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The impact of biographical information about a composer on emotional responses to their music

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Abstract

This study investigated whether reading biographical information about the composer Jan Dismas Zelenka (1679–1745) before listening to his music would influence listeners' self-reported emotional responses. The study involved 179 participants who completed an online listening exercise in which they read either a negative or a neutral biography of Zelenka, or no biography, before listening to two short excerpts of his music. After listening to each excerpt, participants completed a 27-item questionnaire concerning their emotional responses and were then asked to describe in their own words how the music made them feel. Two factor analyses identified five factors underlying the emotional responses of participants for each musical excerpt. Generalised Linear Mixed Model analyses indicate that the biography condition affected participants' emotional responses with regard to memories, associations, and mental images. Positive emotional contagion was also a significant predictor variable for several of the emotional factors that were identified. A thematic analysis of participants' free-text responses supported both the BRECVEMAC model and persona theory as interpretative frameworks, albeit with caveats. Additionally, a chi-square test of contingencies revealed that participants who read the negative biography of Zelenka were more likely to make use of negative language to describe their emotional responses to the music, and that participants who read no biography were more likely to use neutral language. The findings suggest that contextual biographical information about composers (e.g., in program notes) can have an impact on the emotional experiences of listeners.

Keywords: Baroque music; emotion; musical emotion; Jan Dismas Zelenka (1679–1745); program notes; persona theory; emotional contagion; biographical information; contextual information

The impact of biographical information about a composer
on emotional responses to their music

The music of the Bohemian composer Jan Dismas Zelenka (1679–1745) only entered the classical music mainstream in the second half of the twentieth century, and scholars have differing views on whether or not the composer led a successful life at the Catholic court of Dresden. While some have argued that Zelenka was an unloved composer whose artistic fate was a tragedy (Reich, 1987), others have suggested that this is a sentimental fiction (Kohlhase, 1997). A certain speculative image of Zelenka has emerged in the classical music mainstream, that of a misanthropic, hypochondriac recluse and social misfit. For example, in the notes to a recording of Zelenka's music made in 1978, Dietmar Polaczek (1978) wrote, "It may be acting on too little evidence, but one is tempted by the few indications we possess to sketch a character portrait of a choleric recluse, broody and increasingly melancholic as he grew older" (pp. 21–24). A genealogy of this myth of Zelenka as a misanthrope has recently argued that it originated in the nineteenth century as a result of a questionable blending of romantic historicism and oral history and should therefore be discredited (Kiernan, 2019a; Kiernan, 2019b). However, the question of whether such claims about Zelenka influence the emotional responses of present-day listeners to the composer's music has not been explored, and it raises broader questions about how contextual information of various types can influence music-listening experiences.

Music, Emotion and Contextual Information: The Literature

Empirical studies of the impact of contextual information on the reception of both music and visual art works have become increasingly popular, and Chmiel and Schubert (2019) note that this "should come as little surprise considering the frequency of

contextualising notes at performances and exhibits" (p. 1). However, the way in which contextual information influences the emotional responses of listeners to music remains open to debate. Bullot and Reber (2013) proposed an ecologically driven psycho-historical framework for the science of art appreciation (PHF), formulated in such a way as to be applicable to a variety of art forms. According to this influential framework, responses to works of art derive from the way their audiences process causal information about them. However, Chmiel and Schubert (2019) tested a simplified hypothesis drawn from the PHF, using results reported in 34 published studies pertaining to music and visual art works, and they concluded that the majority of the reviewed literature does not support their simplified PHF hypothesis for either medium.

Contextual information pertaining to the prestige of performers and composers has also become a focus of empirical investigation. Anglada-Tort and Müllensiefen (2017) tested the effects on musical judgements of texts suggesting that the performer had low, medium or high prestige. They found that the texts influenced participants' judgements significantly, suggesting that evaluations of music, like many other human judgements, rely on cognitive biases and heuristics. While Anglada-Tort and Müllensiefen (2017) did not test the impact of contextual information on emotional responses, aesthetic judgement is known to be strongly connected to musical emotion (Juslin, 2013). Kirk et al. (2009) also conducted an fMRI study in which participants were shown images of artworks with different contextual information, again representing prestige; they were labelled, for example, either "gallery" or "computer-generated." Artworks labelled "gallery" were rated higher on an aesthetic value scale than the same artworks labelled "computer-generated," suggesting that the neural system supports the contextual modulation of aesthetic ratings.

Vuoskoski and Eerola (2015) provided two groups of music listeners with sad and neutral descriptions of the original context of a sad-sounding piece of film music, before

measuring the listeners' induced emotions using indirect memory and judgement tasks. They found that sad narrative descriptions of the music's original context appeared to intensify the sadness induced by the sad-sounding piece via the *visual imagery* mechanism suggested by Juslin and Västfjäll (2008). Bullot and Reber (2017) have also explored ways of predicting emotional distancing caused by art schemata, such as misunderstanding artistic intentions and contexts. Their findings highlight the difficulty of explaining artistic misunderstandings and the emotional consequences of historical knowledge of the arts. They argue that further inquiry is needed into the way historical contextualisation can modulate negative emotions in this area.

Contextual information of different types has also been shown to both enhance and diminish listening experiences. On the one hand, Zalanowski (1986) found that some listeners reported greater enjoyment of music when they were not given contextual information about its programme, or the story it told, than when they were given contextual information. On the other hand, Halpern (1992) found that listeners appreciated music more when they were provided with historical information about the composer than when they were provided with analytical information about the structure of the music, or given no information. Margulis (2010) also found that listeners reported less enjoyment when they were provided with descriptions of musical structures or the dramatic development of the music than when they were given no information, while Bennett and Ginsborg (2018) found that only 39% of listeners who were given a program note following a performance of unfamiliar music reported that it had a positive impact on their experience of a subsequent hearing of the same music.

The real or imagined presence of other people in a listening context can also influence the emotional experiences of listeners. Grace et al. (2019) considered the impact of contextualising information and human presence on perceived emotion intensity in electronic

music. They found that listeners perceived the music to have more emotional intensity when accompanying program notes explained that the music was the composer's own creation rather than a synthesis of sounds using nature-related or machine-related data, and they suggest that this was due to imagery of human presence and therefore empathy with the composer (Grace et al., 2019). Their results support the theory of empathetic listening derived from cultural psychology, according to which audiences are at least partially engaged in imagining the state of mind of the creator in artistic performance (Cupchik, 2002). Grace et al. (2019) also speculate that "narratives about the compositional thought processes or composer's life events could evoke affective responses in listeners to the composer's experience" (p. 118), which in turn could trigger emotionally valenced memories that may help listeners empathise with the composer (Mar et al., 2011). Margulis et al. (2017) also examined whether neutral, positively or negatively valenced information about a composer's or author's intentions had an impact on participants' aesthetic experiences of excerpts of music and poetry, finding that empathy with a perceived human artist was one important factor, but that different mechanisms underlie the aesthetic appreciation of the two artforms. These findings show that not only the presence of other people, but even imagined or absent others, such as the historical figure of a composer, can also influence listening experiences.

Other studies have focused on the role of empathy in music listening, and how contextual information may influence empathic responses to music. However, given the general breadth of disciplinary approaches available for researching emotions, the methodologies used in these studies have varied greatly (Funahashi & Carterette, 1985; De Bruyn et al., 2011; Miu & Balteş, 2012; King & Waddington, 2017). Patrik Juslin and his colleagues have argued that the psychological mechanism of *emotional contagion* mediates empathic responses to perceived emotional expression in music (Juslin & Västfjäll, 2008; Juslin, et al., 2010; Juslin et al., 2014; Juslin et al., 2016; Juslin, 2019). This mechanism may

operate concurrently with a number of other psychological mechanisms for emotion induction, some of which may also mediate the impact of contextual information on listeners: these mechanisms are the brain stem reflex, rhythmic entrainment, evaluative conditioning, visual imagery, episodic memory, musical expectancy, aesthetic judgement, and cognitive appraisal (BRECVEMAC; Juslin et al., 2016; Juslin, 2019). These mechanisms are said to mediate the emotional responses of listeners during acts of music perception, such the surface features of a musical structure and the emotional response elicited cannot be mapped in a linear fashion; what matters is how the listener's own psychology and cultural background influence the behaviour of the mechanisms (Juslin, 2019). It is therefore plausible that priming biographical information about a composer may influence the behaviour of these psychological mechanisms when listening to their music.

