry.

3.2. Cognitive evaluation of the musical pieces

One of the first tasks following music listening that was assigned to the subjects during the experimental session was to indicate whether or not they were familiar with each musical excerpt. This familiarity factor (or the mere exposure effect) is worthwhile to investigate as a mechanism behind the influence on the overall evaluation and perception of the musical pieces. The majority (87.5%) of the participants were familiar with Taylor Swift's *Blank Space* (*POP* excerpt), 58.3% were familiar with Domantas Razauskas's *Room of Rain* (*DP* excerpt), and no one (0%) was familiar with the instrumental piece *Odenall Pi* by E.S. Posthumus (*INST* excerpt). The latter outcome is also quite beneficial for investigating the only excerpt

of the experiment that does not contain any verbal content that may influence the participants' perception. As no one was familiar with the piece, each participant ended up in the same condition; therefore, the influence of the familiarity factor could be excluded. It is useful to note that some participants identified excerpts as familiar (except for the *INST*) although they were unable to specify the title and/or the performer of the piece. For instance, a few subjects were familiar with the *POP* excerpt but confused it with other pop music pieces or performers, e.g., three participants named Katy Perry (instead of Taylor Swift) as the performer of the *POP* excerpt. A similar case occurred with the *DP* excerpt where participants made confusion with other, different, sung poetry singers (such as Saulius Mykolaitis, Darius Žvirblis or Vidas Bareikis). Some participants were even able to specify how they became familiar with the pieces.

Table 6. Participants' answers on familiarity and genre perception of each excerpt

Excerpt	***POP***	***DP***	***INST***
Subjects familiar with the piece (%)	87.5%	58.3%	0%
Familiar from	Radio (~33%), shops (~8%)	Intentional listening (~17%)	-
Actual genre	(Mainstream) pop music	(Lithuanian) sung poetry	(Contemporary) instrumental music / possible movie soundtrack
Subjects' answers	Pop music (100%)	Sung poetry (~83%)	Instrumental music (~33%)
		Pop music (~4%)	Movie soundtrack (~29%)
		Country music (~4%)	Folklore (~13%)
		Could not identify (~9%)	Other (~8%)
		-	Could not identify (~17%)

It was also of interest to explore how the participants were able to recognize the musical genre or style that each musical excerpt belonged to even if the subjects were not familiar with some or any of the excerpts specifically. The results show that, although not all of them were familiar with the musical piece, they were all able to identify the genre it belongs to. About 83% were able to identify the genre of Lithuanian sung poetry although some confused it with the pop and country music genres. Interestingly, the instrumental piece challenged the participants the most, since, as they admitted, it was not considered to be a typical musical style to be listened to. Probably, for this reason, there was more diversity in the genres mentioned with only more than a third identifying the genre as (contemporary) instrumental music (the participants also used such words as "contemporary classics"). Moreover, almost a third thought that the instrumental piece was a movie soundtrack: some subjects named specific films, while others named the genre in general.

Another task for the subjects was to evaluate each musical excerpt on a scale from 0 to 10 (in the Lithuanian high school grading fashion), on condition that there may be any reasons behind their evaluation. This basically represents the level of enjoyment of each musical excerpt. In order to investigate whatever might influence the decision to evaluate each excerpt with a specific mark, the participants were asked

to specify the reasons they had thought of: they had to consider what inspired them to assign the given mark to the given piece. Of course, not everyone was able to provide explanations; however, most of the participants were (see Table 7). The familiarity factor had an impact during this stage as a valid reason to give a higher mark for a specific musical piece. However, the overall numbers show that, for instance, even though the *POP* excerpt was recognized by most of the participants (87.5% were familiar with the piece), it scored the lowest average mark (6.37 out of 10). And vice versa: although none of the participants was familiar with the instrumental piece, it scored the highest average mark (8.58) among the three musical excerpts of the experiment. However, these connections should be handled with velvet gloves because the subjects' explanations of their evaluations reveal more significant factors as mediators beyond these numbers.

Table 7. Representation of how all the three musical excerpts were evaluated by each subject (S. No. = number of the subject).

	Pop music (*POP*)		**Sung poetry (*DP*)**		**Instrumental (*INST*)**	
S.No.	Mark	Explained evaluation	Mark	Explained evaluation	Mark	Explained evaluation
1	9	Familiar	8	Does not like when it is spoken in songs	9	-
2	2	-	9	-	8	-
3	9	Cheerful piece	8	Not a big fan of the genre, but liked the melody	8.5	Majestic
4	6	Tired of the song	6	-	10	-
5	5	Rhythm cheers up	10	Loves the song	9	Dynamic and dramatic music, tells a story
6	6	Good sound quality, but not their type of music	8	Very beautiful lyrics	7	Music has a storyline, but something is missing
7	8	Associations it brings	10	Feelings from the past	9	The feeling of freedom
8	8	Good sound quality, but not their type of music	10	Loves the song	10	Intro turns into a battle
9	10	Music video is very good	7.5	The song is too sad	6	No lyrics
10	8	Cheerful, but pop music	6.5	Not their style, but the song sounds positive	8	Sounds exciting
11	7	Good sound quality	5.5	Brings sadness	8.5	Liked most of the piece
12	8	Cheerful piece	8	-	7	Strange three parts of the piece's storyline, the middle part is aggressive
13	7	Tired of the song, but nice for dancing	9	Very soft, brings good emotions, but not suitable for relaxation	9	There is a story, like a movie soundtrack
14	4	Good sound quality, but not their type of music	7.5	Not very charming, but a nice topic of the song	8	It may be a soundtrack, so it lacks visual images
15	4	Not "deep enough", but maybe nice for parties	8	Not completely professionally made	10	Reminds of composer Thomas Bergersen, likes the emotion
16	2	Meaningless lyrics, pop	7	Not their musical style, but song is nostalgic	8	Sense of adventure and summer, but not as good as *The Lord of the Rings*

17	8.5	Cheerful, but pop music	7	The song is too calm	9.5	It reminded of a recent trip to mountains, images, adventure
18	6,5	Neutral, not their type of music	4.5	Not a fan of Lithuanian music, sounds sad	9	Their musical style, likes to listen in the background
19	5	Pop music style	9	Familiar and beautiful	5.5	It evoked associations with Scotland that are mostly negative
20	8	Cheerful, inspiring	7	Not their musical style	8	Dynamic music, but something is missing
21	7	Lacks meaningful text	10	Favorite song	9	Lacks lyrics
22	9	Familiar	9.5	Calm melody	10	Dynamic, motivating
23	0	Meaningless song	10	Good emotion, easy, calming	10	Optimistic melody
24	6	Seems positive, but not their type of music	9	Likes this kind of musical pieces	10	Motivating, stimulates imagination
Mean	**6.37**	-	**8.08**	-	**8.58**	-

What arises from the subjects' cultural experience as an influential aspect on their musical perception is that pop music as a genre may be socially perceived as a low-quality standard when it comes to the songs' meanings. Yet, while many subjects evaluated the music more technically, pop songs may sound high-quality in the sense of audio production and post-production. As for the specific *POP* excerpt, *Blank Space,* all the subjects mentioning some technical aspects noted that the piece appeared to be manufactured very professionally. At the same time, paradoxically, some subjects confessed to experience a kind of cognitive dissonance: according to their socio-cultural experience and understanding, pop music is considered to be as more or less low-standard music, and this may be the reason why some other participants evaluated the *POP* excerpt with a low mark just because of the genre itself. However, they also admitted that they enjoyed listening to the *POP* excerpt because, mostly, it sounded cheerful. For instance, subject No. 17 candidly said: "somehow sometimes I feel bad when I listen to pop music just because it is pop music. Although I do like some pop songs, I try not to evaluate the song according to whether it is pop music or not. I can bravely state that I like this song. I don't know, maybe those pop rhythms are very mesmerizing."

Some evaluations were based on the extramusical associations that arose from listening to those musical excerpts. For example, the instrumental piece for subject No. 19 evoked associations with Scotland that were perceived as negative, perhaps due to the subject's experience, and, for that reason, the excerpt did not receive a high mark (it scored 5.5).

It may seem that the lyrics may guide the listener's mind and help perceive or even create a story because the text provides clear verbal directions towards the whole story of the piece. Of course, everyone interprets in their own way, but the essence is the same. However, the research outcome shows that it may be not the lyrics that are behind the creation of a story during the music listening process, but rather the music itself. As early as during the stage of piece evaluation, many participants mentioned 'storylines', 'plots', 'stories' that were inspired by the *INST* excerpt, and this seemed to be a solid reason for giving a high mark. Such notions were mentioned mostly with

reference to the instrumental piece, and nothing similar was brought up when evaluating the other two excerpts. It may be easy to argue that this perception is connected to the fact that many participants identified the excerpt as a movie soundtrack which, indeed, is supposed to accompany some kind of story.

3.3. General extramusical associations

All the participants experienced some kind of response to music during the experimental session: either affective, or visual, or they had abstract associations outside the music itself, but still most of the subjects experienced all of this at once. Extramusical associations, as described by the subjects, are various and different: from very abstract to very detailed and vivid. In this section, mostly references to other existing audio(visual) works as music-induced extramusical connotations will be discussed, also while considering exploration of how much the cultural influence was involved in the general response to music. However, emotion and visual imagery shall be discussed in more detail separately in the next two sections.

All the three musical excerpts triggered a number of different references to specific real-world phenomena, products or activities which mainly belong to the socio-cultural domain which is not necessarily experienced directly by the listener as it may also be picked up and perceived, for instance, through the digital multimedia. Among various descriptions indicating some level of cultural influence, the participants mentioned other singers, composers, performances, video clips and movies as associations that were linked to the excerpts they had listened to. Some of them seem to be naturally deriving, and some of them are more interesting and seem to be strangely linked to the excerpt itself. For example, the *POP* excerpt evoked visual associations that were linked to memories from the previously attended concerts of two different Lithuanian performers, Andrius Mamontovas (a singer-songwriter) and Justas Kulikauskas (a cello player) who are in general very different from the style of Taylor Swift, the singer of the excerpt. The Lithuanian, *DP*, excerpt seemed to have evoked one association that is linked to another culture – the part with the flute in the excerpt reminded a subject as if American Indians were playing a relaxing piece.

3.3.1. Cultural influence

It is worth bearing in mind that every participant of the experiment was a Lithuanian who resides in Lithuania; however, Table 8 shows that in the subjects' associations there is little influence seemingly coming specifically from the Lithuanian socio-cultural environment. The examples include Lithuanian female pop group *Y.V.A.*, the above mentioned concerts of Justas Kulikauskas and Andrius Mamontovas, also Lithuanian sung poetry festivals and acoustic concerts, and a Lithuanian feature length movie *Tadas Blinda: Pradžia*. All other associations show the influence deriving from outside Lithuania which indicates a wider – even global – context. For instance, the *INST* excerpt evoked some exotic associations to other cultures, such as Irish, Scottish, Oriental and South African. However, most of the associations point to the American culture in general: digital media, youth culture,

specific music authors and singers, and most of the mentioned movies are of Hollywood production.

