Beliefs about Authentic Music

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Abstract

People listen to a wide variety of music and yet only some songs strike them as real or authentic. The present studies explore the notion of authentic music and how judgments about authentic music differ from judgments about good music. Study 1 provides support for the claim that judgments about authentic music are especially affected by emotionality while judgments about good music are affected by the proficiency of the music. Study 2 indicates that the emotions expressed in authentic music are the same as the emotions that make us feel close or connected to another person. Finally, Study 3 shows that people rate music composed by artificial intelligence (AI) as less authentic than human-composed music because AIs are perceived as lacking emotions. The present studies serve to define how we judge the authenticity of music and why only certain kinds of emotions and composers can make authentic music.

Keywords: authenticity, music psychology

Imagine that you are listening to an over-produced electronic dance music song created by a DJ for a beer commercial. You might say that the song is good and fun to listen to, but you might also get the sense that there is something superficial about it. You might conclude that the song doesn't feel very authentic. Conversely, imagine you are listening to a punk rock song created by a group of teenagers venting their frustration towards their parents and their school. They recorded the song with poor equipment in their garage and may not be very skilled at playing their instruments. Even if you don't think the song is particularly good, you might still feel that there's something raw or genuine about it. You might therefore concede that it is authentic music. People often make these kinds of distinctions between music that is simply good and music that is "true" or "real." There seems to be an intuition that a distinct category of real music exists, which we will henceforth refer to as *authentic music*.

Within the existing literature in music cognition and performance theory, there is a wealth of research on what people think makes music good. Good music is defined as possessing some of the following features: instrumental competence, technical security, rhythmic accuracy, tonal quality, stylistic accuracy, and musical understanding (Thompson & Williamon, 2003).

A much smaller body of literature also discusses something called authentic music, but uses a different definition of authenticity than we will be using in this paper. Previous literature has discussed authentic music in terms of what constitutes authenticity in different genres of music. For example, hallmarks of authentic country music include untrained, high-pitched nasal voices and simple musical accompaniments. Authentic country music themes evoke images of farm, family and old-fashioned ways of life (Peterson, 1997, p.48). A song that doesn't contain most of these elements would be considered inauthentic country music.

We are not, however, using the term authentic music in this genre conforming sense. By our conception of authenticity, it is possible for music that violates the conventions of a genre to still be authentic and, conversely, for music that greatly conforms to the features of the genre to be totally inauthentic. We will be observing how people use the term authentic music in a much broader sense.

1. What is "authentic music"?

Existing literature has found several different kinds of authenticity which can be applied to a wide variety of contexts, such as our judgments about an authentic Ming Dynasty vase, authentic Thai food, or authentic diamonds (Smith & Newman, 2016). There are two categories of authenticity that seem most relevant to our judgments about music: *type authenticity* and *expressive authenticity*.

Type authenticity is the evaluation of whether something is true to its category (Caroll & Wheaton, 2009). For example, an authentic Ming Dynasty vase has certain traits – it's from a specific time period, has certain stylistic features, etc. – that make it a Ming Dynasty vase. Similarly, a piece of music can have type authenticity because the song or artist espouses the values and beliefs of a musical genre. For example, authentic country music is usually performed by people from rural populations in United States, sung with only the most basic instrumentation, and evokes images of the rural lifestyle (Peterson, 1997). Authentic rock music is characterized by a lack of concern with commercialism, diverging from the superficial, insincere, and formulaic music of the pop world. Authentic punk music declares rebellion against the establishment, including the rock establishment, and sows seeds of anarchy in the lyrics (Tetzlaff, 1994). Hence, type authenticity allows us to discuss a piece of music as an authentic member of a genre category. Given this definition of type authenticity, when you say

"This Ming Dynasty vase is not authentic," you are concluding that the vase in question is not a Ming Dynasty vase at all. Similarly, when you say "This music is not country music," you mean that this music does not belong to the genre "country" at all.

However, this is not the kind of authenticity with which we are concerned in our studies. Instead, we are interested in expressive authenticity, the true expression of an individual's or culture's values and beliefs (Dutton, 2003; Smith & Newman, 2016). To help us illustrate expressive authenticity, it may be less helpful to consider the concept of the Ming Dynasty vase and more useful to consider the concepts of a *true* scientist. To phrase the concept colloquially, a true scientist is someone who embodies what science is all about. Broadly speaking, a true scientist really wants to get at the bottom of things, looks for empirical data, and revises old beliefs in light of new evidence. This notion of the true scientist is quite different from being a good scientist. Even if a person doesn't have a formal science education and would never be considered a 'good scientist', you might acknowledge she is still a true scientist (Knobe, Prasada, & Newman, 2013).

Similarly, consider a song with a very simple melody sung by a musically untrained person strumming on a guitar. The person may never have taken music lessons, the song may contain many rhythmic mistakes, and the tonal quality of his guitar strumming may not be very good, but he pours his deepest, darkest feelings into the song. You might get the sense that, even if it's not particularly good music, there's something authentic about the song. In other words, you might conclude that this song embodies what music is really all about.