Musical Empathy: Theoretical Perspectives and Problems

Emotional contagion theory is based on the premise that musical empathy is the result of an automatic, non-cognitive process of mutual resonance, or attunement, whereby the emotions expressed by music are matched in the listener. This premise is underpinned by the findings of cross-disciplinary research suggesting that people may "catch" the emotions of others when seeing their facial expressions (Hatfield et al, 1994) or hearing their vocal expressions (Neumann & Strack, 2000). It has also been supported more recently by the claim based on neuroscientific evidence that witnessing facial displays of emotion automatically transfers that emotion to the observer by way of so-called mirror neurons, a special population of neurons that discharge both when the individual is doing an action and when witnessing the same or similar action being done by another (Wicker et al., 2003). Mirror neurons were first said to be detected in monkeys (di Pellegrino et al., 1992; Gallese et al., 1996), and neuroimaging studies of human brains are increasingly focusing on mirror

neurons, although hard evidence of their existence in humans is scant (for a useful recent review, see Farina et al., 2020). Freedberg and Gallese (2007) have also argued that empathic responses to works of art, as well as everyday images, depend on embodied, non-cognitive mirror-neuron mechanisms.

Research on mirror neurons has been heavily criticised, however (Hickok, 2011; Hickok & Hauser, 2010; Gallese, et al., 2011). Hickok (2009) claimed that no evidence from monkey data existed, at the time of writing, to support the theory that mirror neurons form the basis of action understanding, and that the evidence from human data can be used to make a strong case *against* that position. Similarly, Leys (2014) lists and critiques a number of assumptions made in Wicker et al.'s seminal study on empathy and disgust (2003), which the researchers do not address; these include the use of actors to portray basic emotions that are supposedly automatically transferred to onlookers, and the fact that the researchers did not ask any of the participants in the study if they actually felt disgust. Leys's (2014) critique is scathing, stating that Wicker et al.'s study "seems to imply that we are destined to spend our days resonating madly, nonselectively, immoderately, and automatically to whatever facial signals someone else, anyone else, sends us" (p. 84), and that she considers their paper "a telling example of what can go wrong in emotion research today" (p. 68). One of Leys's (2014) many concerns is that theorising empathy as an *automatic* mutual resonance with or attunement to someone else's emotional state reduces the individual's ability to control their own empathic response to someone else's emotional expression to a negligible extent, or denies it altogether. While Juslin (2019) concedes that "some authors argue that the notion of 'mirror neurons' has been seriously oversold in the field of neuroscience, and that imitative behaviour may be better explained in other ways" (p. 301), his explanation of musical empathy is still structured as a unidirectional transfer of emotion from the music to the listener (see Chapter 20, "Mirroring the Expression" in Juslin, 2019).

Persona theory offers a humanistic account of musical empathy that attributes more agency and control to the listener than the passive "resonation" of emotional contagion (Kivy, 1980; Davies, 1994; Davies, 2005; Robinson, 2005). The theory also provides an alternative approach to understanding the impact of contextual information on music listening experiences, which may be more relevant to biographical information (Fairchild & Marshall, 2019). Persona theory treats claims about musical emotion (e.g., that a song is "happy", or a lament "mournful") not as descriptions of fixed and observable emotion content in music, but instead as evidence of the human capacity to hear (that is, construct) in music an agent or persona to whom the emotions belong, as distinct from the emotions of the composer, performer, or listener (Levinson, 2006). Cochrane (2010) writes, "the principal attraction of [persona theory] is that it explains how a listener can make the crucial transition between perceiving patterns of sound and seeming to perceive a psychological state [in the music]" (p. 264). Along the same lines, Peters (2015) has argued that music perception is doubly active. He argues that bodily knowledge about sound, which he terms "corpophonic knowledge," is acquired by learning what it feels like to make sounds, and that this knowledge is put to work in music perception, extending auditory perception cross-modally which in turn informs the bodily hermeneutic: the active and partly voluntary process of interpreting sound. Listeners thus draw on their corpophonic knowledge to construct the emotion in the music, which they then attribute to the music itself. As such, "[musical] passages . . . acquire adverbial expressivity [after Goldie (2000)], an expressivity which . . . is co-constituted, and engenders a 'musical other'" (Peters, 2015, p. 2). For Peters, empathy with this other constitutes true musical empathy, which he differentiates from empathy with other people that may be facilitated by or through music ("social empathy", 2015, pp. 10–11). As Peters (2015) writes, "once the ownership of a co-constituted emotion is affirmedly that of an imagined agent, the listener can embark on a shift of perspective towards the musical other" (p. 10). Listeners

may thus switch between affective attentive states, at times embracing the musical emotion as "theirs," and other times not (e.g., when hearing a "happy" song without necessarily feeling the song's happiness). And since the musical persona "might be an imaginatively entertained combination of our own outright psychological experience with the thought of a character or agent… [which] could be part of an ongoing narrative, a listening situation, or framed by background knowledge," (Peters 2015, p. 10), it is therefore reasonable to expect that reading contextual biographical information about a composer before listening to their music may influence the way the listener constructs the imagined agent "in the music," to whom the musical emotion belongs. Persona theory thus provides an alternative to emotional contagion theory for understanding musical empathy.

Aim and Hypothesis

While previous studies examining the impact of context on music engagement tended to focus on one or two dependent variables, manipulating context as an independent variable, the approach of the current study involved a large number of independent and potential dependent variables, which allowed for a far broader examination of their interactions than has previously been undertaken. The overarching aim of the current study was to investigate the effect of reading priming biographical information in the form of a neutrally or negatively worded biography of Zelenka before listening to his music. The hypothesis was that this would influence participants' emotional responses.

Method

Participants

In total, 179 individuals (110 identifying as female, 67 as male, 2 unspecified) participated in the study. The ages of the participants ranged from 17 to 74 (M = 37.04, *Mdn*

= 33.00, *SD* = 14.79). Data from four participants were excluded because they were under the age of 17 or did not indicate their age. The sample included participants of various nationalities (Australia 43.01%, UK 12.29%, USA 8.37%, Germany 4.46%, Iceland 2.79%, Czech Republic 2.23%, with the remaining 26.85 % from elsewhere) and countries of residence (Australia 45.25%, UK 15.64%, USA 11.73%, Germany 5.02%, Canada 3.35%, Netherlands 3.35%, with the remaining 15.66% from elsewhere). Participants had from 0 to 60 years of classical-music training (*M* = 9.03, *Mdn* = 2.00, *SD* = 13.42) and between 0 to 46 years of non-classical music training (*M* = 3.73, *Mdn* = 0.00, *SD* = 7.77). The sample also included participants of various religious affiliations; 97 participants did not indicate any affiliation, and 15 identified as atheists, one as agnostic, and one as pagan. The remaining 65 participants identified a religious affiliation; of these, 57 were Christian (87.69%), three identified as Muslim, two as Jewish, two as Buddhist and one as Hindu.

Participants were recruited online via snowball sampling. Recruitment involved using social media, posting the survey on dedicated online research participation websites and the Zelenka Forum (jdzelenka.net), and a letterbox drop. Participation was voluntary and the project was approved by the Human Research Ethics Committee at The University of Melbourne.

