

**The Influence of Authorship Information on Emotional Response to Music and the
Moderation of AI Bias**

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Abstract

Authorship information has been shown to influence emotional response in different situation, regarding fame, positive and negative author information and also the influence of authorship information when AI is an author compared to human. It leads to less emotional response when AI is mentioned. Other studies has shown that this can be moderate by bias against AI, in one particular case, other studies show no effect or effects implying no effect. In the current study we investigate whether authorship information has an effect on emotional response and if this is moderated by an AI bias. We conducted a between subject study ($N = 80$), where we manipulated authorship information (fully AI, hybrid, fully human). AI Bias was measured, the manipulation was done, a 90 second snippet of our AI song (with human text) was played and the emotional response was measured. The results show that the authorship information differs significantly for the fully AI and hybrid condition in comparison to the fully human condition, and supports our hypothesis. We found no moderation effect of the AI bias on the relationship of authorship information and emotional response. This shows that the authorship information manipulation influences emotional response also in the hybrid condition and for unknown AI(human text) pop music and in that case no AI bias moderation effects are shown.

Keywords: artificial intelligence, AI bias, music, emotion, authorship information

The Influence of Authorship Information on Emotional Response to Music and the Moderation of AI Bias

In the first decades of the 21st century artificial intelligence grew exponentially. Submissions for preprints in arXiv are 2019 at three per hour, over 148 times faster than in 1994, while deep learning preprints are submitted over 1064 times faster than in 1994 (Tang et al., 2020). This shows how important AI has become in the scientific sphere, but also in everyday life. It shows that even robots are more preferred if they appear more human and to our own characteristics and can even be perceived as authority figures (Hong et al., 2022). Additionally, ChatGPT has become a known AI that can help us in our everyday lives, or even write essays for students, which might be higher graded than human made essays (Herbold et al., 2023). These developments are not just for scientific or more professional aspects, but it has also been shown that ChatGPT 3.5 is assessed to be funnier than human written jokes by 63-87% (Gorenz & Schwarz, 2024). This shows a certain competition between humans and AI in more artistic aspects, as some AI art is indistinguishable from human art and people assign a high artistic value to AI art (Elgammal et al., 2017). Which then leads to the consequence that AI does not have a negative impact on the production of artistic products, even if it does not necessarily add things to it either. Logically this results in a heightened integration of AI into the arts, which is supposed to enhance acceptance (Tigre Moura et al., 2023). Yet people are less willing to accept AI when it comes to typically human tasks. The aspects of logic and rationality are more likely shared with machines, but emotion related aspects, which are more subjective, AI/algorithms get push back from humans. As long as the task is objective, then algorithms/AI are more trusted (Castelo et al., 2019).

Similarly, AI has had an influence in music for a number of years, while it is a secure part of music streaming platforms like Spotify or Pandora, who use AI to recommend music to the listeners (Shank et al., 2023). In music itself it has been a part for longer through algorithms like synthesizer and EDM software, but also influencing music itself with AI music generation platforms, like Suno, or live performances like Google's Magenta project. Through this these musicians, that are working with AI and the software, that are finding the benefits of AI and new ways to use and interact with AI to create and perform (Hong et al., 2022). That means a greater shift to AI created music, even though some professionals and lay people are hesitant to adopt it (Shank et al., 2023). The adaptation of such AI seems to be rising, since some music societies are recognizing AI virtual composer as official authors (Hong et al., 2022). Similarly, Hatsune Miku, a virtual, holographic projection, which has sold out concerts and over 100000 songs (Ansani et al., 2025). Liang et al. (2017) showed that ordinary people can not reliably distinguish between human and AI generated content, mentioning the guessing chance between generated pieces of music by BachBot and actual music from Bach. Even personally the progress that is being made in AI music generation sides like Suno is remarkable, going from easier to detect AI music in version 3.5 to a much improved and human like composition in version 4. This leads us to investigate what the effect of authorship information is on the emotional response to music and how it is being moderated by AI-Bias.