Now let us consider the opposite example, the case of the *inauthentic* scientist. Imagine someone who has a PhD and conducts empirical research in a laboratory but has no real interest in getting to the bottom of things and just wants to do enough work to publish some papers. You might acknowledge

that this person is still a good scientist in some sense of the term, but she really isn't a true scientist – she is an inauthentic scientist (Knobe et al., 2013).

Similarly, when you say "This music is not authentic," you are not literally saying that it is not music at all. The piece is still music; it is just a less authentic variety of music. Inauthentic music may even be considered good music if it is technically good and played with accuracy (Thompson & Williamon, 2003). For example, consider a piece of music that was composed by a person who works for a big corporation and is using the music to sell a product. It is possible that the music is well orchestrated, technically intricate, and contains no flaws. You might say that it's a perfectly good piece of music. But you might also get the sense that this music composed for commercial use is not very authentic.

Finally, consider an extreme example of inauthentic music. Consider a piece of music that was composed by an artificial intelligence (AI). A computer scientist feeds the AI an input of thousands of songs which it analyzes to create a new, original song. The song may be technically flawless and show mastery of rhythm, tonality, and style. You might agree that the AI composed good music, but that it lacks the qualities that make music authentic.

In short, authentic music is a category that is separate from good music and that music can still be good even if it is not authentic and vice versa. It is still, however, unclear what makes music authentic and what are the qualities that distinguish authentic music from good music. Our next task will be to define what makes music authentic.

2. What makes music authentic?

We hypothesize that what discriminates authentic music from good music is, in some way, connected to *emotion*. Consider two songs. One of the songs is very well produced, has great sound mixing, and a fun beat, but revolves around the artist expressing smug superiority about the purchase of a fancy new car. The other doesn't have any fancy background music and the artist did the sound mixing on a phone app, but expresses honest feelings of depression and loneliness related to growing up in a broken neighborhood. You might have the intuition that, while the first song might be enjoyable and great to dance to, there is also something rather superficial about it. Conversely, while the second song may not be as well produced as the first song, it feels much more authentic because unlike the first song, it contains emotional depth.

Extending this intuition, we might then hypothesize that the reason AI music is judged as less authentic than human music is because people do not perceive AIs as having emotions. Studies have shown that although people ascribe certain states to robots, such as beliefs and intentions, they do not ascribe emotions to them (Gray, Gray, & Wegner, 2007; Huebner, 2010). So, for example, people believe that a robot is capable of possessing the belief that a triangle has three sides but cannot feel happy when he gets what he wants (Huebner, 2010). Perhaps, it is precisely this lack of emotion of artificial intelligence that makes AI musical creations seem less authentic.

Within the existing literature on emotion and music, one of the more straightforward findings is that people feel the emotions that are expressed in the music (DeNora, 1999; van Goethem & Sloboda, 2011, Juslin & Laukka, 2004). So, if you want to feel positive sensations, you might choose to listen to a happy, upbeat song that is energizing. Similarly, if you are sad and want to wallow, you might

choose to listen to a melancholy song that makes you feel unhappy (Saarikallio & Erkkila, 2007). This type of example does not, however, capture the significance of emotions to authentic music. For example, you might listen to an upbeat EDM song about partying that makes you feel very happy, but you might still get the sense that there is something superficial or inauthentic about the song. Likewise, you might listen to a cheesy pop ballad about a breakup that makes you feel sad, but you might still get the sense that there is something inauthentic about the song. Hence, it appears that emotions are relevant to judgments of authentic music in a way that's different from just making us feel things.

An important feature of emotions is that they make you feel connected to other people. Consider a conversation with a friend who is expressing deep despair. The conversation may make you feel bad, but it may also make you feel very connected to your friend. In domains outside of music, expressing "self-revealing" emotions such as vulnerability, sadness, guilt, or hurt has been shown to facilitate the building of intimacy (Mashek & Aron, 2004 Greenberg & Johnson, 1988).

Interestingly, these same emotions that make us feel close to others seem to be the emotions that we enjoy in music. For example, people really enjoy listening to sad music (Kawakami, Furukawa, & Okanoya, 2014; Schubert, 1996). In a qualitative survey detailing people's musical preferences, participants reported liking music that contemplates major life themes, such as love, death, and other traumatic life events (Saarikallio & Erkkila, 2007). It has been suggested that people enjoy the expression of these profound emotions in music because it validates the listeners' feelings and makes them feel less emotionally isolated (Ruud, 1997). One participant reported that they liked songs that reveal private emotions because, "They are the singer's personal stuff, what he has written there. Even though the whole song is not like completeness or you don't understand the words, but then there is

one sentence you do understand. And then you feel that I have experienced so much the same as him, then they kind of fit into my life, too" [sic] (Saarikallio & Erkkila, 2007).

This research suggests that the role of emotions in judgments of music authenticity may be something more than emotions in music making you feel things – the emotions in music may actually make you feel connected to others and feel less alone. Take Brahms' *Violin Concerto in D Major Op. 77*, for example. It may not have words and you may know that you will never meet the composer because he's dead, but you may still be able to feel this sense of connection to Brahms and feel less alone when you listen to his music. Hence, it is possible that people judge the authenticity of music based on how connected the music makes you feel. This further seems to predict that the emotions that make us feel close to another person in an interpersonal context are also the emotions that make for what we judge to be authentic music. By this hypothesis, if you feel highly connected to a person who is expressing feelings of love in a conversation, you might also have the intuition that a song expressing feelings of love is authentic music.