Design

The study took the form of an online questionnaire hosted by Qualtrics. An experimental design with three conditions was used to test whether reading a neutrally or negatively worded biography of Zelenka before listening to excerpts of his music would influence participants' emotional responses. In the first condition (*n* = 56), participants read a short biography of Zelenka that used relatively neutral language and made no claims about his personality or character. In the second condition (*n* = 62), the short biography, based on

reviews and liner notes of recordings of Zelenka's music dating from the late twentieth century (Kiernan, 2019a), used negative language and made strong claims about the composer's personality and character. In the third, control, condition (n = 61), no biography was provided. The two biographies were as follows:

Condition 1

Jan Dismas Zelenka was born just outside of Prague in 1679, into a musical family. It is likely that he was educated at the Clementinum College in Prague, and in his early thirties he took up employment in Dresden as a violone player in the orchestra of Dresden's royal court. Between 1716 and 1719 Zelenka spent time in Vienna, where he studied composition under Imperial Kapellmeister Johann Joseph Fux, before returning to Dresden. In the 1730s Zelenka was given responsibility for the music of the royal Catholic chapel, which was heavily promoted by Electoral Princess (and later, Queen), the Habsburg Archduchess Maria Josepha. Some of Zelenka's most celebrated works were composed during the final years of his life in Dresden, although many of his works from the 1720s are also very highly regarded. When he died in 1745, the King and Queen, who were not in Dresden at the time, were immediately informed.

Condition 2

Jan Dismas Zelenka was born just outside of Prague in 1679, although very little is known about his early years; he seems to have led a reclusive life. He was probably educated at the Clementinum College in Prague, but it was not until his early thirties that he took up employment in Dresden as a violone player in the orchestra of Dresden's royal court. Even though Zelenka composed much music for Dresden's royal Catholic chapel during the 1720s, he was constantly passed over for promotion in favour of other composers, such as Johann

Adolf Hasse, who was given the post of Kapellmeister in 1734 instead of Zelenka. In spite of his musical achievements, he was always pushed into subordinate positions by musical non-entities. For his efforts, he was eventually given the title of "Church Composer," and for the rest of his life he composed church music in Dresden. He seems to have had a neurotic and hypochondriac personality, and he died a bitter and lonely man in 1745.

Qualtrics was coded to allocate the participants randomly to the three conditions. Additionally, timers were set on the webpages that contained the biographies to prevent participants from skim-reading them or skipping the reading task altogether.

Music

The music excerpts that participants listened to in the study were: 1) the first four minutes of the first of Zelenka's *Lamentationes pro hebdomada sancta* (ZWV 53); and 2) the first four minutes of the first movement of Zelenka's *Simphonie à 8 Concertanti* (ZWV 189). These excerpts were selected so that participants would hear both a sacred vocal work (Excerpt 1) and an instrumental work (Excerpt 2), which are two genres to which Zelenka made important contributions, and because these particular compositions were among the first by Zelenka to be recorded (Kiernan, 2019a).

Procedure

Upon accessing the questionnaire, participants first read relevant details about the study and then were required to indicate their consent. They were also advised that the study involved listening to music, and it was recommended that headphones be worn with the

volume set to a normal, comfortable level. Participants were first asked to provide demographic information, and then to respond to Doherty's (1997) Emotional Contagion measure. Next, they were allocated to one of the three conditions, listened to the two excerpts and responded to the remaining questionnaire items, described below. After completing the study, participants were thanked and debriefed as to its aims and structure. Participation took no more than twenty minutes.

Measures

Demographics

Participants were asked to state their gender, age, nationality, and country of residence. They were also asked to state their religion, and denomination if applicable, and the degree to which they identified with that religion, if applicable (using a five-point Likert scale anchored by *Not at all* and *Very much*).

Music Background

Participants were asked to state the number of years of classical music training and years of non-classical music training they had received. Individuals were also asked the degree to which they agreed with four statements concerning their level of interest in, and familiarity with, baroque music in general, and the music of Zelenka in particular, using a five-point Likert scale anchored by *Strongly disagree* and *Strongly agree*. The statements were: 1) "I like baroque music"; 2) "I am familiar with the techniques and practices of musicians working during the baroque period (ca. 1600–1750)"; 3) "I am familiar with the music of Jan Dismas Zelenka (1679–1745)"; and 4) "My normal music listening time is spent listening to baroque music (for example, attending concerts, listening to CDs, etc.)." As has been done in prior studies (e.g., Krause & North, 2017), the responses were entered into a

principal axis factor analysis with promax rotation resulting in one factor that accounted for 57.69% of variance (see Table 1). The resulting factor score, hereafter referred to as the "baroque interest score", was used in subsequent analyses.

Emotional Contagion

Participants then responded to Doherty's (1997) Emotional Contagion measure, which contains 15 items and uses a four-point response scale (1 = *never*, 4 = *always*). The measure includes two sub-scales, pertaining to positive emotional contagion (example item: "Being with a happy person picks me up when I'm feeling down") and negative emotional contagion (example item: "It irritates me to be around angry people"). This measure gauges participants' susceptibility to the positive and negative emotions of others theorised to result from afferent feedback generated by mimicry. The measure has been used in a variety of contexts to understand student-instructor rapport in educational settings (Frisby, 2019), for example, and the tendency of patients with schizophrenia spectrum disorders to synchronise with emotional expressions of others (Berger et al., 2019). As mentioned above, however, the theory of emotional contagion also been criticised for reducing emotional empathy to the mutual "resonating" of neurons (Hickok, 2009; Leys, 2014). Following Doherty's coding (1997, p. 137), positive and negative subscale scores were computed for each participant. Previous uses of the scale have demonstrated good reliability (Frisby, 2019), with Cronbach's alpha ranging from .81 to .90 (Doherty, 1997; Frisby, 2019; Wang & Schrodt, 2010). In the current study, the Cronbach's alpha values for the positive and negative emotional contagion were .72 and .78, respectively.

Emotional Response to the Musical Excerpts

The 27 items concerning emotional response after each excerpt, for which participants indicated their level agreement or disagreement (using a five-point Likert scale from *Strongly*

disagree to *Strongly agree*), comprised three emotion measures. The 27 items were presented together in a random but consistent order. The first was a ten-item measure developed by Juslin and his colleagues (Juslin et al., 2016, p. 318). Nine items addressed the BRECVEMAC framework (Juslin & Västfjäll, 2008; Juslin et al., 2010; Juslin, et al., 2014; Juslin et al., 2016), with each item targeting one psychological mechanism theorised to mediate emotion induction in response to music listening. This framework was included because, even though the self-reports of participants cannot be taken as verification of the activation of the mechanism, experimental studies have shown these items to be predictive in controlled settings of both the emotions induced (Juslin et al., 2014), and the musical conditions that may activate the mechanism (Juslin et al., 2015). A tenth item used in previous studies alongside the nine items of the BRECVEMAC measure addressed the text (example item: "The music features lyrics that influence my emotions"; Juslin et al., 2016, p. 318). For the purposes of this study the verb tenses of all items were changed to past tense where appropriate (e.g., "The music features" to "The music featured") so that they made sense in the context of the listening exercise.

The second measure included was Tröndle et al.'s (2014) nine-item measure used to gauge emotional reactions to artworks. These items are generic and were thus deemed applicable to the current study (for example, this artwork "pleased me" or "frightened me"). However, one question, "[it] moved me emotionally", was tautological in the current context and was therefore rephrased as "[it] moved me to tears". One further item, "pleased me, I liked it", was shortened to "pleased me". The third measure was based upon that used by Krause and Davidson in their audience response research (Davidson & Krause, 2017; Krause & Davidson, 2018). These eight items include similar statements to those in Tröndle et al.'s (2014) measure (for example, this music "made me joyful"), although they address different emotional states and thus added further nuance. All 27 items are included in Table 2.