Table 8. Generalized categories that derived from the participants' descriptions of their extramusical experience linked to cultural influence. Numbers in parentheses represent the number of participants who have specified the same association

Excerpt / Association	***POP***	***DP***	***INST***
Specific culture	American (2) and British (1) youth culture	American Indian playing flute (1)	Irish (4), American Indian (2), Scottish (1), Oriental (1), South African (1) cultures
Specific media	MTV (1)	-	BBC World (1), YouTube (1)
Specific (digital) audiovisual product	Taylor Swift's music videos (12)	Music video of the excerpt (1)	Movies (11): *Spirit: Stallion of the Cimarron* (4), *The Lion King* (1), *Pearl Harbor* (1), *Braveheart* (1), *How to Train Your Dragon* (1), *Tadas Blinda* (1), *The Lord of the Rings* (1), *Beauty and the Beast* (1)
Specific author/ singer/performer	Beyoncé (1), *Y.V.A.* (1), Cheryl Cole (1)	-	Thomas Bergersen (1), Elton John (1), *Metallica* (1)
Specific activity (entertainment, performances)	Performance on stage including dancing and singing (5), *Victoria's Secret Show* (1), concerts of Justas Kulikauskas (1) and Andrius Mamontovas (1)	Acoustic concert (4), sung poetry festival (2)	Dancing (4), orchestra playing (2)

During the experimental session, the participants were also asked to evaluate all the associations that were induced during music listening together and answer whether those associations, images, emotions, etc., were based on their personal experience or whether there was cultural influence involved, or maybe a mixture of both domains occurred. The data shows that most of the cultural influence on extramusical associations was perceived in the *POP* excerpt (by 14 participants, ~58%), while associations induced by listening to excerpts *DP* and *INST* were rather based on the participants' personal experience (accordingly, for 19 and 10 participants, or ~79% and ~42%). As the data of the mixture of cultural and personal influence shows, regarding the *INST* excerpt, there are 7 participants (~29%) who indicated this aspect in the category, whereas in the *DP* and *POP* excerpts, the numbers are even smaller: 1 (~4%) and 4 participants (~17%), accordingly.

It is important to note that the participants' answers regarding personal and/or cultural influence on music-induced extramusical associations were based on their own perception. In other words, the participants' answers were their own

understanding regarding how much influence there was in their descriptions coming from the cultural or/and personal experience domains; thus, that understanding may not reflect the actual context of the influences. However, this can be explored in the actual descriptions of the participants' extramusical associations where they mention or at least imply factors that reveal where they are coming from: cultural or personal experience, or both. Furthermore, when participants assign their answer(s) to either the 'cultural influence' or 'personal experience' categories, it does not mean that one category influences their associations one hundred percent. It rather indicates that the chosen category has more influence over another.

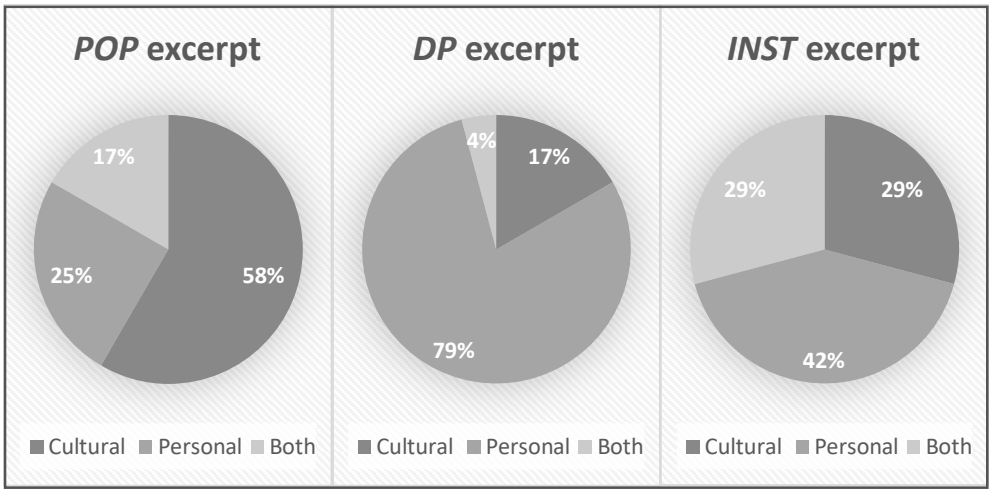


Figure 10. Visual representation of the participants' perception of the influences on their associations evoked by each (*POP*, *DP* and *INST*) musical excerpt. The listeners indicated, to the best of their understanding, on what their extramusical experience was mainly based: cultural influence, personal experience, or a mixture of both

3.3.2. Signifier-signified links

Perhaps one of the most complicated tasks for the participants was to specify what from the musical excerpts was evoked as associations (visual, emotional, or any other). That is, in Saussurean terms, to identify a signifier (an element in the musical excerpt including lyrics), and its signified (any kind of extramusical association that was evoked by that specified musical element). However, for the participants, it appeared to be not a difficult task at all since most of the subjects specified the signifier-signified links. Furthermore, some of the subjects naturally, before getting to the question, started to specify elements in music as particular triggers in order to explain why they experienced and perceived the particular association.

Table 9. Most frequent mentionings of musical elements as signifiers and their signifieds as keywords defined by the participants after listening to the *INST* excerpt

Flute		All associations (1).
	Visual imagery	Nature (2), birds (4), field/meadow (1), sand (1), green color (1).
	Emotion/feeling	Softness (1), freedom (1), adventure (1), reaching out for something (1).
	Abstract	Mysticism (1), hope (1), Irish (1), Oriental (1), American Indians (2), *Spirit: Stallion of the Cimarron* (1), "something good" (2).
Rhythm	**Visual imagery**	People (1), constructions (1).
	Emotion/feeling	Motivation (1), confusion (1), wish to dance (1), reaching out for something (1).
	Abstract	Aim (1), speed (1), rush (1), "something good" (1).
Strings	**Visual imagery**	People (1), Caribbean Sea (1).
	Emotion/feeling	Surprise (1), elevation (1).
	Abstract	Aim (1), fight (1), "something good" (1).
Melody	**Visual imagery**	Meadow (2), wind (2), mountain (1).
	Emotion/feeling	Freedom (1), calm (1).
	Abstract	*Spirit: Stallion of the Cimarron* (1).
Drums	**Visual imagery**	Orchestra (1).
	Emotion/feeling	Aggressive feeling (1), energy (1), drive (1).
	Abstract	Fight (2).

For example, after listening to the *INST* excerpt, the participants were able to indicate at least one signifier-signified link, and all of those were specific musical elements, rather than the abstract 'wholeness' of the piece. As it can be seen in Table 9, more than a half (actually, fourteen) participants indicated the flute as the main signifier that caught their attention and acted as a trigger of a specific association. In general, different items related to nature were mentioned the most, especially birds. Furthermore, the flute also evoked associations that were related to other cultures, such as Irish, Oriental, or American Indian. Only one subject could not identify one specific element of his associations that the instrument had induced; therefore, it was perceived as if the whole association was evoked. Generally, the flute evoked positive associations. Rhythm, on the other hand, was specified as a trigger of both negative and positive associations (e.g., motivation for one subject, but confusion for another). Melody, similarly to the flute, evoked nature-related imagery and positive feelings. The electric guitar, although not mentioned in the table, was indicated only by a few subjects and evoked mostly general feelings, such as energy and drive, also, there was one mentioning of association with fight. Similar items were induced by drums, as indicated by some subjects. Other descriptions of signifiers that could be considered as more complex or abstract compared to the ones presented in Table 9 include such definitions as 'more instruments', 'fewer instruments', 'a combination of melody and rhythm going up', as well as mentioning parts of the excerpt: 'the beginning', 'the middle part', and 'towards the end'. For example: "A lot of different colors, but those colors are bright and light. That was when there was one moment towards the end, it was not that like dramatic, but more energetic, so powerful" (subject No. 3), "Low

instruments, low sounds make some tension" (subject No. 6), or subject No. 9 describes the effect created by the percussion, "You know, everything is fine and *chikh!* – open your eyes." There were also some instances when musically uneducated subjects could not specify the musical elements, especially the musical instruments, e.g.: "It continues all the time, it seemed like it is the main one, and everything around it is stuck. But how to define it, or call it, I cannot think of anything, I don't know. […] That main one seems to be telling something, and everything sticks around it, falls off, others come, and something like that. Well, one instrument, the sound continues all the time, and all others are supplements: they begin, then stop, begin, stop. And it came out as a narrator, I don't know" (subject No. 18).

3.4. Visual imagery

It is an interesting phenomenon that listeners are able to convert audial signals, in this case audible music, into visual mental images. As this is not a rare case, our finding would imply that this process is extraordinary. Indeed, the process itself is very interesting and fairly creative, however, almost every listener can naturally and quite automatically experience it as a response to music listening. The data of this research shows that visual imagery was evoked in almost every participant: for *POP* excerpt ~96%, *DP* excerpt ~88%, and *INST* – 100%.

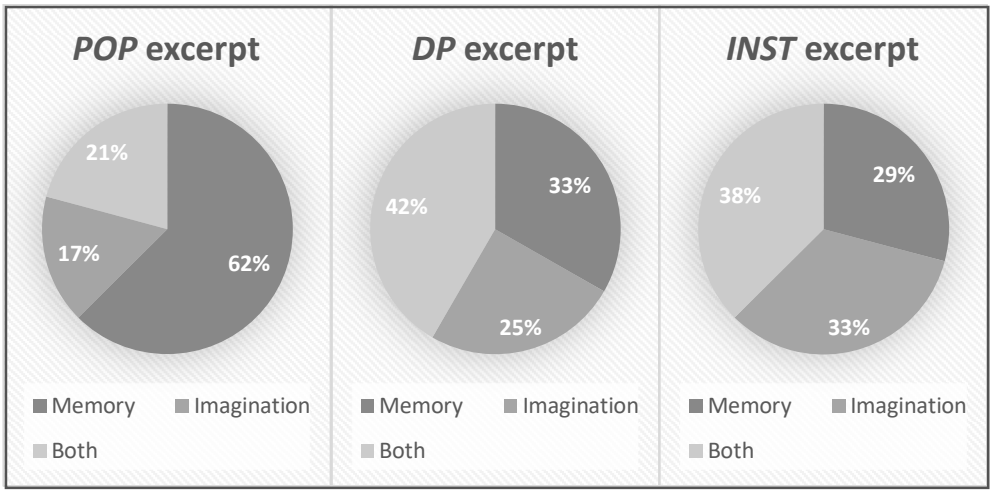


Figure 11. Visual representation of the listeners' perception of the triggered different mechanisms for visual extramusical associations evoked by each (*POP, DP* and *INST*) musical excerpt. The participants indicated, to their understanding, on what their visual imagery experience was mainly based: memory or imagination, or both

Visual imagery can be based on the listener's imagination (the mind of the listener is wandering and creating unseen or unexperienced images) or (episodic) memory (music evokes specific memories from the listener's past). The listener, of course, might also experience a fusion of both imagination and memory. As Figure 13 shows, there were quite a few cases of experiencing visual imagery as an outcome of both memory and imagination, as it can be seen in excerpts *DP* (10 participants,

~42%) and *INST* (9 participants, ~38%). In the *POP* excerpt, the participants' associations were mostly based on their own memories (15 participants, ~62%), whereas it is not as strong a tendency in the other two excerpts (*DP* – 8 participants, ~32%; *INST* – 7 participants, ~29%). Imagination was least stimulated by the *POP* excerpt (4 participants, ~17%), and this fact may be linked to the participants' imagery being associated with the already seen musical videos or live performances that they mentioned in relation to the excerpt. It also explains why the tendency of experiencing memory as visual imagery is so strong in this excerpt. Among all the three excerpts, although the difference is not significant in number, imagination was mostly stimulated by the *INST* excerpt (8 participants, ~33%), and this may be in a way linked to the fact that this was the only excerpt without any direct verbal cues.