3. Present Studies

In a series of three experiments we examined people's beliefs about what makes music authentic. Study 1 investigated whether people's intuitions about authentic music are influenced by the emotionality of the music more than the proficiency and whether people's intuitions about good music were more influenced by the proficiency of the music than the emotionality. Study 2 asks which specific emotions make a piece of music authentic. Finally, in Study 3 we extended our previous findings to test if the reason people have different intuitions about AI versus human-composed music

is that people believe that the agents composing the music must themselves be able to experience emotions in order to produce authentic music.

Study 1:

Study 1 tests the hypothesis that people make distinctions between *good* music and *authentic* music. We predict that the technical proficiency (henceforth referred to as "proficiency") of the music affects judgments about how good the music is more than judgments about how authentic the music is. Conversely, we predict that the emotionality of the music affects judgments about how authentic the music is more than judgments about how good the music is.

Method

Participants. Four hundred and one participants were recruited from Amazon's Mechanical Turk (M_{age} = 38.06; 52.87% female). Participants were each paid $0.20.

Stimuli. Participants were randomly assigned to one of 8 conditions in a 2 (proficiency: high vs low) x 2 (emotionality: high vs. low) x 2 (question type: good vs. authentic music) between-subjects design. In the high proficiency, high emotionality condition, participants read the following:

"You hear a piece of blues music. The singer-songwriter conveys deep and complex emotions in the song. He poured his emotions into his music. It is also musically complex and intricate. It does not contain any errors and is technically flawless. In sum, this music is both emotionally deep and high-quality music."

In the low proficiency music conditions, participants were told: *"It is not musically complex or intricate. It contains lots of errors and is technically very flawed. In sum... it is poor quality music."*

In the low emotionality music conditions, participants were told: "The singer-songwriter does not convey deep or complex emotions in the song. He did not pour his emotions into his music. In sum, this music is emotionally shallow..."

Procedure. After reading the vignette, all participants were asked the extent to which they agreed with one of two statements: "This music is good" (in the good music conditions) or "This embodies what music is all about" (in the authentic music conditions). Participants rated their agreement on a 7 point-Likert scale (1 = strongly disagree, 7 = strongly agree).

Results

The mean responses in each condition are displayed in Figure 1. Results were analyzed using a 2 (proficiency) x 2 (emotionality) x 2 (question type) ANOVA. There was a significant main effect of proficiency, F (1, 393) = 162.5, $p < .001$, $\eta_p^2 = .293$ and a significant main effect of emotions, F (1, 393) = 211.7, p < .001, $\eta_p^2 = .350$. There was no significant main effect of question type, F (1, 393) = 1.2, p =.280 $\eta_p^2 = .003$.

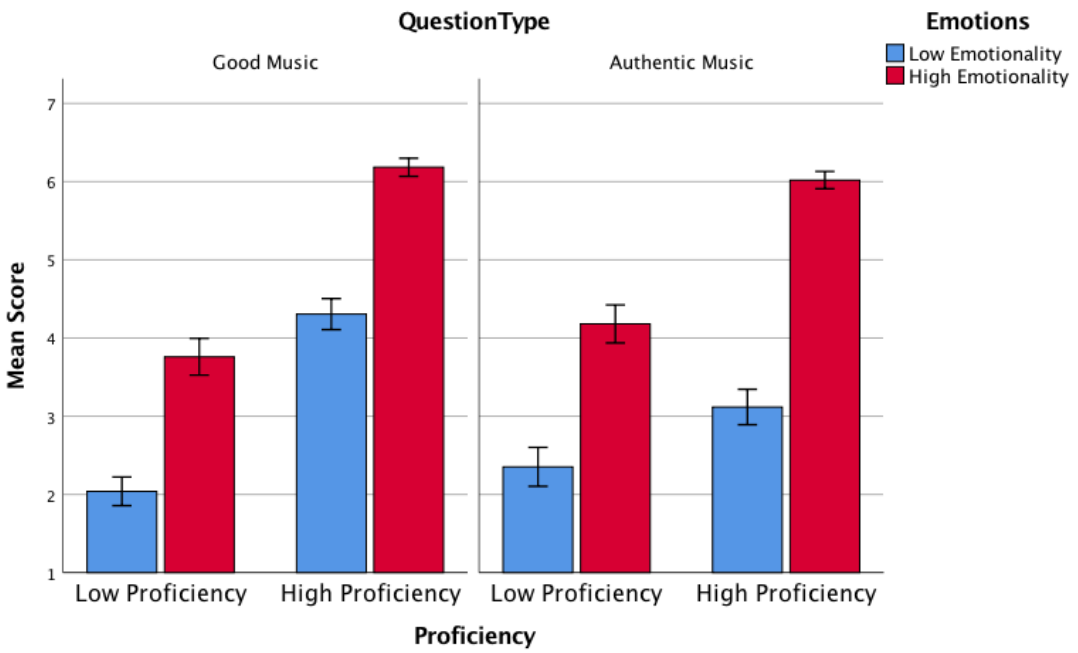

Figure 1: Means by condition for Study 1. Error bars show +/- 1 standard error.