Lastly, participants were asked an open-ended question: "In your own words, please describe how this music made you feel, and why you think this is." Participants were informed that they might respond to each musical excerpt separately if they wished, or they might provide a more general response that addresses both excerpts.

Results

Understanding the Emotional Responses of Participants

To investigate the underlying structure of the emotional responses to two excerpts of music by Jan Dismas Zelenka as reported in a 27-item questionnaire, data collected from participants (Excerpt 1, $N = 179$; Excerpt 2, $N = 169$) were subjected to two, separate principal axis factor analyses with promax rotation.

Adherence to the assumptions of independence and sample size was ensured prior to data analysis. Before running the principal axis factor analysis, the assumptions of linearity and multicollinearity were confirmed. Although not all the variables were normally distributed, this was not considered problematic because emotional responses to music may be highly varied, and factor analysis is robust against violations of this assumption (Allen et al., 2014).

Excerpt 1: Zelenka's Lamentations *(ZWV 53), no. 1, First Four Minutes*

Five factors with eigenvalues exceeding 1 were identified as underlying the 27 items (see Table 2). The Kaiser-Meyer-Olkin measure of sampling adequacy indicated that the strength of the relationship among variables was high (KMO = 0.84) and Bartlett's test of sphericity was statistically significant ($p < .001$), which indicated that the data were suitable

for factor analysis. Together, the five factors accounted for 50.32% of total variance (see Table 2).

The five factors (Table 2) highlight important themes in the participants' responses to the music as captured by the 27 items. Factor 1 concerned the elicitation of pleasure, and not anger, frustration or boredom, and it also emphasised that the music was understood as aesthetically valuable and inherently emotionally expressive. For these reasons this factor was named "Aesthetic pleasure." The most prominent items of Factor 2 represent the idea that the music can elicit the feeling of being anxious and frightened, and was thus named "Anxious fright." Factor 3 relates to the idea that the music elicited memories of events in the lives of participants, and associations of an emotional nature. For these reasons, this factor was termed "The extra-musical." Factor 4 concerned the notion that the music was behaving in unexpected ways, and that the music induced feelings of being surprised and startled, hence this factor was labelled "The unexpected." The most prominent items in Factor 5 represented the idea that the music induced feelings of peace and calm, and for this reason it was labelled "Peace and calm."

Excerpt 2: Zelenka's **Simphonie à 8 Concertanti** *(ZWV 189), Movement 1, First Four Minutes*

Five factors with eigenvalues exceeding 1 were identified as underlying the responses concerning the second musical excerpt (see Table 3). As with Excerpt 1, the KMO value was high (KMO = 0.86), and Bartlett's test of sphericity was statistically significant ($p < .001$) indicating that the data was suitable for factor analysis. The five factors together accounted for 51.16% of total variance.

Factor 1 represented the idea that the music induced pleasure and happiness, without frustration or boredom, and that it was aesthetically valuable and featured a strong,

captivating rhythm. For this reason, this factor was termed “Aesthetic pleasure.” The most pertinent items of Factor 2 concerned the notion that the music induced anxiety, sadness, and the feeling of being frightened and tense. For these reasons we termed the factor “Anxious sadness.” Factor 3 related to the idea that the music elicited memories of the lives of participants, and mental images. This factor was thus termed “The extra-musical.” The most prominent items of Factor 4 represented the idea that the music was surprising and at times startling, and that the music behaved in unexpected ways and made participants think. Factor 4 was therefore termed “Surprise.” Factor 5 contained two items indicating that the music made participants feel calm and peaceful. For this reason, it was termed “Calm and peaceful.”

The Influence of the Content of the Biography

To test whether the biography condition influenced participants’ emotional responses to the two musical excerpts, a series of ten Generalised Linear Mixed-Model (GLMM) analyses was performed (alpha = .005), one for each factor that emerged in the factor analysis. For each GLMM analysis, one of the emotional response factor scores served as the dependent variable, while the set of independent variables remained the same. The independent variables included condition, gender, age, baroque interest score, positive emotional contagion score, and negative emotional contagion score. For Excerpt 1, four of the five GLMM analyses were statistically significant (the exception was “Anxious fright”; see Tables 4 and 5). For Excerpt 2, two of the five analyses were statistically significant (“Aesthetic pleasure” and “The extra-musical”; see Tables 6 and 7).

Importantly, the condition affected participants’ emotional responses with regard to “The extra-musical” for both musical excerpts. In particular, with regard to Excerpt 1, the participants who read the neutral biography reported significantly stronger “extra-musical” responses compared to the participants in the control condition. In addition, with regard to the

"extra-musical" responses, the pairwise contrast concerning the neutral and negative biography approached statistical significance (p = .054), suggesting a trend toward stronger responses from those participants who read the neutral as opposed to the negative biography. For Excerpt 2, the people who read the neutral biography reported a significantly stronger "extra-musical" response than the people who read the negative biography. There was no significant association between condition and any of the other factors for either musical excerpt.

The GLMM findings also demonstrate that participants' emotional responses to both musical excerpts were influenced by the participants' level of interest in baroque music, emotional contagion, age and gender. For Excerpt 1, participants who were more interested in baroque music, as indicated by the baroque interest score, reported stronger responses with regard to "Aesthetic pleasure," "The extra-musical," and "The unexpected." For Excerpt 2, participants who were more interested in baroque music reported stronger "extra-musical" responses. Additionally, for Excerpt 1, the positive emotional contagion score was positively related to "Aesthetic pleasure," "The extra-musical," "The unexpected," and "Peace and calm." For Excerpt 2, the positive emotional contagion score was positively related to "Aesthetic pleasure" and "The extra-musical." Age was also significantly positively associated with "Aesthetic pleasure" with regard to Excerpt 2, meaning that older people experienced this factor more strongly than younger people. Gender was also a significant predictor variable for Excerpt 2, Factor 3 ("The extra-musical"), with participants identifying as female reporting a stronger response than those identifying as male.

Thematic Analysis of Free-text Responses

In order to further evaluate the emotional responses of participants to the two musical excerpts, the free-text responses (N = 153) were subjected to a thematic analysis (Braun &

Clarke, 2006), which was undertaken by the first and second authors, and checked by the third author. As per Braun and Clarke's recommendations (2006, p. 87), the responses were printed on individual cards and laid out in order to facilitate familiarisation with the data, and the responses were then coded according to their key features. The coded responses were collated and emergent themes identified. Lastly, the themes were reviewed to ensure the authors' construction of each theme was traceable back to the text of the participants' responses.

The codes and themes that emerged in the analysis are presented in Table 8, with representative quotes provided for each code. The frequencies of the themes are also provided. Responses that declined to address the question were excluded from the analysis (*n* = 21). While many of the participants who responded to the question did so by naming specific emotions (38.50%), four of the other five themes can be mapped onto the BRECVEMAC model: *rhythmic entrainment* (rhythm); *musical expectancy* (expectations); *evaluative conditioning* (personal associations); and *visual imagery* (imagery). Thus, the themes indicate that the BRECVEMAC model provides a useful way of explaining the underlying structure of the emotional responses of participants to the two musical excerpts (Juslin et al., 2016). The responses also reveal further detail about the personal and other extra-musical associations that the music evoked in listeners. These free-text responses thus complement the quantitative analyses by detailing the specific nature of those extra-musical phenomena to which the music had become attached for the participants, and how these play a role in mediating the reported emotional responses of participants to the musical excerpts.