Emotional Response to Music

Emotional response is the response in a wide variety of emotions, be it tenderness, joyfulness but also sadness (Lykartsis et al., 2017). Listening to music is therefore a very core human activity, that reaches all emotions (Lamont & Loveday, 2020), and so the listening

process itself is driven by emotional regulation. This in combination with memories and feelings, the music becomes an extension of oneself as the music represents parts of human communication (Lamont & Loveday, 2020). This emotional experience is influenced not only by memory, but also by the situational context factors, how the music was produced and the inclusion of different senses to experience the music (Tigre Moura et al., 2023). Furthermore, the influence of anthropocentrism on our emotional experience of music can not be understated, since it is influenced by the cognitive aspect and it in combination with creative perception leads to a higher emotional response (Millet et al., 2023). Additionally liking is influenced by psychological characteristics of the composer, meaning a more similar personality leads to higher liking (Greenberg et al., 2021). This influence of the composer characteristics has also been shown, when the music was made by AI and people also had strong negative responses towards the AI (Lamont & Loveday, 2020). Through this another factor seems to be influencing emotional response, namely authorship information.

Authorship Information

Authorship information is the information that is known about the author. The influence it has is different, since for example a famous author/artist influences the perception of the art as higher quality, but not necessarily with greater liking and arousal. Yet it is also shown to influence liking positively between a famous and non famous artist (Kaube & Rahman, 2024). Further studies show that negative biographical information resulted in less feelings of arousal and judgement of lower quality, compared to neutral information, showing that it does not only affect superficial perception, but also to an emotional depth (Kaube & Rahman, 2024). Shank et al. (2023) additionally showed that the aesthetic appeal is influenced by the composer/performer of the music and that the preference in music depends on contextual and non-music related

factors. Other studies also show, that knowing that the music was human made music, resulted in it being rated more positively, authentic and more preferred than AI music, additionally this resulted in lower evoked emotions (Agudo et al., 2022). Which leads to the hypothesis that we predict a stronger emotional response in people, when they believe that the song was created by a human, than when it was created by a human working with AI or fully made by AI.

Shank et al. (2023) further shows that music that was supposed to be human sounding was liked less when they were told it was human. Meaning that the opinion about AI, namely AI-Bias seem to have an influence on the relationship between authorship information and emotional response.

AI-Bias

AI-Bias can be understood as the general attitude towards AI, that is likely to play a role in the acceptance of AI (Schepman & Rodway, 2020). Because the AI created content has been shown to be sometimes indistinguishable from human made content, it might be liked less just because it is AI made (White et al., 2025) However the more the AI is seen as creative, the less art will be associated with human work, which might AI be more accepted (Agudo et al., 2022). This creativity is for now mostly seen in combination with the subjectivity as art, where it can be judged more easily because it is AI. Such judgements extend to cognitive but also emotional ways (Millet et al., 2023). In the study of Agudo et al. (2022) the participants showed lower evoked emotions and biases about the creativity of AI in auditory art, therefore a stronger emotional arousal was present when it was believed to be human made. Additionally, it showed that higher acceptance of creativity of AI was correlated with emotions. White et al. (2025) adds to that by reporting that AI music is seen as less expressive and also evokes less emotions, while

being liked equally. This leads to the hypothesis that we predict for people high in AI Bias, that they show a stronger emotional response when they believe the music is made by humans, than when it is made by a human working with AI (hybrid) or fully made by AI; whereas we predicted that people low in AI Bias would not have this effect or much smaller.

The Present Study

This study adds to previous findings by focusing of only musical performances, since Ansani et al. (2025) showed a relationship between authorship information and emotional valence that is moderated by attitudes towards AI, but it includes video, which can influence the participant into being more aware of the non-human part of the performance, as that can influence the emotional response (Tigre Moura et al., 2023). The integration of a more granular moderation interaction also expands on the current concept. It additionally adds to Ansani et al.'s work, by using unknown music, by creating our own with our own text but AI generated music, so the effect of knowing the music would not play a role. Shank et al. (2023) study showed that participants assume electronic music as more AI and classical music as more human, so we used the middle with a generic pop song, hopefully mitigating such implicit associations. Furthermore, White et al. (2025) showed that emotional response was influenced by source, especially AI and human, so we add to this by adding a third condition, the hybrid condition in order to find possible effects between fully human and fully AI.