It is not an easy task to process the participants' interpretations on visual imagery since their descriptions contain so much information that is similar to other subjects' descriptions, but at the same time the descriptions are different. In order to see some possible tendencies in the shared general topics, the participants' visual interpretations were categorized into several categories that are listed and illustrated with specific examples in Table 10. Since many participants provided rich descriptions, there are interpretations that fall into more than one category. It should be reminded that the categories were not predetermined, they were naturally derived as tendencies from the subjects' descriptions. The perception of colors, as a part of visual imagery, is presented and explained in a separate table (Table 14).

Table 10. Generalized (basic) categories that derived from the participants' descriptions of their extramusical experience as a visual imagery outcome and happened to be mutual among the musical excerpts. Some associations may be ambiguous and used in different categories. At the bottom of the table, the numbers represent how many participants did not experience (or could not provide a verbal explanation of) visual imagery as a response to music in each musical excerpt

CATE-GORY	*POP*	*DP*	*INST*
Dance / sing / play	**1.** "I imagined girls dancing"; **2.** "like Beyonce's legs, that dance, rhythm"; **3.** "I saw a tall blonde. […] She was singing, dancing and wasn't dressed up too much"; **4.** "Three girls fret on that stage with miniskirts, pink clothes, high-heels. […] I imagined some kind of stage, and there were girls singing and dancing, something like *Y.V.A.*"; **5.** "Girls dressed in white are dancing in the black background";	**1.** "A performer on dimmed stage, and he's the only one who is in the spotlight, or also association by the lake how we play guitars beside a campfire"; **2.** "I see a stage, a person with a guitar, with closed eyes, some kind of cozy environment"; **3.** "[…] there's a man, you know, singing something"; **4.** "[…] a man is sitting by a campfire and plays the guitar";	**1.** "At the beginning, well, so to say, it seemed like Disneyland to me, then it's just dances, something like this. *Beauty and the Beast* […] And then it began, like a movie, as I say, like an eagle flew by, well, it showed from above"; **2.** "It associated a little bit with dances because at school we were learning Irish dances for some reason. [...] It took me to the very distant past, to the school years, I even remember how we were learning those steps"; **3.** "Later I started to see dancing people, I imagined that I was dancing on the beach. […] In the evening. Dances with fire, these are

	6. "I've seen the music video. So there are girls just dancing, singing"; **7.** "A party. I imagined a group of youths riding a car, maybe a jeep, towards the sunset, the sea. They were dancing in the car"; **8.** "in the middle and I remembered that also cellist Kulikauskas performs it, so this exactly…"; **9.** "Maybe not something specific, just imagining a person singing and that's it"; **10.** "It could be like the singer is on the stage. […] like concert stage and lights effects"; **11.** "*Victoria's Secret* show. […] And this singer was singing during the show".		more personal things. I imagined a theatre, so to say, a dance theatre. And those people, so to say, were dancing like savages, I even imagined a ballet. But, in general, I saw a lot of nature […] Mountains, meadows, sky, birds flying"; **4.** "then I imagined somewhere like a concert hall, like a philharmonic, and there is a stage with an orchestra"; **5.** "The whole orchestra was playing in the nature, in that, I don't know, like it is commonly shown in movies, on a special stage for the orchestra and, you know, they play there".
Relation-ships / people	**1.** "[…] Swift with her guys. They don't get along"; **2.** "Totally Friday evening, like a party of close people, a circle of acquaintances, like a pre-party. Everyone is gathering calmly, chatting"; **3.** "A party. I imagined a group of youths riding a car, maybe a jeep, towards the sunset, the sea. They were dancing in the car". **4.** "Communication with my co-workers. This song was in the background all the time".	**1.** "I saw a river, a man walking as if he was dreaming and thinking of some kind of love object or nature, something like this. […] Shortly I saw a forest. At one moment I also saw a girl, her hair in the wind. But she was turned away"; **2.** "When a man stays at home and the girl goes out into the night, somewhere, or something like this. The storyline";	**1.** "I am at the cinema, sitting and watching a movie. […] It's, I'd say, even related to war, maybe some kind of war movie […] There's a soldier with a nurse, you know, they met again after many years of war. […] It's like *Pearl Harbor*"; **2.** "I imagined the same journey, various natural landscapes, people. Very warm communication".
Other cultures/ places	**1.** "Culture of American, British youth, like pop"; **2.** "One of those typical images of *YOLO,* American youth how they spend their time".	-	**1.** "Ireland. Yes, well, you know, like nature when you film it from above with a drone or helicopter, like from the bird's view"; **2.** "like a bird's flight from a high cliff, some canyon […], then opened up like a forest, like there's a lot of nature. And it's not a Lithuanian forest. It looks like

			South African, exotic, different animals running around"; **3.** "At the beginning, well, so to say, it seemed like Disneyland to me, then it's just dances, something like this. *Beauty and the Beast* […] And then it began, like a movie, as I say, like an eagle flew by, well, it showed from above"; **4.** "At the beginning, I imagined that I'm sitting somewhere in the Caribbean Sea, on the beach, I'm watching, I don't know, the waves, how ships are sailing, palm trees, something like this, some people with surfboards there"; **5.** "When the flute started, I began to see Indians. Indians, campfire"; **6.** 'It associated a little bit with dances because at school we were learning Irish dances for some reason. [...] It took me to a very distant past, to the school years, I even remember how we were learning those steps"; **7.** "Like a ship in the sea waves […] the flute reminded me of the Irish culture, so there is a lot of green color in front of my eyes. Some fields, meadows".
Video clip (music video)	**1.** "I just see that music video in front of my eyes. Swift with her guys. They don't get along"; **2.** "Music video. […] Of this musical piece, specifically"; **3.** "[…] Of course, also with those music videos, because there is a lot of dancing"; **4.** "All the storyline is formed not by the lyrics, but by that clip. Well, I remember the images. You hear the song and see all that clip"; **5.** "Yes, where she tears the picture with a knife". **6.** "I've seen the music video. So there are girls just dancing, singing".	**1.** "Room of rain, well, just because of that video that shows rain".	**1.** "For me, it seemed like a video clip about something, I don't know what. It could be about, I don't know, a city, let's say, a presentation or something like this, where those places would be shown, would show those people, what they do there".
Nature	**1.** "I imagined a group of youths riding a car, maybe	**1.** "I would say, like a journey by car or by	**1.** "Ireland. Yes, well, you know, like nature when you film it from above with a drone or helicopter,

	a jeep, towards the sunset, the sea"; **2.** "It reminds me of my childhood […] when you go to the seaside".	bus, and very broad meadows. A field"; **2.** "I saw a river, a man walking as if he was dreaming and thinking of some kind of love object or nature, something like this. […] Shortly I saw a forest. At one moment I also saw a girl, her hair in the wind. But she was turned away"; **3.** "[…] also association by the lake how we play guitars next to a campfire"; **4.** "Tree buds"; **5.** "Maybe these are the images, so to say, they are warm, perhaps some kind of nature"; **6.** "At the end, I was walking on the beach a little bit. […] maybe I climbed a mountain/ hill"; **7.** Yes, somewhere in the nature, near a homestead"; **8.** "I don't know why for me always while [listening to] sung poetry, images are like these: some kind of moss… there are also natural images";	like from the bird's view. And that beauty of the nature… […] You just fly, you know, this kind of movement"; **2.** "There is a field of grass or other short plants, you just stop in front of that field, and it is open to you […] the action is only wind that moves the grass, and a few birds flying"; **3.** "like a bird's flight from a high cliff, some canyon […], then opened like a forest, like there's a lot of nature. And it's not a Lithuanian forest. It looks like South African, exotic, different animals running around. […] different monkeys, tigers […]. It's like again going up above the forest, it's like a river's stream, such a light flight with that river"; **4.** "I would imagine a meadow now, well, summer, a meadow, something like this, wind, tranquility"; **5.** "So, mountains, meadows, sky, birds flying"; **6.** "At the beginning, I imagined that I'm sitting somewhere in the Caribbean Sea, on the beach, I'm watching, I don't know, the waves, how ships are sailing, palm trees, something like this, some people with surfboards there"; **7.** "I imagined the same journey, various natural landscapes, people. Very warm communication"; **8.** "In the *Lord of the Rings*, the action takes place mostly in summer, everything is summery. For example, when someone is riding a horse across fields somewhere to bring news or accomplish a mission. […] This was my image, so it is associated"; **9.** "It very much reminded me of my recent trip to the mountains, and there were even these images like when we were climbing up, when I was there in the mountains, some kind of adventure, walking on rocks, seeing from up high […] I saw a lot of nature"; **10.** "The whole orchestra was playing in the nature, in that, I don't know, like it is very much shown in

			movies, on a special stage for the orchestra and, you know, they play there"; **11.** "So, at the beginning, that meadow from *Tadas Blinda*. And then, more towards the end of the piece, I don't know why, it associated with that *How to Train Your Dragon*, so I saw like above the water"; **12.** "Well, for me, I don't know, such an image like a small stream flows, flows on, and it gets wider and wider, the current gets stronger and flows into the ocean"; 1**3.** "The nature seemed very tranquil, so at first maybe a beach, maybe a forest nearby"; **14.** "Black-grey clouds. I mean, like, for example, the nature looks: it is light and cloudy, when it gets louder. Later on, a storm may rise, and then, again, like tranquility, a little bit too hot. Something more associated with the nature"; **15.** "Also in the drawing, well, there was the blue sky, a brown horse and green grass"; **16.** "Like a ship in the sea waves […] the flute reminded me of the Irish culture, so there is a lot of green color in front of my eyes. Some fields, meadows"; **17.** "At the beginning, it seemed like very broad fields, the sky, maybe a bird, later on, some mountains appearing"; **18.** "It seemed for me like I was in my hometown. […] Rokiškis, Lukštai Village. as if I were in that village and saw around me forests, fields"; **19.** "I don't know, for me it reminds of the *Stallion of the Cimarron* […] Some kind of stream, fields, and more, I now think. […] In general, fields, that horse running, that got freed from shackles"; **20.** "Later on, I started to see dancing people, I imagined that I was dancing on the beach. […] In the evening. Dances with fire, these are more personal things. I imagined a theatre, so to say, a dance theatre. And those people, so

			to say, were dancing like savages, I even imagined a ballet. But, in general, I saw a lot of nature […] Mountains, meadows, the sky, birds flying".
Trip/ journey	**1.** "It reminds me of my childhood […] when you go to the seaside".	**1.** "I would say, like a journey by car or by bus, and very broad meadows. A field";	**1.** "I imagined that someone is walking… The beginning is somewhat easy, calm, then somehow it grows, something like that, and as if it was like going on a trip, like to battle..."; **2.** "I imagined the same journey, various natural landscapes, people. Very warm communication"; **3.** "Let's say, an animated movie, and someone, the main character, understands what he needs to do or he already goes to save someone, while running, or riding a horse […] *Stallion of the Cimarron* and he's running somewhere"; **4.** "In the *Lord of the Rings*, the action takes place mostly in summer, everything is summery. For example, when someone is riding a horse across fields somewhere to deliver news or accomplish a mission. […] This was my image, so it is associated"; **5.** "It very much reminded me of my recent trip to the mountains, and there were even these images like when we were climbing up, when I was there in the mountains, some kind of adventure, walking on rocks, seeing from up high […] I saw a lot of nature".
Abstract imagery	**1.** "Some kind of soft abstractions, and those visualizations were jumping a little bit due to the technical thinking".	**1.** "Specific – maybe no, just abstract things"; **2.** "It's just bright and that's all, it seems";	**1.** "I'd say I saw something more like some kind of constructions".
	None: 1	**None: 3**	**None: 0**

Of course, the triggered visual imagery may not always be very vivid and dynamic, it can also be only a single extremely abstract image throughout the entire musical piece. For example, subject No. 11 describes the *POP* excerpt: "some kind of soft abstractions, and those visualizations were jumping a little bit due to the technical thinking." However, all the three excerpts evoked relatively clear visual images, thus there are only a few cases that represent perception of abstractions.