In addition, many of the free-text responses (118 out of the 153 responses) were usefully interpreted using persona theory (Peters, 2015). Sixteen participants identified an emotional agent (a persona) in the music at a basic level (e.g., "I found the first [excerpt] melancholy and much more emotional"), while 29 participants reported that their own

emotions blended with those of the persona to a certain degree (e.g., “I was surprised by the pathos in the first example. I found this very sad even though I had no idea what the lyrics were… In the first example I felt leaden with the sadness”). Twenty-two observed a difference between the persona’s emotion and their own (e.g., “[The first excerpt] was a sad piece of music but did not induce 100% sadness in me. [It] did make me feel bored”; this emotional discrepancy between persona and listener was also suggested by one participant who stated “I was trying to figure out the emotions behind it”). Twenty-four participants reported that they were able to switch between affective attentive states, at times embracing the persona’s emotion as their own to a degree, and at other times directing their empathic attention elsewhere (e.g., “I was unconsciously urged to switch my attention to some matter which is less perturbing”). Nine participants revealed the capacity for alternating between social and musical empathy as defined by Peters (2015). For example, one listener appeared to embrace the musical emotion as their own, at times (“The first example was incredible . . . while there was tension and broody sections there were also some brilliantly joyful parts”) before reflecting on the socio-emotional connotations that the music listening experience had induced (“It also had emotional associations for me . . . I was brought up in a Catholic family so church music reminds me of a particular part of my life”).

The responses of four participants clearly illustrated the active rather than passive nature of music listening and the role of the listeners’ own agency in constructing their emotional response to the music. For example, one person stated, “I can tell it’s sad, but I’m just not in the mood to allow myself to be moved.” Similarly, another participant wrote “the second song just wasn’t able to make me feel authentically lively and happy even though I feel like that’s what it wanted.” These responses highlight the way in which listeners can self-consciously differentiate their own emotional response to the music from what they perceive the musical emotion to be (that is, the persona’s emotion), and that listeners have a degree of

control over whether they embrace the musical emotion as "theirs." Only two participants clearly suspected that their interpretation of the persona's emotion had been shaped by the negative biography of Zelenka they had read prior to listening to the musical excerpts (e.g., "For me, it evoked scenes of a man whose wife was dying. However, this could also be coming from the passage that I read before listening to the music").

For two participants, the priming biographical information about Zelenka seemed to influence the nature of the social empathy that the music elicited, this being empathy for other people such as the performer or composer rather than for the musical persona as defined by Peters (2015). For example, one participant stated "after reading about the composer's life, this piece made me focus on the potential isolation and sadness that he may have experienced," while another wrote "The first piece made me feel a sense of empathy for the sadness or tension of the composer and performers." However, free-text responses provided by ten other participants included vivid descriptions of a musical persona that were very close to matching the character described in the negative biography of Zelenka read by participants in the second condition. For example, one wrote, "The first piece sounds like a man who is in a difficult situation that he can do nothing about and has just got some terrible news that makes things worse for him, making him feel more hopeless and apathetic to his own life than before." This indicates that the negative biography may have shaped not only their social sense of empathy for the composer aroused by the music, but also their musical empathy—that is, empathy for the musical persona that the participant had co-constructed—whose emotions they may or may not have adopted as their own while listening to the music.

The Influence of Condition on Language Used to Describe Participants' Emotional Responses

In order to further evaluate whether the experimental condition influenced the language used by participants to explain their emotional responses to the musical excerpts, the free-text responses were categorised by the first and second authors, and checked by the third, on the basis of whether they described negative emotional states (e.g., “sorrowful”, “mournful”, “melancholic”, “doleful”), neutral emotional states (e.g., “calm”, “relaxed”, “peaceful”, “bored”), or a combination of both. Responses that contained neither were excluded from the analysis (n = 66).

A Pearson’s chi-square test of contingencies (alpha = .05) was used to determine whether the condition influenced their description of their own emotional response to the music. The chi-square test was statistically significant, χ^2 (4, N = 87) = 10.76, p = .029. As illustrated in Table 9, regardless of condition, 55% of participants used negative language, with these participants distributed fairly evenly across the three conditions. However, participants in the control condition were more likely to use neutral language than those in either biography condition, and participants who read the negative biography of Zelenka were more likely to use a combination of negative and neutral language to describe their emotional response to the music compared to participants who read the neutral biography or participants who read no biography.

Discussion

The language used by participants to describe their emotional responses to Zelenka’s music strongly supported the hypothesis that being primed by biographical information about a composer would influence their emotional responses to the composer’s music. Participants who read the negative biography of Zelenka were more likely to make use of negative language to explain how the music made them feel, while participants who read no biography were more likely to use neutral language. Language is known to guide our experience of

emotion, not only by communicating emotions but also by organising sensations into specific perceptions (Lindquist et al., 2015). This finding was also particularly interesting because the biography was only one paragraph in length. This raises important questions about the magnitude of the impact of cultural messaging on emotional experiences with music and highlights the need for the findings of empirical investigations of emotion to be considered against broader trajectories of cultural and historical change, in order to avoid "presentist" assumptions (Spitzer, 2010, p. 2). This was relevant to the current study not only because the erroneous stereotype of Zelenka as a misanthrope persists to this day, but also because it developed gradually over the course of hundreds of years (Kiernan, 2019a; Kiernan, 2019b).

Additionally, the type of biographical information that was provided about the composer influenced participants' responses with regard to extra-musical emotions, suggesting that music can evoke memories of past events, become associated with other things that can in turn arouse emotion through association, and can evoke mental images. In other words, this factor does not speak to the emotional impact of the aesthetic properties of a musical structure but rather to the emotional impact of the memories and associations evoked by the music in listeners. However, the type of biographical information did not influence participants' emotional responses defined by the other factors, including "Aesthetic pleasure." This factor was concerned with the idea that music can be pleasing, may be judged on aesthetic terms as being valuable, beautiful or original, and that its structures may themselves express emotion. This supports the music analyst Michael Spitzer's argument that the listener's emotional response to a piece of music is delimited by its structural, formal and aesthetic properties (Spitzer, 2009; Spitzer, 2020).

Nevertheless, the findings of the current study indicate that people's emotional responses to music are influenced not only by the structure of the music, but also by their own life experiences and their perceptions of the composer's identity, as suggested by

Margulis et al. (2017): empathy with an imagined composer can be engendered and influenced by receiving information about their expressive intentions. In the current study, biographical information purporting to describe the composer's personality influenced participants' emotional and empathic responses to his music. Also relevant is Anglada-Tort and Müllensiefen's (2017) finding that 75% of participants believed that they were hearing a different recording of a piece of music when in fact they were hearing it for the second time, when it was accompanied by a text suggesting that the performer had low, medium or high prestige. While the aim of that study was to construct a paradigm enabling the systematic measurement of what the authors call the "repeated recording illusion," the two biographical conditions in the current study also constructed the composer's prestige in different ways, and this may have been a factor in shaping the participants' responses to the music; in future research, this line of inquiry could be developed further.

In the current study, participants who were more interested in baroque music experienced stronger emotional responses on several of the factors. These were concerned particularly with musical aesthetics, the memories induced in the listener by the music, its associations, and the degree to which the listener's expectations were fulfilled or violated. These findings suggest, unsurprisingly, that greater familiarity with baroque music encourages greater sensitivity to the aesthetic contours and grammatical structures of baroque musical forms, as well as memories or associations that may develop through the listener's lifelong experiences of listening and/or performing. Indeed, participants who were more interested in baroque music reported weaker emotional responses on factors including anxiousness, fright, sadness, peace and calm, perhaps because they were less concerned with analytical or experiential issues.