Method

Participants

Initially our data set consisted of 155 cases, but some of these cases failed to meet our exclusion criteria. These exclusion criteria were put in place in order to verify that the

participants took seriously and consciously part in this study and completed it, so the data could be used. One of those criteria is that they finished and with that completed the seriousness check, since otherwise these cases would be seen as incomplete. This is because we could not be sure that the participant took part in the study seriously, which lead to 45 cases being excluded from the dataset. The reason behind this might be of some participants being in the wrong environment or first wanting to see the study before filling it out later. This is supported by the fact that only twelve out of 45 got to the manipulation, while only one of them answered some questions after the manipulation. Which resulted in 110 cases answering the seriousness question, where they were asked if they took part seriously in the study or not. Each case passed this exclusion criterion and in the next step we removed 27 cases, because they did not manage to pass the attention check. Additionally, three cases were removed because they inquired about their data to be removed, which leaves 80 cases. All participants were recruited by the students via text, talking, email and providing a link to the study, which lead to a total of 80 participants (57.5% Female, 42.25% Male, 0% nonbinary/other) that took part in this study with a mean age of 31.41 years ($SD = 14.49$, range between 18 and 75).

Design

In this study we used a between-subject design with one independent variable, authorship information, consisting of three levels (fully human, hybrid, and fully AI). The participants were randomly assigned to one of the three conditions. Emotional response was measured as the dependent variable and the moderator was AI-Bias. This study was part of a bigger project consisting of multiple different dependent variables and moderators. For a list of all the variables that were measured, see Table 1 in Appendix A.

Materials and Procedure

The study was approved by the Ethical Committee at the University of Groningen and it was conducted in Qualtrics. At the beginning of the study the participants were introduced shortly about the essence of the study. Here the participants were given a cover story about the study being about the experience of music to humans compared to AI. This was done in order to minimize the influence of possible biases in the answering of the questions. Particularly to justify the use of an AI-Bias questionnaire, while not making the participants suspicious about AI usage in this study.

AI Bias

Following the introduction, the moderator questions about AI-Bias were measured using a modified version of the GAAIS (Schepman & Rodway, 2023) questionnaire, which measures the general attitude towards AI ($\alpha = 0.83$). It consists of six positive and six negative questions about AI on a 7-point scale (strongly disagree to strongly agree) with for example a positive statement like “Artificial intelligence can provide new economic opportunities for this country.” or a negative statement like “I think artificial intelligence is dangerous.“.

Authorship information manipulation

After answering these questions, the participants arrived at the manipulation where they were shown one of the three conditions before listening to the song. The first condition is the fully AI where the participant was told that the song is performed by Victoria Bellamy, a virtual musician, created by the AI platform Suno and that it was completely AI generated. The second condition was the hybrid condition where singer and songwriter Victoria Bellamy, who writes the lyrics and used AI to make the music in her liking. The third condition is the fully Human

where the singer songwriter Victoria Bellamy who writes, makes and performs her songs entirely by herself. The condition contained as similar and as limited information as possible in order to not induce any additional biases due to the information the different conditions entailed. This was followed by the participants listening to the 90 seconds long snippet from a song that was initially three minutes and 23 seconds long and was created with the AI music creation platform Suno. The song was chosen as a generic pop song about a breakup in order to be in line with current trends and therefore to be liked by a broader audience. The choice of a 90 second snippet was made in order to give the participants enough time to engage with the song, while not being too long to keep the questionnaire shorter and to not have participants lose focus, in case the music style was not to their taste. During the first 90 seconds when being presented with the song there was no button shown in order to continue, after 90 seconds it appeared. This was done in order to hinder participants from accidentally or purposefully skipping listening to the song. This way they were incentivized to listen and pay attention to it.

Emotional response

After listening to the song and continuing, the participants were shown the questionnaire of the dependent variable, emotional response, through a modified version of the GEMS (Geneva Emotional Music Scale, Zentner et al., 2008) ($\alpha = 0.83$). The GEMS includes nine questions about how the music made you feel, for example “The music made me feel wonder (e.g. filled with wonder, allure, moved).”, which were rated by a 7-point scale (strongly disagree to strongly agree).