3.4.1. POP excerpt

Some of the derived categories of visual imagery are mutual for all or at least two excerpts, such as performance (dancing/singing/playing), relationships/people, other cultures or places, the nature, a trip/journey, and the video clip (music video). Additionally to these topics, specifically to the *POP* excerpt, there was only the topic of youth (~17%) mentioned – not only seeing young people but also pointing out to their lifestyles, and two participants related this specifically to the American youth culture which falls into the category of other cultures with the same two examples. The category of dancing, singing, or playing an instrument contains the highest number of examples compared to the other excerpts, as well as compared to the other derived topics from listening to the *POP* excerpt.

The piece mostly evoked visual imagery that is related to some kind of performance in ~46% of the participants, most of the examples are related to dancing (~64%) and singing (~55%), also to some particular performers, concerts or shows. Six participants represented cases of evoked visual imagery by the *POP* excerpt that were directly influenced by music videos, from which, five claimed seeing specific scenes from the clip of the musical piece, *Blank Space*. In the category of relationships/people, there are four cases, from which two were related to the party atmosphere. The *POP* excerpt evoked only a couple of visual imagery cases that relate to the nature (and this is the lowest number in this category compared to the other two excerpts), from which one also fits in the topic of the trip/ journey that contains only that one example.

Table 11. Examples of visual imagery descriptions that are unique (in their categories) only to the *POP* excerpt

Category	Examples
Youth	**1**. "Culture of American, British youth, like pop. Fashion… well, those youthful clothes, girls"; **2.** "one of those typical images of *YOLO,* American youth, how they spend their time, a *Mini Cooper* without the roof, girls screaming"; **3.** "it is attempted to go into the culture of youth"; **4.** "I imagined a group of youths riding a car, maybe a jeep, towards the sunset, the sea. They were dancing in the car".
Other	**1.** "I remembered myself doing house chores"; **2.** "Entertainment in warm weather, volleyball and other things".

3.4.2. DP excerpt

Not only the *DP* excerpt's title is *Room of Rain*, but also there were a few cases of mentioning of 'raining' or 'rain' in the song's lyrics, the excerpt evoked direct visual association of rain only to four participants, and one of those examples was triggered by remembering the video clip of the piece (see Table 12). Most images that were evoked by the same excerpt involve seeing the nature (~33% of the participants), although the images themselves seem to be quite divergent within the category.

DP is the only excerpt that did not evoke any visual imagery that would involve another culture or foreign places. However, some interesting visual associations as

memories were evoked, such as camping contexts that would involve playing the guitar beside a campfire as described by two subjects; or seeing a room as specified by three subjects, of whom, two saw dormitory rooms, and all of them were associated with specific memories – situations where the subjects used to listen to this specific song, or other songs similar in genre. As described by two subjects, seeing a clock was evoked by the lyrics. Four examples of evoked visual imagery by the *DP* excerpt illustrate singing (1) or playing the guitar (3). Although the excerpt was highly associated with love and relationships in general, it is not reflected in the evoked visual imagery specifically – there are only two examples that are related to relationships/people.

Table 12. Examples of visual imagery descriptions that are unique (in their categories) only to the *DP* excerpt

Category	Examples
Rain	**1.** "There were images with rain, room of rain there"; **2.** "Room of rain, well, just because of that video that shows rain"; **3.** "And those images are evoked, that rain"; **4.** "And an image was evoked, that it's raining outside".
Other	**1.** "Specific image maybe that from the recent years, a dormitory room, a messy bed, a desk, you are sitting at the desk and doing something, and the time passes by. Just the clock is ticking". **2.** "It is the study years and the dormitory […]. Yes, our cozy room, evening, tea". **3.** "So at first that clock was seen, some kind of tower, maybe of a cathedral, it was autumn". **4.** "So something the same as it was sung, according to the words. That kind of images were evoked. Where it was sung that he will go away, so I imagined that someone is going through the door"; **5.** "I saw a friend's room".

3.4.3. INST excerpt

As it can be seen in Table 13, the *INST* excerpt evoked the richest and the most dynamic visual imagery – many participants mentioned the excerpt as if it were telling a story. It means that, when the musical material and its conveyed general mood changed, the associations of some participants changed accordingly as well.

Most of the evoked images are related to the nature: many examples include meadows, fields, forests, rivers, mountains and even animals. The latter can be described more specifically: some participants mentioned birds (4), horses (4), monkeys (2), lions (1) and tigers (1). As explained by the listeners, all the animals, except for the birds, the tiger and one monkey, are related to these specific movies: *The Lion King* (the lion and the monkey), *The Lord of the Rings* (one mentioning of the horse) and *Spirit: Stallion of the Cimarron* (three cases of mentioning the horse). A few examples illustrate that the observed nature is exotic, not Lithuanian: a South African forest, a Caribbean beach, the Irish nature, or even American Indians by the campfire were mentioned. Although some other participants did not specify the places of their visual imagery, they can be categorized as exotic to the Lithuanian nature as well, for instance, meadows that would be related to specific movies, such as the *Lord*

of the Rings, or mountains – mostly based on the personal experience of traveling. Some examples involve seeing water, such as: sea/ocean (4), stream/river (2), beach (2), or even sailing ships (2).

Table 13. Examples of visual imagery descriptions that are unique (in their categories) to the *INST* excerpt

Category	Examples
Battle/ fight	**1.** "I imagined that someone is walking… The beginning is somewhat easy, calm, then somehow it grows, something like that, and if it was like going on a trip, like to a battle..."; **2.** "Some kind of walking, so easy. Later on, bad guys maybe attacked, I don't know"; **3.** "[…] those beasts, animals run and fight for their every day, survival, and for that they could evolve".
Flight/ bird view	**1.** "Ireland. Yes, well, you know, like the nature when you film it from above with a drone or helicopter, like from the bird's view. And that beauty of nature… […] You just fly, you know, this kind of movement"; **2.** "action is only wind that moves the grass, and a few birds flying"; **3.** "like a bird's flight off a high cliff, some canyon […], it's like again going up above the forest, it's like a river's stream, such a light flight with that river"; **4.** "At the beginning, well, so to say, it seemed like Disneyland to me, then it's just dances, something like this. *Beauty and the Beast* […] And then it began, like a movie, as I say, as if an eagle flew by, well, it showed from above"; **5.** "So mountains, meadows, the sky, birds flying";
Movie	**1.** "At the beginning, well, so to say, it seemed like Disneyland to me, then it's just dances, something like this. *Beauty and the Beast* […] And then it began, like a movie, as I say, as if an eagle flew by, well, it showed from above"; **2.** "I am in the cinema, sitting and watching a movie. […] It's, I'd say, even related to war, maybe some kind of war movie […] There's a soldier with a nurse, you know, they met again after many years of war. […] It's like *Pearl Harbor*"; **3**. "This musical piece reminds me of *Braveheart*. […] film elements were evoked. I saw that actor walking"; **4.** "Let's say, an animated movie, and someone, the main character, understands what he needs to do, or he already goes to save someone, while running, or riding a horse […] *Stallion of the Cimarron*, and he's running somewhere"; **5.** "In the *Lord of the Rings*, the action takes place mostly in summer, everything is summery. For example, when someone is riding a horse through the fields somewhere to deliver news or accomplish a mission. […] This was my image, so it is associated"; **6.** "So, in the beginning, that meadow from *Tadas Blinda*. And then, more towards the end of the piece, I don't know why, it associated with that *How to Train Your Dragon*, so I saw like above the water"; **7.** "The whole orchestra was playing in the nature, in that, I don't know, like it is commonly shown in movies, on a special stage for the orchestra and, you know, they play there"; **8.** "Later on, something from imagination associated with stage lights, when there is a stage and lights. So, darkness and stage lights shining. Then I remember the *Stallion of the Cimarron* [...] So again, green, blue, and a beautiful horse"; **9.** "I don't know, for me, it reminds of the *Stallion of the Cimarron* […] Some kind of stream, fields, and more, I now think. […] In general, fields, that horse running, that got freed from shackles"; **10.** "images from *The Lion King*, that animated movie. […] The monkey from that movie is holding Simba".

The *INST* excerpt also evoked the highest number of additional categories that are unique to this excerpt: battle/fight, flight/bird view, and a movie. The latter category includes the highest number of examples which point to specific movies (mostly adventure/action and animated films), and this is connected to the fact that, by many participants, this excerpt was assigned to the genre of the film soundtrack.

The category of the flight/bird's view involves not only seeing birds or other entities flying, but also seeing the ground (or something else) from above. The category of the battle/fight presents three examples that were evoked due to the dramatic part of the excerpt.

3.4.4. Color perception

As a part of the subjects' visual imagery, a separate table demonstrates the participants' perception of colors that were connected to their music-induced associations (see Table 14). There were a few participants who could not identify any, even very abstract, colors in each excerpt, however, the majority of the subjects were able to describe their perceived dominating colors, and each excerpt seems to have some tendencies in evoking the same or similar colors in the participants, especially in the *INST* excerpt, very clear and strong tendencies of two most dominating colors can be seen.

Table 14. Generalized categories of colors evoked in the listeners' visual imagery. The numbers in parentheses represent the number of participants who specified the same color

POP	***DP***	***INST***
Red (7)	Dark (6)	Green (13)
Yellow (6)	Yellow (6)	Blue (12)
Black (4)	Black (5)	Yellow (6)
White (4)	Grey (5)	Grey (5)
(Light) blue (3)	Brown (4)	Brown (4)
Pink (2)	Green (4)	Black (3)
Other: green (1), brown (1), orange (1), purple (1)	Other: white (3), red (2), orange (2), pink (1)	Other: white (2), red (2), orange (1)
Abstract: bright (4), light (3), pastel (2), dark (1), colorful (1), warm (1)	Abstract: blurry (3), cold (2), pastel (2), light (2), colorful (1), warm (1), soft (1), colorless (1)	Abstract: light (5), dark (3), warm (2), colorful (1), bright (1), clear (1)
None: 5	**None: 4**	**None: 4**

In relation to the *POP* excerpt, the most dominating specific colors were red, yellow, black and white. Red, for instance, was evoked by many different elements which, according to the subjects' explanations, mainly came from the musical video of the excerpt, for example, Taylor Swift's red lipstick. One participant associated this and another color not with the image itself, but with the evoked two opposite emotions: red was linked with anger, whereas yellow was linked with joy. Three participants associated a few colors (including red and yellow, also bright colors in general) with the stage lights. White and other bright colors (such as light blue) were

mostly associated with clothing, while black and dark colors in general were associated with the background.