The findings of the thematic analysis support both the BRECVEMAC model and persona theory as frameworks for understanding how listeners respond emotionally to music,

although each approach had its limitations. While it was easy to suggest the engagement of particular psychological mechanisms in the free-text responses of participants, it was often difficult to categorise the responses because many of them could have been interpreted as revealing multiple mechanisms. Responses were therefore categorised on the basis of the researchers' interpretation of their most prominent thematic features, since the analysis would have been unwieldy and of questionable value if the researchers had tried to identify the activation of all possible mechanisms in every response. Also, the BRECVEMAC model did not account for the impact of the priming biographical information on the emotional responses of participants as comprehensively as persona theory. Take, for example, the statement "The first piece sounds like a man who is in a difficult situation that he can do nothing about . . ." This could be interpreted according to the BRECVEMAC model as evidence that the participant had engaged the visual imagery mechanism, which grants the individual much more agency and control over their own emotional response than many of the other mechanisms in the model (Juslin & Västfjäll, 2008). According to persona theory, however, the statement can be understood as musically empathic. While the BRECVEMAC model explains musical empathy by reference to emotional contagion, another mechanism, persona theory can be used to support the explanation that participants imaginatively constructed an "other" in the music to whom the musical emotion belonged, and with whom they could empathise in varying degrees by embracing the musical emotion as their own, or not, or by moving between different empathic states.

However, these points do not diminish the relevance of emotional contagion theory to the current study. Indeed, emotional contagion was a significant aspect of the emotional responses of participants to both musical excerpts; four of the five underlying factors for Excerpt 1 were positively associated with positive emotional contagion, and the same was true for two of the five factors for Excerpt 2. Variations in the susceptibility of individuals to

"catch" the emotions of others thus played an important role in shaping the emotional responses of participants to both musical excerpts. These findings highlight the need for further empirical research and theoretical work into how this process occurs, especially given the ongoing debates about emotional contagion theory and mirror neurons discussed above.

The current study is not without its limitations, which, taken into account alongside the findings, point to suggestions for future research. The first limitation is the design of the study: an online listening survey about a single composer represented by two short excerpts of music. It is unclear whether we would have obtained similar findings had we provided biographical information in the form of program notes, since these are usually read in listening contexts where a number of other social factors are at play (for example, the presence of other people, and the practiced listening behaviours associated with classical music concerts). In the current study we aimed to prevent participants from skim-reading or skipping the biographical information by administering a timed reading task although, in future research, a comprehension question could also be used to check that the biographical information has been attended to and understood properly. A pre-test could be conducted with a sample of (different) participants to determine whether the two texts were sufficiently differentiated, and the effects of texts of different lengths could be tested.

Given that the free-text responses of two participants indicated that they were cognisant of the possible emotional influence of the biographical text they had read, it would be wise in future studies to ensure that they were designed in such a way that the research questions were not obvious. And while the items used in the questionnaire to measure participants' emotional responses resulted in five factors, it must be acknowledged that together they explained only 50–52% of the variance. The items were grounded in the theoretical literature, but many alternative measurement tools are available. There is also an

ongoing debate as to the difference between perceived and felt emotions (Xu et al., 2020), which should be taken into account in future research.

Finally, while the current study considered familiarity with baroque music as a variable, collative variables such as exposure, novelty, and complexity could be included in future studies. Chmiel and Schubert (2019) noted the importance of understanding the role of collative variables in shaping participants' responses as a basis for understanding appreciation tendencies, since "collative variables and context interactively influence stimulus appreciation" (p. 10). Future research into the relationship between collative variables, appreciation and emotion is thus also warranted.

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Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

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Table 1

Principal Axis Factor Analysis with Promax Rotation of the Baroque Musical Interest Items

Interest in baroque music item	"Baroque interest score" loading
I like baroque music	.820
I am familiar with the techniques and practices of musicians working during the baroque period (ca. 1600–1750)	.796
My normal music listening time is spent listening to baroque music (for example, attending concerts, listening to CDs, etc.).	.794
I am familiar with the music of Jan Dismas Zelenka (1679–1745)	.609
Eigenvalue	2.307
% Variance Explained	57.687
Cronbach's alpha	.830

Table 2

Promax Rotated Factor Structure of the Twenty-Seven Item Questionnaire Concerning Excerpt 1

	Loadings[a]				
This music…	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Made me frustrated	-.877				
Pleased me	.853				
Made me bored	-.713				
Is aesthetically valuable (e.g. beautiful, original)	.672				
I was touched by the emotional expression of the music	.641				
Made me angry	-.480	.342			
Made me feel a sense of awe					
Made me anxious		.867			
Frightened me		.824			
Featured lyrics that Influenced my emotions		.548			
Made me tense		.406		.396	
Evoked memories of events in my life			.842		
Aroused an emotion through associations			.604		

Evoked images that affect my emotions			.578		
Moved me to tears			.527		
Has practical consequences for my goals or plans in life			.525		
Featured unexpected or inventive changes				.732	
Surprised me				.731	
Featured an event (e.g. a very loud sound) that 'startled' me				.544	-.359
Made me think				.405	
Featured a strong and captivating rhythm				.368	
Made me peaceful					.894
Made me calm					.816
Made me happy					.488
Made me joyful					.488
Made me laugh					
Made me sad		.370			
Eigenvalue	6.833	3.642	1.339	1.035	0.736
% Variance explained	25.308	13.491	4.958	3.833	2.726
Cronbach's alpha	.824	.703	.750	.739	.773

[a] The factors were named "Aesthetic pleasure," Anxious fright," "The extra-musical," "The unexpected," and "Peace and calm" respectively.

Table 3

Promax Rotated Factor Structure of the Twenty-Seven Item Questionnaire Concerning Excerpt 2

	Loadings[a]				
This music…	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Pleased me	.929				
Made me bored	-.793				
Is aesthetically valuable (e.g. beautiful, original)	.756				
Made me happy	.708				
Featured a strong and captivating rhythm	.682				
I was touched by the emotional expression of the music	.531				
Made me joyful	.530				
Made me anxious		.877			
Made me sad		.747			
Frightened me		.737			
Made me tense		.663			
Made me angry		.607			
Made me frustrated	-.357	.543			
Featured lyrics that influenced my emotions		.449			
Moved me to tears		.417			

Evoked memories of events in my life			.779		
Evoked images that affect my emotions			.763		
Aroused an emotion through associations			.687		
Has practical consequences for my goals or plans in life			.480		
Made me think			.464	.354	
Made me feel a sense of awe					
Surprised me				.839	
Featured an event (e.g. a very loud sound) that 'startled' me				.673	
Featured unexpected or inventive changes				.598	
Made me calm					.989
Made me peaceful					.678
Made me laugh				.352	
Eigenvalue	6.185	4.448	1.410	0.899	0.872
% Variance explained	22.907	16.474	5.221	3.330	3.229
Cronbach's alpha	.882	.831	.806	.698	.757

[a] The factors were named "Aesthetic pleasure," "Anxious sadness," "The extra-musical," "Surprise," and "Calm and peaceful" respectively.

Table 4

GLMM Analyses Concerning the Emotional Response to Excerpt 1 (N = 159)

	F	df_1	df_2	*p*	η_p^2		Beta	*t*	95% CI		η^2
Factor 1, "Aesthetic pleasure"											
Overall model	7.163	7	151	< .001	.249						
Condition	0.817	2	151	.444	.011	Neutral – Control	0.207	1.174, *p* = .242	-0.141	0.556	.009
						Negative – Control	0.182	1.050, *p* = .295	-0.161	0.526	.007
						Neutral – Negative	0.025	0.145, *p* = .885	-0.311	0.360	.000
Gender	2.712	1	151	.102	.018		0.247	1.647	-0.049	0.543	.017
Age	0.216	1	151	.643	.001		0.003	0.465	-0.009	0.014	.001

Baroque interest score	8.657	1	151	.004	.054		0.263	2.942	0.086	0.440	.054
Positive emotional contagion score	12.282	1	151	.001	.075		0.641	3.505	0.280	1.002	.075
Negative emotional contagion score	1.264	1	151	.263	.008		0.202	1.124	-0.153	0.558	.008
Factor 2, “Anxious fright”											
Overall model	2.815	7	151	.009	.115						