Attention Check

After the questionnaires, the participants had to perform an attention check, where they were asked to recall who the song was made by. The answer options consisted of the three conditions (“a singer -songwriter from the UK who writes and composes her own songs”, “a singer -songwriter from the UK who collaborates with AI tools in her active process.”, “a virtual AI musician created entirely by the AI platform Suno.”), matching the authorship information given before listening to the song. If they failed to answer the question correctly, they would be excluded since it showed that they did not pay attention to the study. On the same page they were asked for any comment about the song, their gender, age and lastly the seriousness check, if they have taken part seriously in the study. Following this they were debriefed, that they were misled in the introduction and that the study is not about human and AI experience to music but rather about how authorship information influences how we feel about the music we listen to. Additionally they were told about the different conditions and that the song text was made by us and the music made by AI. They got informed about the reasoning behind the misleading, that knowing what it was about would have influenced the responses. An apology followed with an option to request for their data to be removed and they were given an email if they had any questions. Lastly they were thanked for their participation.

Results

The data was analyzed in SPSS and using the PROCESS(Hayes, 2013) macro. The assumptions were checked and met.

The first hypothesis was, that we predicted a stronger emotional response in people, when they believe that the song was created by a human, than when it was created by a human working with AI or fully made by AI. The second hypothesis was, that we predicted for people

high in AI Bias, that they show a stronger emotional response when they believe the music is made by humans, than when it is made by a human working with AI (hybrid) or fully made by AI; whereas we predicted that people low in AI Bias would not have this effect or much smaller. To test these hypothesis we ran the analysis with the authorship information as the independent variable, emotional response as the dependent variable and AI-Bias as the moderator.

In line with our first hypothesis, we found that authorship information significantly affected the emotional response. As expected, participant in the fully human condition ($M = 2.94$, $SD = 0.88$) had a stronger emotional response than those in the hybrid condition ($M = 2.38$, $SD = 0.869$, $t(74) = -2.05$, $p = 0.04$). Similarly they also had a significantly stronger emotional response than those in the fully AI condition ($M = 2.35$, $SD = 1.03$, $t(74) = -2.09$, $p = 0.04$).

Contrary to the second hypothesis, there was no main effect of the AI Bias on the fully human condition ($M = 4.06$, $SD = 0.99$, $t(74) = -0.86$, $p = 0.39$) and no interaction effect of the AI Bias on the hybrid condition ($M = 4.30$, $SD = 0.88$, $t(74) = 0.44$, $p = 0.66$) or fully AI condition ($M = 4.18$, $SD = 0.74$, $t(74) = 1.02$, $p = 0.31$). Meaning that AI Bias did not moderate a higher emotional response when people believed they were in the fully human condition compared to hybrid or fully AI. Similarly the opposite of that effect can then also not be found for people low in AI Bias. When looking into the analysis of conditional effects for people high in AI Bias (-0.86 , high values mean greater liking of AI, so high AI Bias is a negative), they show an almost significant moderation effect for the hybrid condition ($t(74) = -1.82$, $p = 0.07$), while it showed significant for the fully AI condition ($t(74) = -2.27$, $p = 0.03$). This means that the participants in the conditionally high AI Bias group showed a stronger emotional response when they believe that the song was made by a human, than when it is made by a human working with AI (hybrid) or fully made by AI. When analyzing the conditional effects for people

low in AI Bias (0.86), these moderation effects did not occur for the neither the hybrid condition ($t(74) = -1.19, p = 0.24$) nor the fully AI condition ($t(74) = -0.70, p = 0.49$). Which shows that the people low in AI Bias do not have this moderation effect of AI Bias on the emotional response. Even though this seems in line with the second hypothesis, these are the conditional effects and not the moderation effects.

Discussion

Our first hypothesis that we predicted a stronger emotional response in people, when they believe that the song was created by a human, than when it was created by a human working with AI or fully made by AI, was supported. Which is not surprising considering that White et al. (2025) found similar results on authorship information's effect on emotional response when comparing AI and human made music. Namely that AI condition leads to less expressive and lower evoked emotions, while also liking the music equally. Further support brings Agudo et al. (2022) where they show that artworks elicit lower emotions when it is named as AI compared to human, where they elicit stronger emotions and this has also been replicated for music.