The *DP* excerpt seems to have evoked more abstract and darker colors than the *POP* excerpt. Such colors (including brown, black and grey) were mostly associated with such visual images as night, dusk, a dark room and rain, which may have been evoked by the musical piece's lyrics that contain such words and phrases as "room of rain" and "three o'clock in the night." However, also yellow, which is a bright color, is one of the dominating colors among the participants' interpretations as well, and it was mostly associated with various sources of light, such as different lamps, a camp fire, or the sun. These kinds of associations may also have been evoked by the lyrics of the song, specifically: "look at the light, don't look at me." Two participants stated that, for them, the genre itself, Lithuanian sung poetry, is always associated with the green color – which suggests that whatever the song's content may be in terms of its message, it is the genre itself that influences the perception of color as an association.

Somehow, the *DP* excerpt also evoked very strange associations or perceptions of the colors, thus there were many interesting and at the same time confusing descriptions given by the participants. For example, subject No. 5 interprets: "those colors are blurry, you know, but colorful. Well, somewhat natural colors, maybe a little bit of dusk, but cozy colors." Subject No. 7 explains: "a gloomy room, grey, colorless, dark and cold colors, not cold, but, for example, a little bit of brown." Also, a fairly unusual interpretation is shared by subject No. 8: "The colors seem to be blurry, perhaps, there is no grey, but somewhat soft, but they are, maybe, going more towards the cold tones."

The *INST* excerpt induced many different images of the nature in general, thus the dominating colors of the participants' interpretations correlate with these nature-like images. The green color was linked with various greenery (a tree, grass, a meadow), blue was related with the sky, whereas yellow was associated with fields, gravel roads or the sun. Compared with the other two experimental excerpts, this one evoked dominating colors in a greater number of the participants, which confirms the claim that the *INST* excerpt, even with no lyrics, induced more unified interpretations among the subjects.

As the participants' interpretations reveal, the ability of music to turn into visual mental images in the listeners' mind is again linked to the listeners' socio-cultural environment and personal experience within the domain. Being exposed to different audiovisual products that share the same or at least similar structures, patterns, this kind of material starts working as a teaching tool by which listeners can learn *what music should look like*, or, vice versa, *how images should sound*. This means that whenever a person hears, for example, a movie soundtrack (even an unfamiliar one), it will probably trigger images that are associated with similar already heard music from one or even more movies that the listener has already seen, and with which his mind decides to produce associations as with the most similar ones to the musical piece that the listener is being exposed to at the moment.

3.5. Emotion

Music-induced emotion is one of the most subjective and ambiguous aspects to explore in music research. There is a variety of reasons for this, as it was discussed in the theoretical part: it is not entirely clear how listeners perceive the music-induced emotion, and when they do, we may wonder how to understand that particular emotion which may not have any verbal representation in the real world. This is, perhaps, the most interesting moment when listeners experience a music-induced emotion, however, they are unable to find the right words to express and explain the actual feeling to another person, in this case, to the experimenter-researcher. That is why, in the participants' descriptions, there can be found a lot of additional words or phrases, such as "I don't know", "it's hard to say", "something like…", "well…", "I would say", etc., which indicate uncertainty of their perceived emotions.

Table 15. Emotions (keywords) associated by each musical excerpt. One subject may have employed more than one keyword for explaining the emotion. The last row indicates how many participants did not provide any descriptions on emotion

POP	***DP***	***INST***
Relaxation (2), no responsibility (2)	Calm (9), relaxation (2), dreaminess (2), warmth (2), love (1), softness (1), romance (1)	Calm (7), dreaminess (3), relaxation (2), softness (2), lightness (1), romance (1)
Cheer (9), uplift (5), positivity (3), inspiration (1), laughter (2), made the subject smile (2)	Positivity (3), joy (3)	Cheer (5), elevation (5), enthusiasm (3), motivation (2), energy (2), positivity (2), optimism (1), excitement (1), inspiration (1), good mood (1), bliss (1), euphoria (1)
Sadness (3), disappointment (3), nostalgia (1), "not a good emotion" (1)	Sadness (5), nostalgia (4), longing (4), melancholy (3), disappointment (2), depression (1), worry (1)	Worry (2), disturbance (1), fear (1)
Wish to dance (3)	-	Wish to dance (1)
Freedom (1), activity (1)	-	Freedom (5), adventure (3), activity (1), courage (1)
-	Concentration (2)	-
Passion (2), impulsivity (1), pride (1), anger (1), jealousy (1), cheekiness (1)	-	Drama (2), tension (1), surprise (1), grandeur (1)
None: 2	**None: 1**	**None: 0**

There are even some examples that illustrate the participants' struggle to explain the emotion, and they describe more not the feeling itself but what kind of activity or situation is connected with the directly unexplainable emotion, e.g., subject No. 10 describes the *INST* excerpt: "but that emotion is something like I would be going somewhere, I don't know, by bike listening to this music, and it would be very nice

for me to travel somewhere. […] I don't know how to name it. […] I don't know, either I can't find the words, or there is not much more to say." Subject No. 21 tries to describe the feeling induced by the same excerpt as a very abstract feeling as if it were spring time: "Spring, well, this kind of feeling. Well, I don't know, it's very strange but, well, something is evoked inside. It feels like it would be spring – it was not a particular event of my life, but it seems like it is spring and, well, it is just that feeling."

Furthermore, the participants mostly experienced a mixture of similar or, to the contrary, different emotions at once. In doing their best to explain that mixed feeling, they in some instances used more than two 'emotion keywords'. For instance, subject No. 16 explains the emotion evoked by the *POP* excerpt: "there is a little sadness, not much, maybe there is nostalgia, too, it is hard to say – at this point lyrics should be analyzed, but there is, I would say, sadness, unfulfilled expectation, at the same time partly somewhat cheerful, well, it is difficult to name it." Another example involves a description delivered by subject No. 22 after listening to the *INST* excerpt: "indeed, very ambiguous emotions. It's like it is calming, and at the same time it… what is the opposite word… […] Yes, it brings tension. At the same time, it brings tension and calms down. […] Well, perhaps, those two opposite forces."

Despite the difficulties and complexity of experiencing and perceiving music-evoked emotions, the participants were able to provide some specific and fairly informative keywords to define their associated emotions. There were only three cases when descriptions were not provided: two subjects did not define their emotions when listening to the *POP* excerpt, and only one did not comment on the *DP* excerpt. Descriptions concerning the *INST* excerpt were provided by all the participants. As Table 15 displays, the *POP* excerpt was mostly perceived as a cheerful and uplifting piece, the *DP* excerpt was mostly associated with calm, sad and nostalgic emotions, which generally in some way correlates to the perceived colors in each musical excerpt indicating emotional mediation (similar to the results of other music-to-color studies, e.g., Isbilen and Krumhansl, 2016; Lindborg and Friberg, 2015; Palmer *et al*., 2013). What concerns the *INST* excerpt, since it was perceived as a dynamic piece in general, there is a variety of different emotions from calm and dreamy to dramatic and tense. The *DP* excerpt, compared to the other two, did not evoke any dramatic emotions. Nor did it induce any 'wish to dance' as indicated by some listeners after listening to the other pieces.

Although the subjects were not asked to distinguish between the emotion that is expressed in music and the emotion that was evoked in the listener by that music, a few participants were able to do it quite naturally. For instance, subject No. 17 describes the emotional experience when listening to the *POP* excerpt: "Some kind of passion is sent in this song, I would say. […] Yes, it inspires a bit, uplifts the mood." The listener describes an emotion that she perceived as *expressed* in the musical piece which in this case is passion; however, the *evoked* emotion is not the same – the participant mentions inspiration and feeling uplifted. This kind of example also illustrates that the perceived emotion, as expressed in music, can be different from the one the music actually evokes in the listener. Another case worth mentioning is that an emotion might come not from the musical piece itself, but rather from the

associations related to the genre or style the piece belongs to. For instance, when listening to the *POP* excerpt a subject expressed disappointment because it was mainstream pop music, while another participant mentioned the same emotion that, in his case, was triggered by the singer's voice. On the other hand, the participants who liked the pop music genre in general described themselves as perceiving positive emotions. A similar case was observed when discussing the *DP* excerpt.

3.5.1. Indirect links

It might be that not only the musical piece directly evokes the emotional response, but visual imagery, for instance, is evoked by the same musical piece, yet earlier than the emotion. According to Juslin and Västfjäll (2008, p. 572), some particular musical styles may correlate with specific psychological mechanisms; the authors proposed six mechanisms in total (brain stem reflex, evaluative conditioning, emotional contagion, visual imagery, episodic memory and musical expectancy; see pp. 36–37 of the dissertation).

Table 16. Specific cases illustrating visual imagery being evoked before the emotion itself

Excerpt (genre)	Description
DP	"Once I was with my friend in Vilnius. So, we were in Vilnius, we talked all night also with another friend about what this song might be about. […] Well, it is nice to remember, so pleasant, warm, good, some kind of cheerful, nostalgic, so here it is."
INST	"It's like three parts. […] *The Lord of the Rings*, in that part, the emotion is cheerful, a little bit of adventure, well, like I told. Then, the Eastern, it makes you dream about something, get philosophical, speaking more abstract. And then, with the guitar so energetic and with drive, it encourages to act here and now."
INST	"*Beauty and the Beast* or something like that, this kind of atmosphere, like I said, dark blue, some kind of twilight, not negative, but as if romantic. […] So, I don't know, it derives from it. That it is beautiful, cheerful, something like that."
POP	"At first, not like discouraging, maybe softer, I don't know how to call it. Not acceptable. But when I remembered Kulikauskas, then something like *ah, Kulikauskas!* So, cheerful, because, particularly, remembering that concert, it was a nice evening."
POP	"Well, I don't know, this kind of music is, well, something like when you clean your house and you need that something in the background would stimulate and make you happy, so this kind of impression is evoked inside me by this music. I even wanted to smile when listening to it."
POP	"So, most probably, since I've seen not only once, so in general all that wittiness, that witty depiction of all that jealousy emotion, and also that strong woman. […] Maybe laughter. Again, because everything is depicted in a funny way."

One of the mechanisms, for instance, that we may apply for this research is the visual imagery; it may affect the perceived emotion by indicating that emotion is more directly linked to the visual outcome rather than the musical piece itself. It is worth

noting that this angle of investigation was not included in the questions during the experimental session of this research, therefore, not all descriptions are eligible for the exploration of whether visual imagery may influence the emotional response since the participants simply might have failed to indicate the link. However, there are a few examples clearly indicating that visual imagery was triggered first, and then the emotion was derived from it (see Table 16). Among all the excerpts, the instrumental musical piece and, especially, the pop music excerpt, activated the visual imagery mechanism as a mediator in the induction of emotion which mainly happened to be in the form of specific memories. Perhaps the most interesting example is the one with remembering cellist Kulikauskas' concert: as the subject describes, at first, before the memory, it was one emotion, and it was mostly negative as it was probably directly affected by the musical piece; however, after remembering that particular concert, the emotion suddenly changed into a positively valenced one.