Condition	1.630	2	151	.199	.021	Neutral – Control	0.157	0.843, p = .400	-0.211	0.526	.004
						Negative – Control	-0.142	-0.804, p = .423	-0.492	0.207	.004
						Neutral – Negative	0.300	1.804, p = .073	-0.029	0.628	.021
Gender	0.206	1	151	.651	.001		-0.071	-0.453	-0.378	0.237	.001
Age	1.490	1	151	.224	.010		-0.006	-1.221	-0.016	0.004	.010
Baroque score	7.578	1	151	.007	.048		0.232	2.753	0.066	0.399	.048
Positive emotional contagion score	0.078	1	151	.781	.001		0.046	0.279	-0.278	0.370	.001

Negative emotional contagion score	5.200	1	151	.024	.033		0.368	2.280	0.049	0.688	.033
Factor 3, “The extra-musical”											
Overall model	10.528	7	151	< .001	.328						
Condition	4.217	2	151	.017	.053	Neutral – Control	0.448	2.860, p = .005	0.139	0.758	.051
						Negative – Control	0.144	0.953, p = .342	-0.155	0.444	.005
						Neutral – Negative	0.304	1.945, p = .054	-0.005	0.612	.024
Gender	0.208	1	151	.649	.001		0.061	0.456	-0.202	0.323	.001
Age	0.591	1	151	.443	.004		-0.004	-0.769	-0.013	0.006	.004

Baroque score	20.601	1	151	< .001	.120		0.338	4.539	0.191	0.485	.120
Positive emotional contagion score	20.278	1	151	< .001	.118		0.702	4.503	0.394	1.010	.118
Negative emotional contagion score	3.294	1	151	.071	.021		0.325	1.815	-0.029	0.679	.021
Factor 4, “The unexpected”											
Overall model	4.183	7	151	< .001	.162						
Condition	1.478	2	151	.231	.019	Neutral – Control	0.264	1.581, $p = .116$	-0.066	0.593	.016
						Negative – Control	0.015	0.086, $p = .931$	-0.322	0.352	.000

						Neutral – Negative	0.249	1.393, p = .166	-0.104	0.602	.012
Gender	0.008	1	151	.930	.000		-0.013	-0.087	-0.297	0.272	.000
Age	1.751	1	151	.188	.011		-0.007	-1.323	-0.017	0.003	.011
Baroque score	5.063	1	151	.026	.032		0.181	2.250	0.022	0.340	.032
Positive emotional contagion score	14.041	1	151	< .001	.085		0.600	3.747	0.284	0.917	.085
Negative emotional contagion score	0.141	1	151	.708	.001		0.067	0.375	-0.288	0.423	.001

Factor 5, “Peace and calm”

Overall model	4.775	7	151	< .001	.181						
Condition	0.134	2	151	.875	.002	Neutral – Control	0.089	0.490, p = .625	-0.270	0.449	.001
						Negative – Control	0.069	0.407, p = .685	-0.266	0.404	.001
						Neutral – Negative	0.020	0.121, p = .904	-0.310	0.351	.000
Gender	2.829	1	151	.095	.018		0.266	1.682	-0.046	0.578	.018
Age	0.612	1	151	.435	.004		0.004	0.782	-0.007	0.016	.004
Baroque score	0.067	1	151	.797	.000		-0.021	-0.258	-0.182	0.140	.000

Positive emotional contagion score	20.853	1	151	< .001	.121	0.827	4.567	0.469	1.185	.121
Negative emotional contagion score	0.000	1	151	.985	.000	0.004	0.019	-0.421	0.430	.000

Note. CI = Confidence Interval.

Table 5

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Influence of Biography Content for Excerpt 1 Factor 3 (N = 159)

Condition	Mean	Std. Error	95% CI
Neutral	0.286	0.110	[0.068, 0.504]
Negative	-0.018	0.111	[-0.237, 0.202]
Control	-0.162	0.107	[-0.373, 0.049]

Note. CI = Confidence Interval; Continuous predictors were fixed at the following values: Age = 36, Baroque interest score = -0.05, Positive emotional contagion = 3.01, Negative emotional contagion = 2.73.

Table 6

GLMM Analyses Concerning the Emotional Response to Excerpt 2 (N = 153)

Variable	*F*	df_1	df_2	*p*	η_p^2		Beta	*t*	95% CI		η^2
Factor 1, "Aesthetic pleasure"											
Overall model	3.815	7	145	.001	.156						
Condition	1.198	2	145	.305	.016	Neutral – Control	-0.033	-0.200, *p* = .841	-0.358	0.292	.000
						Negative – Control	-0.256	-1.483, *p* = .140	-0.597	0.085	.014
						Neutral – Negative	0.223	1.215, *p* = .226	-0.140	0.586	.010
Gender	0.101	1	145	.752	.001		-0.046	-0.317	-0.331	0.240	.000

Age	6.333	1	145	.013	.042		0.013	2.517	0.003	0.023	.042
Baroque score	2.866	1	145	.093	.019		0.151	1.693	-0.025	0.327	.019
Positive emotional contagion score	4.993	1	145	.027	.033		0.419	2.235	0.048	0.790	.033
Negative emotional contagion score	0.412	1	145	.522	.003		0.114	0.642	-0.237	0.446	.003
Factor 2, “Anxious sadness”											
Overall model	0.903	7	145	.506	.042						
Condition	1.400	2	145	.250	.019	Neutral – Control	0.323	1.660, p = .099	-0.062	0.708	.018

						Negative – Control	0.189	0.978, p = .330	-0.193	0.571	.006
						Neutral – Negative	0.134	0.677, p = .500	-0.257	0.525	.003
Gender	0.822	1	145	.366	.006		-0.136	-0.907	-0.432	0.160	.005
Age	1.738	1	145	.190	.012		-0.008	-1.318	-0.020	0.004	.012
Baroque score	2.599	1	145	.109	.018		0.150	1.612	-0.034	0.335	.018
Positive emotional contagion score	0.618	1	145	.433	.004		0.114	0.786	-0.172	0.399	.004

Negative emotional contagion score	0.003	1	145	.956	.000		0.009	0.056	-0.325	0.344	.000
Factor 3, "The extra-musical"											
Overall model	7.069	7	145	< .001	.254						
Condition	4.857	2	145	.009	.063	Neutral – Control	0.254	1.590, $p = 0.114$	-0.062	0.570	.017
						Negative – Control	-0.257	-1.417, $p = 0.159$	-0.615	0.101	.013
						Neutral – Negative	0.511	3.084, $p = 0.002$	0.183	0.838	.061
Gender	8.996	1	145	.003	.058		-0.423	-2.999	-0.702	-0.144	.058

Age	0.042	1	145	.838	.000		0.001	0.205	-0.010	0.012	.000
Baroque score	14.472	1	145	< .001	.091		0.300	3.804	0.144	0.455	.091
Positive emotional contagion score	9.621	1	145	.002	.062		0.497	3.102	0.180	0.814	.062
Negative emotional contagion score	0.476	1	145	.491	.003		-0.109	-0.690	-0.421	0.203	.003
Factor 4, “Surprise”											
Overall model	1.342	7	145	.235	.061						
Condition	1.618	2	145	.202	.022	Neutral – Control	0.303	1.797, p = .074	-0.030	0.637	.021

						Negative – Control	0.158	0.871, p = .385	-0.200	0.515	.005
						Neutral – Negative	0.146	0.791, p = .430	-0.218	0.510	.004
Gender	0.325	1	145	.570	.002		-0.083	-0.570	-0.372	0.205	.002
Age	0.020	1	145	.887	.000		-0.001	-0.143	-0.010	0.009	.000
Baroque score	1.384	1	145	.241	.009		0.093	1.176	-0.063	0.248	.009
Positive emotional contagion score	4.170	1	145	.043	.028		0.360	2.042	0.012	0.709	.028
Negative emotional contagion score	0.195	1	145	.659	.001		0.070	0.442	-0.242	0.381	.001

Factor 5, “Calm and peaceful”											
Overall model	2.024	7	145	.056	.089						
Condition	2.187	2	145	.116	.029	Neutral – Control	0.085	0.462, *p* = .645	-0.280	0.451	.001
						Negative – Control	-0.266	-1.407, *p* = .162	-0.638	0.107	.013
						Neutral – Negative	0.351	2.032, *p* = .044	0.010	0.692	.027
Gender	0.001	1	145	.977	.000		0.004	0.028	-0.301	0.310	.000
Age	0.807	1	145	.371	.006		0.005	0.898	-0.006	0.015	.006

Baroque score	1.129	1	145	.290	.008	0.087	1.062	-0.074	0.248	.008
Positive emotional contagion score	3.463	1	145	.065	.023	0.368	1.861	-0.023	0.759	.023
Negative emotional contagion score	0.006	1	145	.940	.000	-0.013	-0.076	-0.360	0.333	.000

Note. CI = Confidence Interval.