Yet it was a bit surprising that there was no moderation effect of AI-Bias since White et al. (2025) seems to show an implicit AI bias, when they do not have the same emotions, but the same liking for AI music. Similarly Hong et al. (2022) showed that the composition process had no effect on the perception of the music. Yet this could also exclude emotional response, since it can be influenced by the cognitive and creative perception of the composer (Millet et al., 2023). Agudo et al. (2022) supports that by showing that acceptance of creativity is correlated to emotions. But this might explain the conditional response, namely the high and low AI bias groups were further analyzed and they showed a pattern in line with the second hypothesis. The

acceptance of AI and creativity might have influence the low AI group into not having a moderating effect and the relationship between authorship information and emotional response. In line with this pattern is the adopting of new innovations by technophiles (Tigre Moura et al., 2023), which might have a better view on AI and that people who see AI music generators as musician gave them higher ratings (Hong et al., 2022). The opposite pattern of a moderating effect of AI bias on the relationship between authorship information and emotional response can be seen in the high AI bias conditional group, it is supported by the moderation of AI bias found by Ansani et al. (2025) and by Tigre Moura et al. (2023), showing that decreased quality is perceived as AI involvement rises, which could lead to implications about emotional response. These patterns remain conditional and do not support any moderating effect of AI bias on authorship information and emotional response. That might be explained due to the low number of participants, 80, while we were hoping for over 200, we therefore lose power and through that possible effects of AI bias. Furthermore the song itself might have been an issue, the genre and type of generic text might be well thought but it also lead to low emotional engagement (human condition ($M = 2.94$, $SD = 0.88$)). It barely reaches three out of possible seven. Such intangible product are more likely to have vague consumer expectations and therefore are hard to get right, due to the subjectivity (Tigre Moura et al., 2023). Another possibility is that the music sounded to AI as described in Shank et al. (2023), but the music itself was thought to be convincing by all members and participants only commented about AI music when they were in the AI condition, so we should not assume that the song sounded AI.

We therefore expand existing theories, by including only music, namely unknown music that has been created by human text and AI music, showing that the relationship between authorship information and emotional response still holds true for these circumstances.

Furthermore we expand the theory by including the hybrid condition which was almost identical to the AI condition, showing that the difference between hybrid and fully AI is almost non-existent in the eyes of the participants. Regarding the music, we showed that the relationship is also to be seen in generic pop music, so the genre did not seem to have an influence on the music perception neither towards AI nor human. Lastly we showed there is likely no moderation by AI-Bias even though there are patterns, but the effect must be either small or be effected by other parts that could not be measured by our questionnaire.

Limitations

One limitation might be that the attention checks were failed often, so then it would be interesting to see how many of those cases were then later participants, but due to anonymity this can not be checked. Yet the second part of participants failing the attention check, shows that the condition could have been shown for longer, possibly again with a timer to incentivize reading, so the participants are aware of their condition. Another apart is that the recruited participants are friends and family that are from different countries so as Lykartsis et al. (2013) describes it, that non native speakers might not grasps the fine nuances of lyrics and sound. This could be addressed by only asking highly experienced, and native speakers of English and also by making them listen to the song multiple times. Additionally the friends and family selection influences the generalizability overall. All limitations are not expected to have a large influence.

Future Research

Further research should look further into the effects of AI bias, moderation found by Ansani et al. (2025) and the pattern found, show that there is a possible moderation that should further be explored. In addition to the pattern found and the correlation of creativity and

acceptance of AI (Agudo et al., 2022), it would be interesting to investigate further how this has developed since AI has become better and more involved in our daily lives. Regarding to both points it another future study should investigate particularly such moderation effects on musicians, since they are more experienced and when the factor of possible job loss is associated with AI, but also AI as a helping tool, there could be some more extreme views of AI.

Conclusion

Our study showed that our prediction of a stronger emotional response in people, when they believe that the song was created by a human, than when it was created by a human working with AI or fully made by AI, is supported by our findings and corresponding theory. It adds to the existing theory by showing that the relationship of authorship information and emotional response is true for unknown music of the pop genre and that the condition of hybrid and fully AI are very close together in respect to emotional response. Furthermore we showed that a moderation effect of AI bias on the relationship of authorship information and emotional response can not be shown, even though patterns are found. Clear theory and evidence if the effect exist or not is yet unsure, but tends towards not existing/being marginal.

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Appendix A

Table 1

All measured variables in the complete study

Moderator variables	Dependent variable
Openness to experience	Emotional response
Interest of music in daily life	Perceived originality
AI bias	Emotional response
Musical expertise	Perceived creativity
Importance of lyrics	Appreciation
Openness to experience	Evaluation of the music