After analyzing separately the visual imagery, emotion and general associations that are evoked when listening to music, it seems that these elements may not make a unity although that might not be the case every time (see Figure 14). In order to illustrate the possibility of disunity, a real example can be taken from subject No. 3 experience who explained that, when listening to the *INST* excerpt, especially to the part with the flute solo, an association was evoked with relaxation music. However, the visual imagery involved natural landscapes and episodes from the *Spirit: Stallion of the Cimarron*, and the emotion was induced directly by the musical excerpt. Therefore, there was no direct link between at least the general association (the first impression) and the evoked visual imagery.

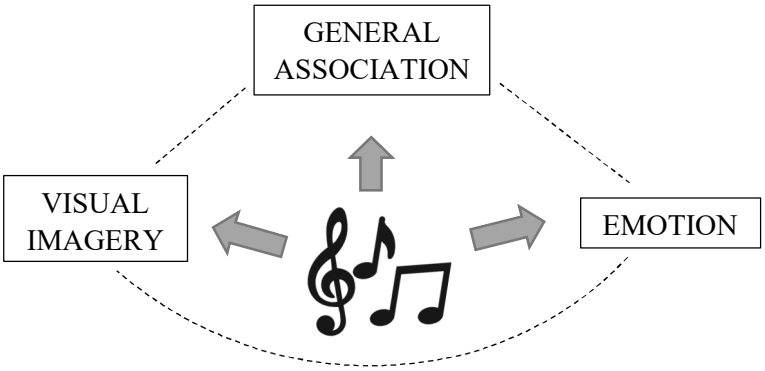


Figure 12. Representation of music inducing extramusical response that may be distinguished as the general association, visual imagery and emotion; however, those elements might not be connected content-wise to each other every time. The scheme was prepared by the author of the dissertation

As not only the above mentioned ones, but also some other examples show that listeners may instantly associate a musical piece with something that happens to be the first perceived impression (general association) linked to the musical stimulus, for instance, it reminds the listener of another song that is from his/her favorite movie. However, the visual outcome is not connected to that thought, but rather new images

are created based on the listener's imagination that is guided by the musical 'narration'. The music-evoked emotion might be deriving from the general association, visual imagery, or directly from the musical piece.

3.6. Lyrics

Another perspective involved investigation whether lyrics as a component of the entire multimodal fabric in the *POP* and *DP* excerpts had significant influence on directing the participants' extramusical associations, or, instead, their mind just might have ignored the verbal cues and might have been guided by the music itself. In order to explore this aspect, the subjects were asked to assess whether their extramusical experiences related to those excerpts were more influenced by lyrics or music, or, perhaps, by both. The results show (see Figure 11) that music was generally perceived as the more influential factor in forming extramusical associations in both excerpts (*POP* excerpt – 13 subjects, ~54%; *DP* – 9 subjects; ~38%). Interestingly, although sung poetry is considered to be a genre where the lyrics are more important than the music, the same number of participants – 8 (~33%) – in both excerpts identified the lyrics as to some extent a more influential factor over the music. What concerns the mixture of the lyrics and music, 7 subjects (~29%) in the *DP* excerpt and 3 subjects (~13%) in the *POP* excerpt indicated that both, the lyrics and the music, were equally important in influencing their extramusical associations.

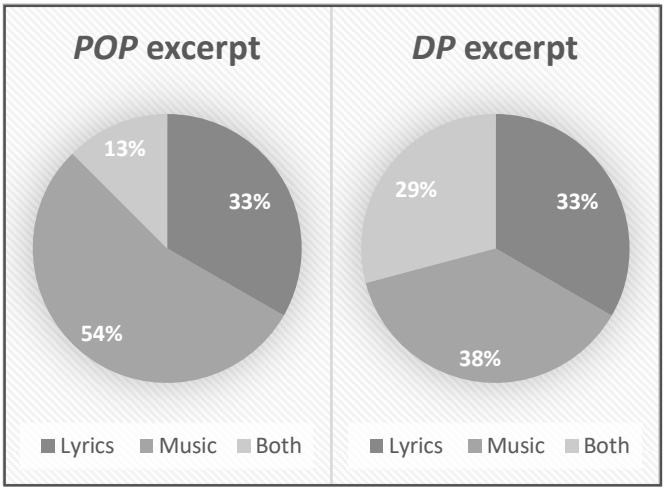


Figure 13. Visual representation of what had a bigger impact, according to the understanding of the listeners themselves, on the listeners' associations evoked by the *POP* and *DP* excerpts: lyrics, music, or both

When analyzing the influence of the verbal cues on the subjects' musical perception, an unexpected aspect was discovered: some participants, without asking, mentioned that they did not pay attention to the lyrics in either the *POP* or the *DP* excerpt. When being asked the first questions, such as regarding the pieces' evaluation, they would suddenly get confused and say phrases like "I didn't pay attention to lyrics," or "I never listen to the words," and the latter was a more common

statement. There were eight participants in the *POP*, and seven in the *DP* excerpt who admitted not paying attention to the excerpts' lyrics. Moreover, the above mentioned phenomenon seems to be linked to the order of listening to musical excerpts containing lyrics. Knowing that a) there are 24 participants in total, b) there are two out of three excerpts that contain lyrics, and c) that the sequence of listening was randomized for each participant, there were 8 cases for each excerpt to be the first in the listening order. Interestingly, in the *DP* excerpt, 6 out of 7 cases of ignoring the lyrics belong to the participants who were exposed to the excerpt as their very first listening passage. However, subject No. 1 is also included here, to whom, *DP* was the second excerpt as it followed the *INST* excerpt that contains no lyrics, thus making *DP* the *first* excerpt that contained lyrics to which s/he was exposed to. Therefore, it means that all the 7 cases can be considered as the first excerpts (with lyrics) that the subjects were exposed to. This implies that the participants did not expect the kind of analysis they were asked to do following the experimenter's questions; therefore they were not prepared and/or fully attentive to the lyrics during the music listening task. Even those participants who stated that they never listen to lyrics were more attentive during the following excerpt containing lyrics since they got familiar with the process of the experimental session. Although the results in the *POP* excerpt reveal that it may not be the case of firstness since six (including subject No. 8, to whom the excerpt was second, but the previous excerpt was *INST*) out of eight subjects meet the discussed condition, and two subjects (No. 11 and No. 16) did not pay attention to the lyrics even though it was the last excerpt for both of them. However, as further analysis shows, even ignoring the lyrics did not prevent the participants from perceiving the musical message and extramusical associations since they simply relied more on the musical domain.

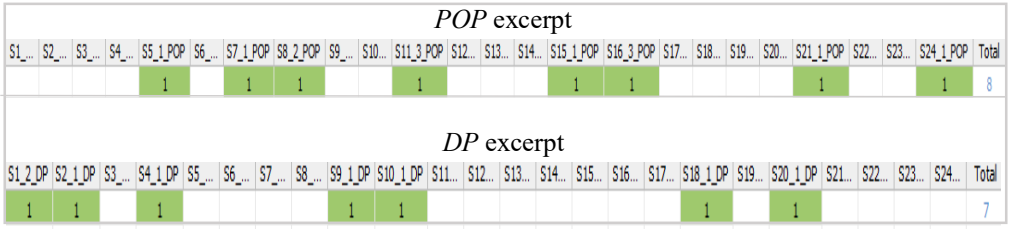


Figure 14. Representation of the subjects, who admitted that they did not pay attention to the lyrics in the *POP* and *DP* excerpts. The middle number of each subject's code indicates the order of listening. For example, *"S1_2_DP": S1* stands for the subject's number (in this case, subject No. 1), *2* means that it was the second excerpt that the subject listened to, and *DP* is the type of the excerpt is sung poetry. The tables were generated by using *MAXQDA* software

It may seem that, for a Lithuanian listener, the text of the *POP* excerpt is more difficult to pay attention to and understand since it is in English. However, the participants of the research were between 21 and 30 years old, which allows us to assume that they know English fairly well. Furthermore, from the meaning point of view, it is the Lithuanian text in the *DP* excerpt that happens to be more difficult to understand in terms of the main message particularly since it employs various

metaphors that make the meaning of the musical piece 'deeper' and more complicated. Nevertheless, perhaps the situation of not paying attention to the lyrics lies not within the musical piece itself (especially the verbal part), but rather generally in the attention of the individual listener. Particularly, we can see the tendency of "not being prepared for the task" since ignoring of the text occurred when the listeners were exposed to the excerpts containing lyrics firstly during the experimental session.

3.7. Comparison between *sung poetry fans* and the *control* group

As one of the objectives of the research was to check whether there is a significant difference between the sung poetry fans (SPF) and the listeners of other genres (in this study, indicated as the *control* group), this section shall explore the perceptional aspects of the *INST* excerpt by comparing the two listener groups. The other two excerpts, *POP* and *DP*, are not employed in this analysis since preconceptions related to these genres might be involved especially because the genre of sung poetry itself is involved, and also these excerpts contain lyrics. Therefore, as it was predetermined in the design of the research, the *INST* piece is considered to the most suitable in this case since it is the most neutral one, especially that none of the participants had been familiar with it before the research.

The participants were divided into two groups (twelve subjects in each), the target and the control groups, according to their provided answers regarding sung poetry that were asked in the online questionnaire on the listeners' sociodemographic information. Since the questionnaire was filled in after the experimental session, during it, none of the participants knew to which group they belonged. In order to be in the target, SPF, group, a listener had to name this genre in his/her preferences of musical genres and put a mark equaling 8 (out of 10) or higher when evaluating how much the genre means to them/ how much they like it. These two aspects would indicate that these listeners perceive sung poetry as an important genre in their music listening repertoires.

Table 17. Comparison of some quantitative data related to the *INST* excerpt between the sung poetry fans and control groups

Group	**Sung poetry fans**	**Control**
Evaluation of the excerpt	8,625	8,541
Perceived genre	Instrumental (7), soundtrack (2), other (2)	Soundtrack (5), (contemporary) classics (3), instrumental (1)
Memory/ Imagination/ Both	4 / 4 / 4	3 / 4 / 5
Cultural / Personal / Both	3 / 7 / 2	4 / 3 / 5
Visual imagery	12 subjects (100%)	12 subjects (100%)
Colors	12 subjects (100%)	8 subjects (~66%)
Emotion	12 subjects (100%)	12 subjects (100%)
Identified signifiers-signifieds	12 subjects (100%)	12 subjects (100%)

As for the measurements of the ways sung poetry fans might be different listeners from others, analysis of the gathered data involves some quantitative (see

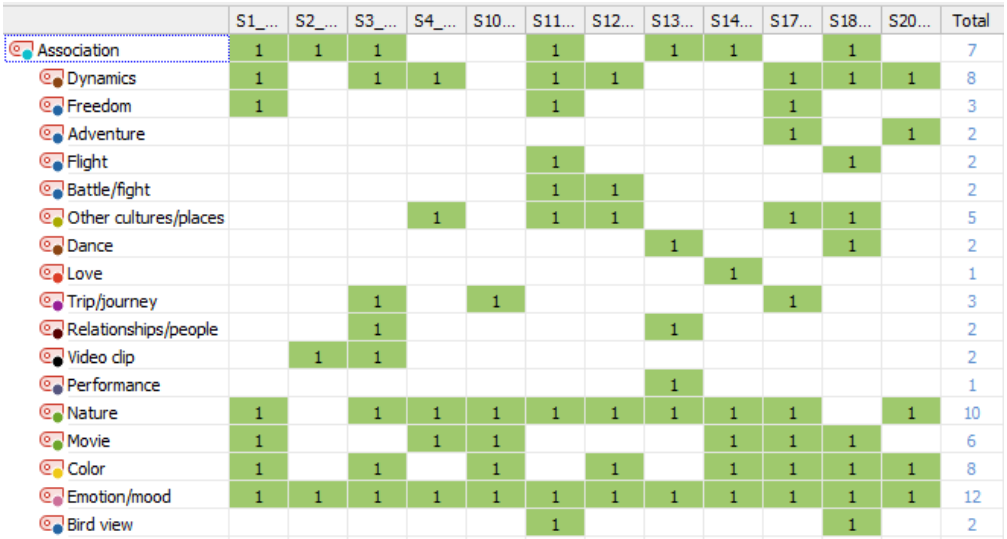
Table 17), but mostly qualitative, approach similar to the analysis of already discussed data that involved all the participants of the experiment. However, in this particular case, it was also important to take into account not only how differently the same excerpt might have been perceived by the groups, but also what might have caused the difference and may hint at 'more creative' cues. Therefore, the exploration involves looking for more unusual, outstanding descriptions, especially from the group of the sung poetry fans.