Importantly, there was a significant interaction between question type and proficiency, F (1, 393) = 13.3, p < .001, η_p^2 < .001. We decomposed the interaction by comparing the effect of proficiency for each question type (good vs. authentic music). There was a smaller effect of proficiency on authentic music, F (1,393) = 41.95, p < .001, η_p^2=.096 than for good music, F (1,393) = 132.68, p <.001, η_p^2= .252.

There was a significant interaction between question type and emotions, F (1, 393) = 3.9, p = .049, η_p^2 = .010. Decomposing this interaction, we found a larger effect of emotions on authentic music, F (1, 393) = 138.32, p < .001, η_p^2 = .260 than for good music, F (1, 393) = 78.08, p < .001 η_p^2= .166.

There was also a small unpredicted significant interaction between proficiency and emotions, F (1, 393) = 4.6, p = .032, η_p^2 = .012. Inspection of the means suggested that the impact of the emotionality

was slightly greater in the high proficiency compared to low proficiency conditions. There was no significant three-way interaction.

Discussion

Both proficiency and emotion impacted judgments about both good music and authentic. However, the proficiency of the music had a larger impact on judgments about good music than on judgments about authentic music. Conversely, the emotionality of the music has a larger impact on judgments about authentic music than on judgments about good music.

These initial findings support the main hypothesis that people distinguish between *authentic* and *good* music. Furthermore, our results confirm our hypothesis that the emotionality of the music accounts for responses about authenticity more than the proficiency of the music. In fact, the low proficiency and high emotionality condition was considered more authentic than the high proficiency low and emotionality condition.

As for the unpredicted significant interaction between proficiency and emotions, one potential explanation may be that there is some baseline level of proficiency that is necessary in order for the music to be considered good. For example, a person who has no idea of how play the piano but has a lot of passion for music may not be able to express his emotions through the music because he doesn't know how to play. Perhaps people recognize that a person without any skill whatsoever is incapable of producing music that can express anything because it is just bad music.

Study 2:

In Study 1, we showed that emotions are integral to our notions of authentic music. We now want to understand why people relate emotions with authenticity in music. Is it because they like the emotions being expressed in the music or is it because of something else? We predicted that judgments about authentic music are less about liking specific emotions and more about certain emotions triggering feelings of connection to another person. So, if you are listening to a song expressing feelings of pure joy, to the extent that you feel that the piece is authentic, it is because the expression of pure joy makes you feel deeply connected to other people.

We therefore predicted that the emotions that make you feel connected to other people are also the emotions that make music authentic. For example, you might find it more enjoyable to talk to someone who is expressing mild contentment over deep despair, but you might still feel closer to the person when they are expressing deep despair. Since our prediction is that authentic music is more about connection than liking, we expect that people will find a song that expresses deep despair more authentic than a song that expresses mild contentment. Study 2, therefore, tests the hypothesis that the emotions that we consider authentic when expressed in music are the same as the emotions that make us feel close or connected to another person.

Methods

Participants. Two hundred thirty-four participants were recruited from Amazon's Mechanical Turk. In the present study, participants were each paid $1.00 in exchange for participating and completing all 72 questions in our survey. Two participants were rejected for failure to answer all the questions presented in the survey.

Stimuli. We randomly assigned participants to one of 9 conditions in a between-subjects design. Three of these conditions measured judgments about authentic music ("It is true music", "It embodies what music is really supposed to be about", and "This music is soulful"). Three of these conditions measured judgments about connection in spoken conversation ("I find this conversation emotionally engaging", "I feel close to this person", and "I find this conversation meaningful"). Three of these conditions measured judgments about liking a conversation ("I like this conversation", "I find this conversation enjoyable", and "I find this conversation interesting"). Participants responded to all questions on a 7 point Likert scale (1= strongly disagree, 4 = neutral, 7 = strongly agree).

Procedure. Within each of the 9 experimental conditions, participants read 72 statements of the form: "You hear an instrumental music piece that expresses feelings of _____". The statements were identical but for the "feelings" that the music or conversation evoked (joy, happiness, sorrow, boredom, etc). A list of all 72 items can be found in the appendix (on page 30) Each participant received a random order of the 72 statements.

Results

We calculated the mean response for each question on each item type and conducted a by-item analysis. A reliability analysis indicated that the three questions assessing Authentic Music, Connection, and Liking were highly correlated (α= .992, α=.968, and α= .978 respectively) and therefore, they were averaged into single measures of *Authentic Music, Connection*, and *Liking*. Authentic music was were significantly positively correlated both with Connection, $r(70) = .90$, $p < .01$ (see Figure 2) and with Liking, $r(70) = .70$, $p < .01$.