Table 7

Means, Standard Errors, and 95% Confidence Intervals of the GLMM Analysis Concerning the Influence of Biography Content for Excerpt 2 Factor 3 (N = 153)

Condition	Mean	Std. Error	95% CI
Neutral	0.239	0.101	[0.039, 0.440]
Negative	-0.272	0.133	[-0.534, -0.009]
Control	-0.015	0.115	[-0.243, -0.213]

Note. CI = Confidence Interval; Continuous predictors were fixed at the following values: Age = 37, Baroque interest score = -0.002, Positive emotional contagion = 3.00, Negative emotional contagion = 2.73.

Table 8

Themes, Codes and Representative Quotes from the Thematic Analysis (N = 153)

Theme	Code	Representative quote
Analytical (*n* = 16)	Analytical (not reflective)	Participant ZS064: "The first fragment played in minor… made me think that it celebrates sorrow. Sometimes it is calm, sometimes solemn. It made me quite sad, but in a calm way… The first fragment, despite its key, made me alert, anxious and restless. I was unconsciously urged to switch my attention to some matter which is less perturbing."
	Analytical (reflective)	Participant ZS176: "My reaction to the first piece was pleasant surprise, mainly because of my immediate recognition of the harmonic progressions which bring to mind Vivaldi and Corelli, and then hearing how it diverted. I think in a programme context I would have engaged more, than I can coming off the back of a survey. As it is, my sentiment is very much 'I can tell it's sad, but I'm just not in the mood to allow myself to be moved'."

Named emotions (*n* = 59)	Contrasting Excerpts 1 and 2 (describing emotional response or using emotional language)	Participant ZS049: "The first excerpt was contemplative and sad. The deliberate tempo and minor key contributed to the mournful mood. It wasn't as grave and sad as a dirge, but it might have been a quarrel between friends, or a disappointment of some kind. It did not seem angry— the music was more resigned and accepting of the situation rather than fighting against it… The second excerpt was much more energetic, but it did not make me feel happy exactly."
	Describing emotional response (mixed and complex emotions)	Participant ZS099: "The first piece made me feel a sense of empathy for the sadness or tension of the composer and performers."
	Predominantly a single emotion experienced and reported (calm/relaxed)	Participant ZS157: "This music really relaxed me while I was listening to the two songs. I liked it."
	Predominantly a single emotion experienced and reported (joy)	Participant ZS120: "Joyful."
	Negative response (bored)	Participant ZS173: "It is not my taste of music, and because of this I was kind of bored."

	Positive response (basic appraisal)	Participant ZS125: “I liked the music. It was nice to listen to.”
	Negative response (not moved by the music)	Participant ZS132: “[I] just didn’t really like the music I heard… It was, more than anything, inoffensive.”
Expectations (*n* = 25)	Expectations (Baroque)	Participant ZS127: “I was assuming the music would sound similar to other Baroque pieces I know, and for whatever reason that meant I expected something a little more lively.”
	Expectations (general)	Participant ZS023: “The first song was able to put me deep in thought while the second song just wasn’t able to make me feel authentically lively and happy even though I feel like that’s what it wanted. Perhaps it’s because it’s music that I’m unfamiliar with, while the first song seemed more familiar to music in film that I’ve seen.”
	Expectations (Zelenka)	Participant ZS105: “With the first piece… I started to close my eyes, noticed how tired I was feeling, and felt a bit flat… I think this was due to the tempo, the melody, and the voice. I also think that, after reading about the composer’s life, this piece made me focus on the potential isolation and sadness that he may have experienced.”

Personal associations (*n* = 10)	Personal association/memory	Participant ZS011: "The first example was incredible. I felt that there was so much in it that differed from what I expect of music from that period. It made me laugh at points, and while there was tension and broody sections there were also some brilliantly joyful parts. I think it also had emotional associations for me as, while it was very inventive and unusual, it still sounded to me like church music, and while I am not religious at all, I was brought up in a Catholic family so church music reminds me of a particular part of my life."
Imagery (*n* = 22)	Visual imagery (baroque imagery)	Participant ZS051: "[The] first example captured my attention and made me listen carefully—[it] reminded me of Peter's pain in the Bach passions (which I love, and which make me feel that pain). This music made me feel a little of that pain too but I think perhaps primarily by association with Bach's pieces."
	Visual imagery (contrasting Excerpts 1 and 2)	Participant ZS014: "I could feel the music and it seemed like someone going through a hard time in their life by trying to be strong. There were a lot of strong emotions but a general feeling of despair. For me it evoked scenes of a man whose wife was dying. However, this could also be coming from the passage that I read before listening to the music. The second piece was more energetic and it touched me less emotionally and

		more mentally as it seemed like someone hurrying to do something, maybe rushing around tidying their home or packing a suitcase as they are late for something important."
	Visual imagery (general)	Participant ZS076: "I felt a sense that both pieces were telling a story and building to an important event. They made me feel slightly anxious not knowing what the event will be—especially in the first example, it felt like it was expressing a negative event. I may feel this way because classical music is often used to depict such things in cinema."
	Visual imagery (going back in time)	Participant ZS013: "It makes me feel like I'm living in a time hundreds of years earlier than now. The first piece was melancholic but the man's voice made it soothing and the second piece evoked joy and was inspiring."
Rhythm (*n* = 21)	Contrasting Excerpts 1 and 2 (rhythm)	Participant ZS041: "The first piece made me feel more calm and slightly melancholy but in a nice way. The second piece made me feel more energised and alert and made me think more. The first piece made me want to be still, and the second piece made me want to move."

	Rhythm	Participant ZS090: “Captivated by the first piece, because I was trying to figure out the emotions behind it. [The] second piece made me feel tense because of the quick rhythm.”

Table 9

Chi-Square Results Concerning the Influence of the Participant Condition on Language Usage

Variable		Experimental condition			
		Neutral biography	Negative biography	Control	Total
Neutral language	Count	6	4	14	24
	% within Language	25.00	16.70	58.30	100.00
	% within Experimental condition	23.10	14.30	42.40	27.60
	% of Total	6.90	4.60	16.10	27.60
Negative language	Count	17	15	16	48
	% within Language	35.40	31.30	33.30	100.00
	% within Experimental condition	65.40	53.60	48.50	55.20
	% of Total	19.50	17.20	18.40	55.20
Combination	Count	3	9	3	15
	% within Language	20.00	60.00	20.00	100.00
	% within Experimental condition	11.50	32.10	9.10	17.20
	% of Total	3.40	10.30	3.40	17.20
Total	Count	26	28	33	87
	% within Language	29.90	32.20	37.90	100.00
	% within Experimental condition	100.00	100.00	100.00	100.00
	% of Total	29.90	32.20	37.90	100.00