As Table 17 displays, it does not seem that there are any significant differences in quantitative measuring. Both groups enjoyed listening to the *INST* excerpt at essentially the same level since the difference of their evaluation is very small. Also, both groups experienced music-evoked extramusical associations in the form of visual imagery, and the perceived emotions were described by all the participants. Furthermore, all the subjects from both groups were able to identify the links of signifiers-signifieds. However, a couple of interesting differences should be noted: first, the SPF group mostly perceived the musical piece as an instrumental genre, while the control group identified the *INST* excerpt more in a style of a movie soundtrack. Moreover, what concerns the evoked extramusical outcome, the most significant difference is seen in specifying the sources of influences: seven of the SPF subjects indicated that their associations were based on their personal experiences, whereas only three participants from the control group indicated the same domain. In the latter group, a mixture of both, cultural influence and personal experience, was indicated by most of the listeners, whereas the same option was indicated by the least number of the SPF subjects. Also, if all the SPF subjects were able to specify the dominating colors of their evoked visual imagery, four members of the control group were unable to provide feedback.

	S5_...	S6_...	S7_...	S8_...	S9_...	S15...	S16...	S19...	S21...	S22...	S23...	S24...	Total
Association		1		1			1		1	1			5
Dynamics	1	1		1	1	1	1	1	1	1	1	1	11
Freedom			1								1	1	3
Adventure							1					1	2
Flight	1		1									1	3
Battle/fight				1	1	1				1			4
Other cultures/places	1					1	1	1		1	1	1	7
Dance										1		1	2
Love						1							1
Trip/journey				1			1						2
Relationships/people	1					1	1						3
Video clip					1								1
Performance								1	1			1	3
Nature	1	1	1	1	1	1	1	1	1		1	1	11
Movie					1	1	1	1	1		1		6
Color	1	1	1	1	1	1	1	1	1	1	1	1	12
Emotion/mood	1	1	1	1	1	1	1	1	1	1	1	1	12
Bird view	1												1

Figure 15. Visual representation of whichever categories (codes) of extramusical associations evoked by the *INST* excerpt were involved in the descriptions of the SPF group subjects

Another quantitative and visual representation that reveals some minor differences of the perception of the *INST* excerpt and its evoked extramusical associations is displayed in Figures 15 and 16 which basically contain tables generated by using the *MAXQDA* software. More similarities than differences can be found there as well: the data shows similar or even exact numbers in each category. The musical excerpt was highly associated with the nature by both groups. However, some instances display somewhat significant differences as well. These include the perception of the *INST* piece as dynamic: only one subject from the SPF group and four from the control group did not indicate this as the case.



	S1_...	S2_...	S3_...	S4_...	S10...	S11...	S12...	S13...	S14...	S17...	S18...	S20...	Total
Association	1	1	1			1		1	1		1		7
Dynamics	1		1	1		1	1			1	1	1	8
Freedom	1					1				1			3
Adventure										1		1	2
Flight						1					1		2
Battle/fight						1	1						2
Other cultures/places				1		1	1			1	1		5
Dance								1			1		2
Love									1				1
Trip/journey			1		1					1			3
Relationships/people			1					1					2
Video clip		1	1										2
Performance								1					1
Nature	1		1	1	1	1	1	1	1	1		1	10
Movie	1			1	1				1	1	1		6
Color	1		1		1		1		1	1	1	1	8
Emotion/mood	1	1	1	1	1	1	1	1	1	1	1	1	12
Bird view						1					1		2

Figure 16. Visual representation of whichever categories (codes) of extramusical associations evoked by the *INST* excerpt were involved in the descriptions of the control group subjects

Qualitative analysis did not result in finding any significant differences between the groups, either. No special phrases, stories, or metaphors were found that would stand out among other extramusical interpretations. Only one somewhat outstanding description was found, which was provided by subject No. 11: “Well, I think that piece is about life, the flow of life, its non-stop rush, but at the same time it’s about relaxation during that vigorous moment and sometimes free flight, when you can carelessly look at everything from above, what we see every day. And in that part, where there were more strings, it seems that there is some kind of return to that intensive part where continuous, let’s call it a battle of life is needed in order to evolve, develop. It’s like an effort has to be made, and then it gets a little bit freer, again lighter flight, so it’s like dreams and life.” This quite philosophical and the most fluent narrative, however, belongs not to the target SPF group, but to a representative of the control group.

The reason why the hypothesis of sung poetry fans being more creative listeners than others was not confirmed by this research also probably lies in the difference of the methodology of the experimental session. The previous study involved listening to instrumental pieces as many times as the subjects wanted, and the descriptions were provided in written form via the internet whenever the time was suitable for the participants. When interpretations are provided in the written form, it is easier for the researcher to note the differences in the descriptions' content as well as *how* each description is presented. For instance, rather obvious examples of differences involved comparing short and long informative descriptions of the participants' extramusical interpretations. A short description might have contained only a list of a few nouns expressed as keywords associated with the particular excerpt, and long descriptions would have been written more like stories, in the narrative manner, and they would contain many details and thoughts. These definitions were beautifully written stories that were well-thought through without any unnecessary items that happen to be natural when a subject tries to define his/her extramusical experience orally with the presence of the experimenter, which was the case in this recent research. Since there was not much time to think during the experimental session, each participant did their best to explain each extramusical association in as much detail as it was possible under the given circumstances. Therefore, the delivery of the descriptions in general is different from the previous research, and this resulted in the interpretations being more or less at the same level when explained orally. After analyzing these differences of the two studies, now it may seem that the sung poetry fans happened to be more creative *writers* than *listeners* in the previous research, as, given much time and privacy, they were able to provide more engaging information, use more sophisticated phrases, even metaphors, and create interesting dynamic stories.

CONCLUSIONS

The research has empirically investigated the process of music listening through the listeners' perspective. It can be generally concluded that music listening is a complex and fairly creative experience for the listener since audible music is able to evoke various responses including extramusical associations. The findings of the empirical study reveal different aspects involved in the process:

1. Most of the music-evoked extramusical associations became quite dynamic stories full of emotional and visual content. As the empirical findings show, at least one of the two mentioned responses was evoked during music listening, however, usually, visual imagery and emotion were induced together. Emotional associations were evoked in 92% of the subjects in the *POP* excerpt, 96% in *DP*, and 100% in *INST*; visual imagery was evoked in 96% in the *POP* excerpt, 88% in *DP*, and 100% in the *INST* excerpt. Emotion could be evoked directly from the musical piece or mediated through the visual outcome that was induced first. Visual imagery could involve specific memories from the listeners' past or stimulate imagination, or it could be a mixture of both processes. There were also references to other existing real-world items in (multi)media, music and/or audiovisual industry and culture, which mostly involved associations with other, non-Lithuanian, cultural contexts. Each musical excerpt was perceived as a different story thus indicating that listeners can distinguish nuances in different pieces (or even genres) that evoke specific to that music extramusical interpretations.
2. As it might have been expected, musical perception is not that prominently individual experience as it may seem from the first glance: general tendencies shown by the Lithuanian subjects show significant impact of the cultural influence on musical perception. However, it indicates not the Lithuanian culture itself since the listeners' extramusical associations were based or at least linked to the Western (especially American) pop-culture and film industry (namely, Hollywood production), as specified by the experiment participants. Perhaps this fact should not seem to be surprising since this domain is available for and even popular amongst the Lithuanian audience in many forms and many virtual platforms via the internet, television or radio. In any case, a strong tendency is indicated: Lithuanian listeners are more influenced by foreign social and cultural environment rather than the national, local context.
3. It is natural that the subjects' musical perception is based on their cultural, including musical, experience since music itself is a part of that cultural environment. Thus music, by existing in a wider context around itself, also brings to the listeners a wider context – extramusical associations – that are linked to that wider context of the music, its environment. And since many listeners come from the same cultural environment, have similar cultural, audiovisual and musical experiences, all this leads to possibilities of perceiving the same musical meaning in a musical piece if not identically, then at least very similarly. The reason behind the phenomenon is that the listeners, as seen from the semiotic perspective, can read the signs that are characteristic to their

culture where those signs exist, and users have agreed upon. In other (semiotic) terms, it means that the receiver understands the sender as they speak the same language: the codes are easily encoded and decoded, in this case – through the medium of music. This explains the cases that involve instrumental music where no clear verbal signs are provided, as only music is provided, and listeners are still able to perceive a similar (sometimes even identical) meaning. This is evident especially with extramusical associations that were evoked by the instrumental piece which no listener was familiar with: although the perceived meanings were not identical in details, however, most of the listeners tended to see natural landscapes, which concerns visual imagery.

4. The randomization of the music listening order has revealed that listeners may not always be paying attention to the lyrics in a musical piece. This fact indicates that the verbal domain may not be playing the main role in directing the listener's mind when forming extramusical associations. Therefore, even if a musical piece contains lyrics which is much more explicit than the music itself, the musical domain may still exert stronger or even absolute influence on the listener's perception and formation of the extramusical outcome.
5. As the analyzed quantitative and mostly qualitative data revealed, no significant difference was found between the sung poetry fans and the other listeners. Only one somewhat interesting difference was noted: when listening to the instrumental musical piece, extramusical associations evoked in the sung poetry fans were based more on the personal experience rather than on the cultural influence. However, the hypothesis based on the previous research was not confirmed, and, after analyzing the results of both studies, it is assumed that the fans of sung poetry happened to be just more creative writers of their perceived extramusical interpretations in the previous study.

Although the conducted empirical study was fairly complex and multifaceted, of course, further research is needed that would enrich empirical findings on the link between music listening and its evoked extramusical content. Firstly, more emphasis could be put on investigation of how actually emotion is perceived by the listeners, although, as it could be seen from the study's data, it was a rather difficult task for the participants. However, the two following questions can be considered quite important, and could be addressed and analyzed more in depth in further empirical research where the listeners are involved in the analysis process in order to understand more from the point of their perspective:

- what kind of emotion is perceived in music (what music expresses or conveys) and how does the musical piece make the listener feel (what is the evoked emotion)? Are those emotions different or do they coincide? These questions allow to explore and differentiate the two types of emotion: evoked (felt) and expressed/ conveyed in music. Furthermore, even emotion categories should be explained to the participants prior to the experiment so that they would understand and analyze what they perceive more accurately: feelings, emotions or mood, etc. This would help to break down the listeners' affective responses into more specific categories.