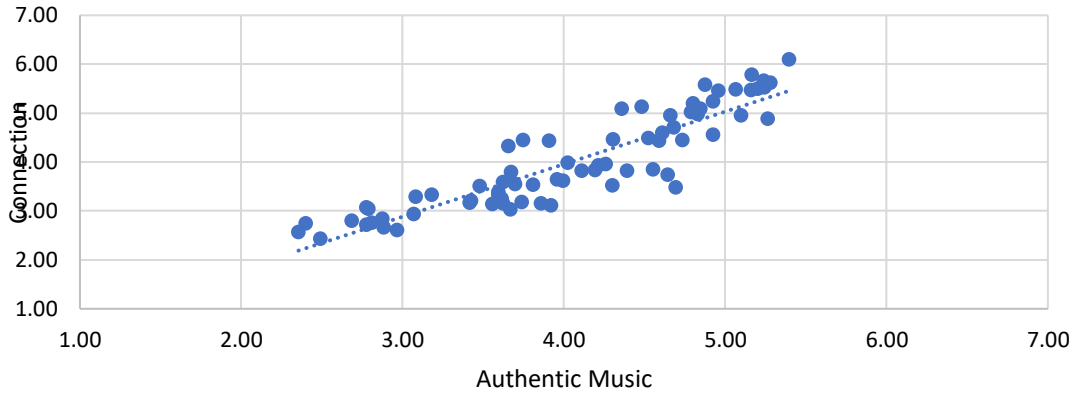

Figure 2: Scatter plot of Authentic Music as Predicted by Connection in Study 2.

To assess the relationship between Authentic Music, Connection, and Liking, Authentic Music was regressed on Connection and Liking. These variables statistically significantly predicted Authentic Music, F (2, 69) = 185.862, p < .001, R^2 =.843. There was a significant effect of Connection (β= .765, p <.001) and a smaller but still significant effect of Liking (β= .218, p = .001).

Discussion

Study 2 confirmed the hypothesis that the emotions that we consider authentic when expressed in music are the same as the emotions that make us feel close or connected to another person. There was also a smaller, but still statistically significant, effect of the emotions that we consider authentic when expressed in music are the same as the emotions that make us like a conversation with another person.

Perhaps this is because feeling connected to another person in a conversation and liking a conversation are not vastly different things. It is possible that the emotions that make music authentic can both make us feel connected to another person and, to a smaller extent, make us generally enjoy a social

interaction. These results suggest that emotion in music is related to feelings of connection with another human being, like the composer or artist. Perhaps this is why we can still feel connected to a composer or artist even if the music has no words and we are never going to meet the musician in-person.

Study 3:

Previous research has shown that people's evaluations of a piece of music differ if people are told that a music clip was performed by a computer versus a human (Ziv & Moran, 2006). Specifically, people rate computer performed music as lower quality than human performed music.

Given that Studies 1 and 2 find that emotion seems to underlie intuitions about authentic music, in Study 3 we investigate if people have different intuitions about AI-composed versus human-composed music because AIs lack emotions. To test this hypothesis, we constructed scenarios where the agent composing a piece of music (either an AI or human) could experience emotions or have intentions. Specifically, we were interested in examining people's responses to fictional scenarios where AIs could feel emotions or have intentions and humans did not have emotions or intentions.

We hypothesized that AI composed music will be rated as less artistic than human composed music because AIs lacks emotions. We further predicted that people will rate music composed by a fictional AI that possesses emotions as more authentic than music composed by a fictional human that does not possess emotions.

Methods

Participants. Eight hundred participants were recruited from Amazon's Mechanical Turk (M_{age} = 36.61). Participants were each paid $0.10.

Stimuli. Participants were randomly assigned to one of eight experimental conditions in a 2 (agent: human vs. AI) x 2 (emotions: has vs. does not have) x 2 (intentions has vs. does not have) between-subjects design. Participants read a description about the piece of music they were about to hear. For example, in the condition where the agent was human and possessed both emotions and intentions, participants read the following vignette:

"Imagine it's the year 2050 and scientists have created a human being in a test tube that can have experiences, emotions, goals, and desires. When the person gets older, he begins to compose music. This person can feel emotions like pain, happiness, and anger and he poured his feelings into the music. The human can have desires and he really wanted to create music. This is the piece that he composed."

In the conditions where the agent was an AI, participants read*: "Imagine it's the year 2050 and a scientist has built a computer that can have experiences, emotions, goals and desires. This computer analyzed thousands of songs to create a new and original composition."* In conditions where the agent had no emotions, participants read: *"The human/computer cannot feel emotions like pain, happiness, and anger so he/it cannot put feelings into the music."* In the conditions where the agent had no intentions, participants read*: "The human/computer doesn't have desires so he/it cannot want to create music."*

After reading the vignette, participants listened to a 60 second piano music clip, A*ir In F Major, BWV Anh. 131* by JS Bach and performed by The Piano Girl (2016).

Procedure. Participants in each condition rated how much they agreed with a series of four statements assessing the authenticity of the music (1 = strongly disagree, 7 = strongly agree): "It is creative", "It is expressive", "It is emotional", and "It is soulful". To test the strength of our manipulation, we also asked participants to indicate the extent they believed the agent described in the story could experience emotions on a scale of 1-5 (1= does not have experiences/emotions at all, 5 = has a lot of experiences/ emotions). We also asked participants to indicate the extent they believed the agent described in the story has intentions on a scale of 1-5 (1= does not have any intentions at all, 5 = has a lot of intentions). Finally, participants were asked to what extent they believed the agent in the story is human on a scale of 1-5 (1= is not human at all, 5 = is a human).

At the end of the study, participants were asked to recall if they heard a piano or flute in the audio clip using a forced-choice response. Eight people did not pass this manipulation check and were dropped from subsequent analyses, leaving 792 participants in total.

Results

A reliability analysis indicated that the four items assessing the authenticity formed a reliable scale (α = .86) and therefore, they were averaged into a single measure of perceived authenticity.

We first tested the strength of our manipulations. As predicted, there was a significant main effect of emotions on the "has experiences" manipulation check, $F(1, 783) = 88.93$, $p < .001$, η_p^2=.102. There was also a significant main effect of intentions on the "has intentions" manipulation check, $F(1, 783) = 69.58$, $p < .001$, η_p^2 .082. Finally, there was also a significant main effect of agent on the "is human" manipulation check, $F(1, 783) = 83.30$, $p < .001$, $\eta_p^2 = .096$.

The mean authenticity scores in each condition are displayed in Figure 3. Results were analyzed using a 2 (agent) x 2 (emotions) x 2 (intentions) ANOVA. There was a significant main effect of agent, F (1, 784) = 5.62, p = .018, η_p^2 = .007, replicating the results from Study 1. There was also a significant main effect of emotions, F (1, 784) = 6.77, p = .009, η_p^2 = .009. There was no significant main effect of intentions and no significant interactions.

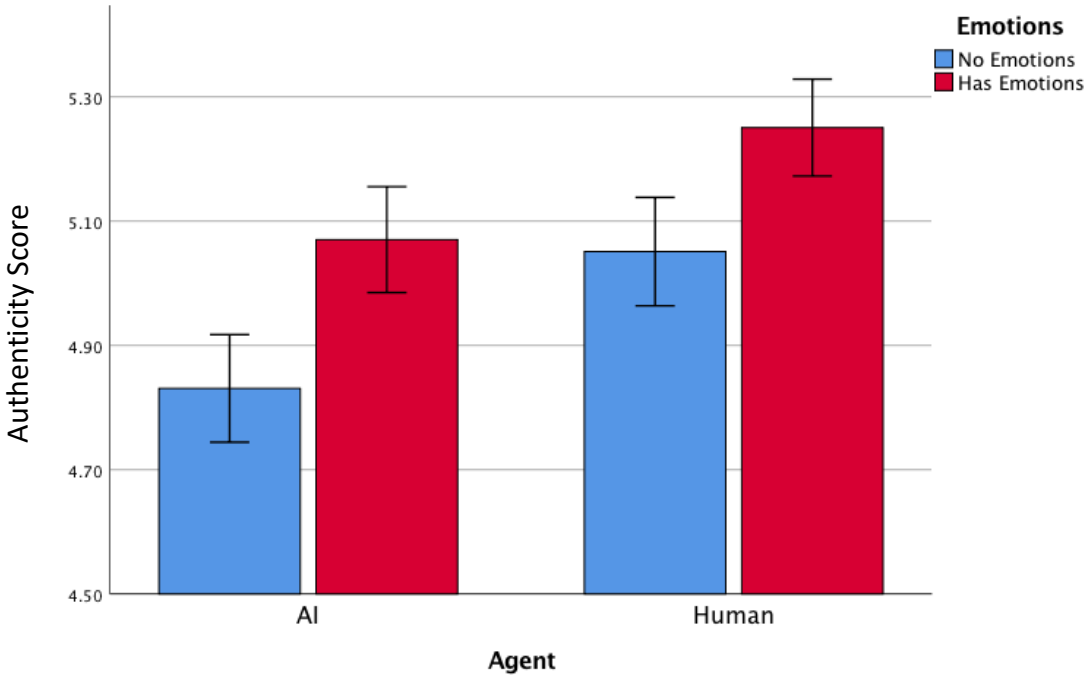

Figure 3: Mean judgments of authenticity by emotions condition in Study 2. Error bars show +/- 1 standard error.

Discussion

The results of Study 3 show that when participants were told that the agent composing the music was an AI, they rated the music as less authentic than when they were told that it was composed by a human. More interestingly, the mere belief that a composer experiences feelings and emotions impacts people's judgments about the authenticity about a piece of music, even when controlling for whether the agent composing is an AI or a human. When participants were told that the agent composing the

music can experience emotions and feelings, they rated the music as more authentic than when they were told it was composed by an agent that did not have emotions or feelings. These results are most striking in the two fictional conditions, when people rated music composed by an AI that has emotions as more authentic than music composed by a human that lacks emotions.

While we did not have people listen to actual music clips while making judgments in the previous two studies, we had people listen to music and see how the description biased their judgments about what they were hearing. While in previous studies it is possible that people were predicting what the music would sound like based on the information provided, in Study 3 it is clear that the effect exists even when controlling for what is actually present in the music clip.

These results are interesting on two different levels. On the one hand, the results tell us how people think about AIs and how people believe that AI music is inferior in certain respects to human music. But they also tell us something more generally about how people think about authentic music. Once again, emotions seem to underlie people's judgments about authentic music, regardless of who the agent composing the music is.