- if visual imagery was evoked as well, we should explore whether it was evoked first, before the emotion? If so, is the emotion linked and dependent on the evoked visual content? This approach would help to investigate the indirect induction of emotion through visual imagery if that would be the case.

Furthermore, for a similar future research, it would be interesting and useful to incorporate other measurements of more unconscious responses to music, such as body language (gestures, posture, facial expressions, etc.). That is, not only the subjects' answers as conscious interpretations could be investigated, but also behavioral (bodily) responses (e.g., taken from recorded audiovisual material) while listening to music and explaining musical experience. For example, perhaps eye-tracking equipment could help investigate natural mind-wandering by capturing and measuring the listeners' eye movements during the process of music listening.

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Papečkytė, I. (2016, May 13). Personal Interview.
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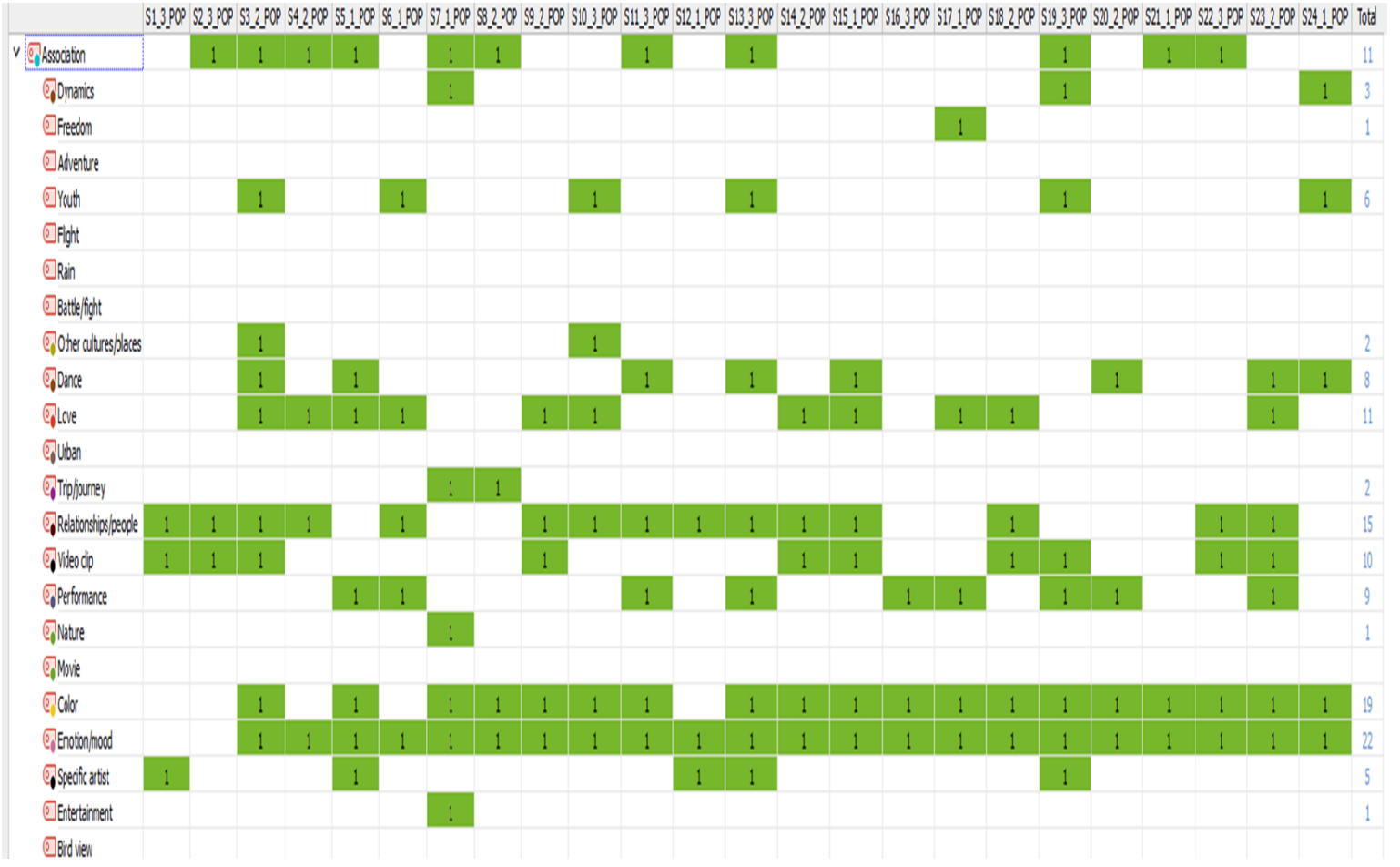
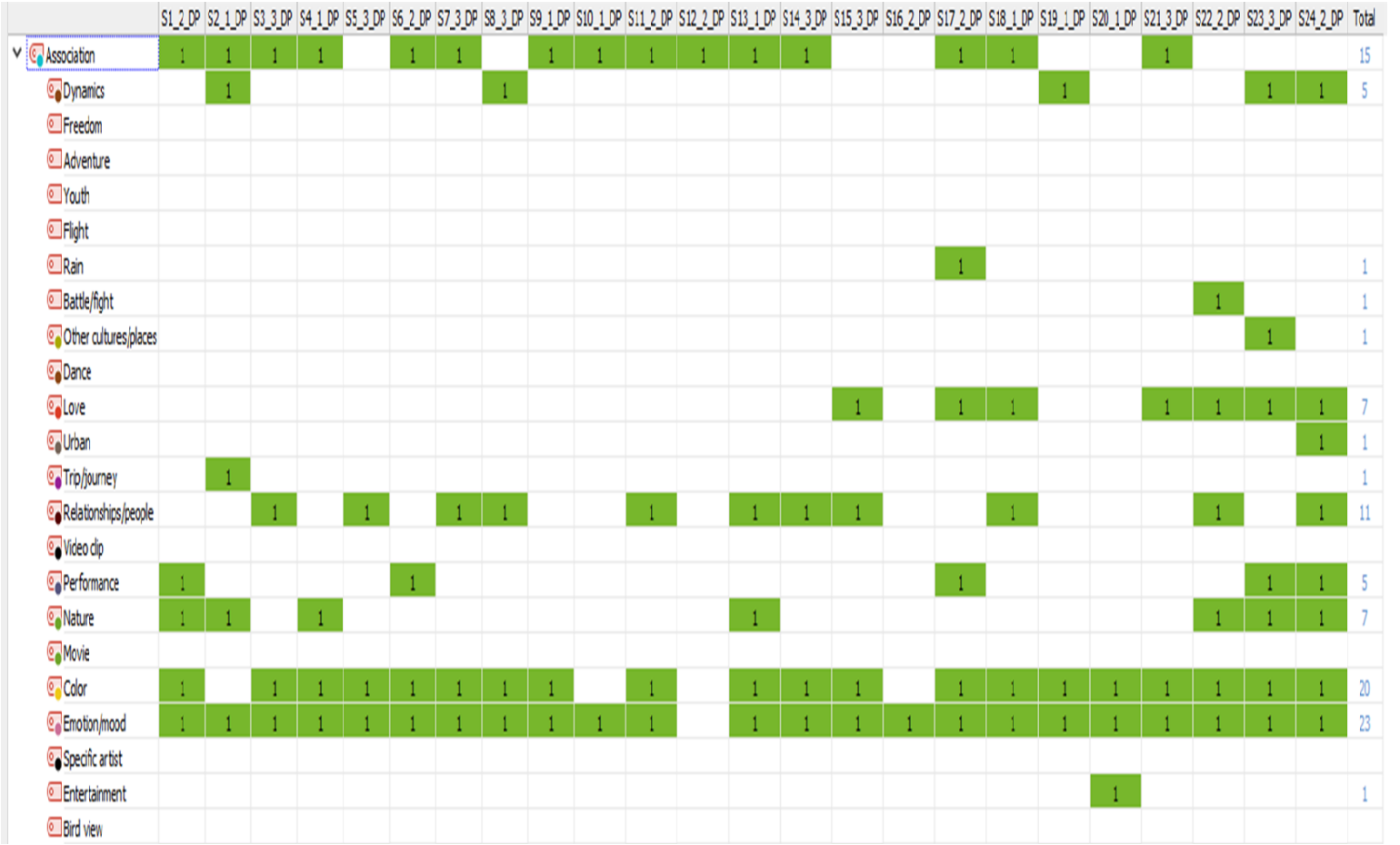
APPENDIX

The following three tables were generated by using *MAXQDA*. They are visual representations of which codes (categories) of the extramusical outcome, especially what concerns visual imagery, have been involved in each participant's descriptions of their music listening experience when exposed to the *POP, DP* and *INST* excerpts.



	S1_3_POP	S2_3_POP	S3_2_POP	S4_2_POP	S5_1_POP	S6_1_POP	S7_1_POP	S8_2_POP	S9_2_POP	S10_3_POP	S11_3_POP	S12_1_POP	S13_3_POP	S14_2_POP	S15_1_POP	S16_3_POP	S17_1_POP	S18_2_POP	S19_3_POP	S20_2_POP	S21_1_POP	S22_3_POP	S23_2_POP	S24_1_POP	Total
Association		1	1	1	1		1	1			1		1						1		1	1			11
Dynamics							1												1					1	3
Freedom																	1								1
Adventure																									
Youth			1			1				1			1						1					1	6
Flight																									
Rain																									
Battle/fight																									
Other cultures/places			1							1															2
Dance			1		1						1		1		1					1			1	1	8
Love			1	1	1	1			1	1				1	1		1	1					1		11
Urban																									
Trip/journey							1	1																	2
Relationships/people	1	1	1	1		1			1	1	1	1	1	1	1			1				1	1		15
Video clip	1	1	1						1					1	1			1	1			1	1		10
Performance					1	1					1		1			1	1		1	1			1		9
Nature							1																		1
Movie																									
Color			1		1		1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	19
Emotion/mood			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
Specific artist	1				1							1	1						1						5
Entertainment							1																		1
Bird view																									

***POP* excerpt**



	S1_2_DP	S2_1_DP	S3_3_DP	S4_1_DP	S5_3_DP	S6_2_DP	S7_3_DP	S8_3_DP	S9_1_DP	S10_1_DP	S11_2_DP	S12_2_DP	S13_1_DP	S14_3_DP	S15_3_DP	S16_2_DP	S17_2_DP	S18_1_DP	S19_1_DP	S20_1_DP	S21_3_DP	S22_2_DP	S23_3_DP	S24_2_DP	Total
Association	1	1	1	1		1	1		1	1	1	1	1	1			1	1			1				15
Dynamics		1						1											1				1	1	5
Freedom																									
Adventure																									
Youth																									
Flight																									
Rain																	1								1
Battle/fight																						1			1
Other cultures/places																							1		1
Dance																									
Love															1		1	1			1	1	1	1	7
Urban																								1	1
Trip/journey		1																							1
Relationships/people			1		1		1	1			1		1	1	1			1				1		1	11
Video clip																									
Performance	1					1											1						1	1	5
Nature	1	1		1									1									1	1	1	7
Movie																									
Color	1		1	1	1	1	1	1	1		1		1	1	1		1	1	1	1	1	1	1	1	20
Emotion/mood	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	23
Specific artist																									
Entertainment																				1					1
Bird view																									

***DP* excerpt**

***INST* excerpt**

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