Thus, this study broadens the implications of our previous two studies by demonstrating that whether the agent creating the music can itself feel emotions influences people's judgments about the authenticity of the music.

General Discussion:

The present studies attempted to understand people's conceptions of authentic music, what underlies their judgments of authenticity in music, and how judgments from authenticity differ from judgments of goodness in music. Study 1 gave us evidence that people's beliefs about authentic music are influenced by the emotionality of the music more than by the proficiency of the music and that beliefs about good music are influenced by the proficiency more than the emotionality of the music. Study 2 found that the emotions that make us feel connected to other people are also the emotions that make for authentic music. Study 3 found that people believe AI music is less authentic than human music because AIs are perceived as lacking emotions. Taken together, these studies show that people do indeed believe that authentic music is a category that is distinct form good music and that emotions underlie our intuitions about authentic music.

One question we might ask ourselves is why people would care about authentic music to begin with. Our results from Study 2 suggest that authentic music is related to feelings of emotional connectedness. The social psychology literature identifies the *need for connection*, a desire to form emotional relationships with others, as one of the most fundamental human needs (Andersen, Chen, & Carter, 2000). Perhaps listening to authentic music fulfills our need for connection. This would explain why listening to a sad, cheesy pop ballad may generate feelings of sadness, but still doesn't feel like authentic music; the pop ballad doesn't fulfill the psychological needs that might be fulfilled if you were listening to a song about deep despair that makes you feel highly connected to a person.

If authentic music is about fulfilling a need for connection, then it is worth exploring the possibilities of who or what we feel connected to when listening to authentic music. Study 3 suggests that we might

be feeling connected to the person creating the music. This would explain why people were less inclined to rate AI-composed music as authentic. Perhaps they couldn't feel connected to an AI which itself didn't possess emotions because the need for connection assumes reciprocal emotional responsiveness (Andersen, Chen, & Carter, 2000). If we are feeling connected to the person who created the music, it would also explain why we believe that instrumental music can be authentic. We are connecting directly with the composer or artist even if the music has no words and we know we are never going to meet the creators in person.

Our work is related to literature in psychology of art which suggests that people's assessments of art are related to their beliefs about the creator. People evaluate a work of art as an extension of the person who created it (Dutton, 2009; Newman & Bloom, 2011). So, for example, people judge that a painting that took longer to create is aesthetically higher in quality than one that took less time to paint, even though the two paintings are identical (Kruger, Wirtz, Van Boven, & Altermatt, 2004). They also value a work of art that was created by multiple artists as aesthetically inferior to one that was created by a single author. This effect emerges because people judge the individual effort exerted by each artist in a painting created by multiple artists to be less than the amount of effort exerted by a single artist to create the same painting (Smith & Newman, 2011). People also care about whether a performance was the result of practice or innate skill and place higher value on works that are the result of innate skill (Riis, Simmons, & Goodwin, 2008). Furthermore, people value items that have been in contact with celebrities more than the same items that did not come into contact with celebrities (Newman, Diesendruck, & Bloom, 2011). So, for example, a painting that was created by Picasso would be rated as more valuable than a similar painting created by someone less famous (e.g. Newman et al., 2011; Newman & Bloom, 2011).

All of the research above is primarily concerned with evaluations of how good the artwork is. Within this work, a key factor that we seem to care about is how special or exceptional the person who created the art was. Although this research did not relate to judgments about music in particular, we would expect that the same effects would emerge for judgments about music.

Our studies, on the other hand, did not focus on judgments about goodness. Instead, we were interested in investigating how information about the musicians affected judgments about the authenticity. Perhaps it is because we were interested in people's intuitions about authenticity that we observed a slightly different effect. It's not about the artists being revered or that matters for judgments of authentic music. In fact, we found the opposite effect in Study 1, which showed that even highly technically skilled musicians are not always capable of creating authentic music. It seems that people care more about the creators being *real* people who express something deep about their character when making judgments about authenticity of music. People care about the emotional life of the musician and they want to feel connected to the person behind the music in a profoundly emotional way. Perhaps this is why we believe that AIs cannot create authentic music, because we cannot connect feel connected to an agent that does not possess an emotional life.

By this logic, it is also possible for you to feel connected to music created by relatively unremarkable people, like the teenagers making punk music in their garage. It is the profound emotional link, not the extraordinariness of the creator, that makes the music authentic. In fact, you might actually feel less connected to a famous musician who you are in awe of because they seem harder to connect with emotionally. Perhaps it is easier to feel connected to a random person singing a song about deep despair while strumming on his banjo than Kanye West singing a song about the vast number of cars he owns.

Additionally, while our paper did not directly address explore the mechanism by which people make authenticity judgments, it is possible that people, these judgments are driven by psychological *essentialism*. On this hypothesis, when people are making judgments about whether a given piece of music embodies what music is all about, they are really thinking about the *essence* of music. People have the tendency to represent many things in the world in terms of their essence, the unobservable characteristics shared by all members of a category (e.g. Gelman, 2003; Keil, 1989; Sober 1994). Some recent research also suggests that people's beliefs about the essences of categories are deeply tied to their values, especially for categories like art (Newman & Knobe, in press). It is reasonable to suggest that people's judgments about authentic music reflect this value-based essentialism.

Furthermore, there is, conceivably, some individual variation in what people consider to be the essence of authentic music, which might be why different populations or individuals disagree on what constitutes authentic music. For example, Schönberg's music is often regarded as "cerebral, cold, and willfully difficult" (Napolitano, 2017). It is unlikely that you would feel connected to Schönberg's music on this highly emotional level in the way you would for Brahms' music, for instance. Yet many musicologists believe that Schönberg's music is truly authentic music. Perhaps the musicologists who consider Schönberg's Five Piano Pieces, Op. 23 to be authentic music may still be thinking about authenticity in essentialist terms; they may just consider this other structural, mathematical, and technical quality as the essence of authentic music. Similarly, someone who composes avant-garde music might consider John Cage's experimental piece *4'33* as authentic music although the average listener would disagree with that sentiment. The avant-garde musician who believes John Cage's music is authentic may also still be thinking about music in essentialist terms. It is just that he doesn't believe that emotion is the essence of authentic music – originality and creativity may be the essence of

authentic music for the avant-garde musician. Further studies may seek to study individual differences in what music people consider to be authentic to understand if people are indeed thinking about authentic music in terms of an essence.

To sum up, we have shown that people think about authentic music as a category that is separate from good music. Moreover, we have shed light on at least one possible explanation for how people make judgments about authentic music. Further research may consider asking whether emotions are only crucial for making judgments about the authenticity of music or whether they may be valuable for making judgments about authenticity in other art forms such as visual art, dance, or literature. More broadly, one could also ask whether judgments of authenticity in aesthetics differ from judgments of authenticity in other domains.

Author Contributions

TV and JK designed Studies 1 and 2. TV collected and analyzed Study 1 data as part of one directed research credit in the fall of 2018. Study 2 data was designed, collected, and analyzed during the spring of 2018 in completion of the senior thesis requirement. TV and GN designed Study 3. TV collected and analyzed Study 3 data during the spring of 2018 in completion of the senior thesis requirement. Both JK and GN were actively involved in the manuscript revision process.

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Appendix

Mean Authenticity, Connection, and Liking Scores for each of the 72-feeling items in Study 2:

FEELING	CONNECT	AUTHENTIC MUSIC	LIKE
love	5.40	6.09	2.78
inspiration	5.17	5.78	5.28
joy	5.24	5.66	5.81
happiness	5.28	5.62	5.9
triumph	4.88	5.57	5.56
compassion	5.24	5.52	4.96
hopefulness	5.20	5.50	5.46
tenderness	5.07	5.48	4.26
excitement	5.16	5.47	3.49
awe	4.96	5.45	5.49
determination	4.93	5.24	5.53
satisfaction	4.80	5.20	5.29
confidence	4.48	5.12	5.43
calmness	4.36	5.09	5.52
sadness	4.85	5.08	3.18
ecstasy	4.79	5.01	5.81
admiration	4.83	4.97	5.39
sorrow	4.66	4.95	3.2
empathy	5.10	4.95	5.5
gratitude	5.26	4.88	4.97
relief	4.68	4.71	5.05
loneliness	4.61	4.60	3.25
amusement	4.93	4.55	5.71
surprise	4.52	4.49	5.1
remorse	4.31	4.46	5.12
suffering	4.74	4.45	2.87
wistfulness	3.75	4.44	4.15
depression	4.59	4.43	2.96
lustfulness	3.91	4.43	5.76
coolness	3.66	4.32	4.28
weariness	4.03	3.98	3.19
anger	4.26	3.95	5.11
disappointment	4.22	3.93	3.11
anxiety	4.55	3.84	3.36
uncertainty	4.20	3.83	3.62

frustration	4.39	3.82	3.57
helplessness	4.11	3.82	3.12
resignation	3.67	3.79	3.28
fear	4.64	3.73	3.05
confusion	3.96	3.64	3.32
unease	4.00	3.61	3.31
contempt	3.63	3.58	0.27
Emotional withdrawal	3.70	3.54	3.11
exhaustion	3.81	3.53	3.19
shame	4.30	3.52	3.15
reluctance	3.48	3.51	3.54
stress	4.70	3.47	3.25
hatred	3.60	3.38	3.03
detachment	3.18	3.33	3.14
disdain	3.60	3.32	2.9
coldness	3.08	3.28	2.82
hesitancy	3.62	3.24	3.42
derision	3.42	3.20	3.07
disgust	3.74	3.18	2.95
listlessness	3.42	3.16	2.95
awkwardness	3.86	3.15	3.61
mild discomfort	3.62	3.15	3.36
distaste	3.56	3.13	3.11
skepticism	3.92	3.11	4.05
nonchalance	2.78	3.07	3.51
aloofness	2.79	3.04	3.09
mild irritation	3.67	3.02	3.44
lethargy	3.07	2.93	2.86
indifference	2.88	2.83	3.37
narcissism	2.69	2.80	2.28
disinterest	2.81	2.75	2.66
smug superiority	2.40	2.74	2.49
superficiality	2.78	2.72	3.19
boredom	2.89	2.66	2.9
dullness	2.97	2.61	2.62
snobbishness	2.35	2.56	2.36
inattention	2.49	2.43	2.65