UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Emotional Resonance in Film: Disentangling the Effects of Music on Moral Judgments in Dilemmas

Permalink

https://escholarship.org/uc/item/1fs6q18w

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 47(0)

Authors

Wang, Zhiying
Yu, Zihua
Chen, Rongrong

Publication Date

2025

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

Emotional Resonance in Film: Disentangling the Effects of Music on Moral Judgments in Dilemmas

Zhiying Wang (christywang03@gmail.com)
Beijing Normal-Hong Kong Baptist University,
Zhuhai 519087, China

Zihua Yu (zihua_yu2022@163.com)
Beijing Normal-Hong Kong Baptist University
Zhuhai 519087, China

Rongrong Chen* (rainerrchen@uic.edu.cn)
Guangdong Provincial/Zhuhai Key Laboratory IRADS,
Beijing Normal-Hong Kong Baptist University, Zhuhai 519087, China

Abstract

The Social Intuitionist Model emphasizes the primary role of moral intuitions, rather than analytical moral reasoning, in forming moral judgments. In line with this model, moral emotions, rather than reasoning, are strongly associated with moral actions. This study explored the impact of emotionally evocative film excerpts, specifically those featuring moral dilemmas within varying contexts of social distance, on moral judgment processes. We invited 88 college students to view excerpts from foreign movies and their Chinese remakes under three music conditions: no music, positive music, and negative music. Participants evaluated the characters' actions based on three moral dimensions: Harm, Fairness, and Authority, while also rating their emotional responses. The results indicated that positive music during moral dilemmas elicited strong negative emotional responses. Additionally, viewers judged the protagonist's actions more harshly regarding fairness and placed greater emphasis on social order and authority in Chinese compared to foreign movie excerpts, regardless of the music's emotional valence.

Keywords: moral judgment, social intuitionist model, construal level theory, moral emotion, moral intuition

Introduction

Moral judgment is the process of detecting and determining whether certain actions are morally justified. It is a fundamental aspect of human socialization and involves the evaluation of behavior and decision-making in the realm of ethic (Avramova & Inbar, 2013; Killen & Dahl, 2021). David Hume, in particular, proposed that moral judgments are akin to aesthetic judgments: they are derived from sentiment rather than reason. According to Hume, we acquire moral knowledge through an "*immediate feeling and finer internal sense*", not through "*a chain of argument and induction*" (Hume, 1960). In line with this perspective, the Social Intuitionist Model suggests that moral judgments are based on rapid moral intuitions, followed by slower moral reasoning that resembles the hypothesis-testing process used by scientists (Haidt, 2001). According to this model, moral intuition (including moral emotion) plays a primary role in moral judgment, overshadowing analytical moral reasoning. Additionally, the Construal Level Theory suggests that the perceived proximity or distance from individuals involved in a situation influences how people evaluate those situations (Liberman & Trope, 2008). This principle extends to the moral domain, where perceived social distance affects how individuals assess the ethical implications of actions in moral dilemmas (Lo et al., 2019). Last, Moral judgments take into account not only the outcomes of actions but also the intentions behind them (Malle et al., 2014).

Building on these prior insights on moral judgment, this study aims to explore the influence of emotionally evocative film excerpts, particularly those featuring moral dilemmas within varying contexts of social distance, on moral judgment processes. By examining how music that elicits emotional engagement shapes moral intuition, this research seeks to offer actionable insights for the design of future creative media. Additionally, it aims to enhance our understanding of human behavior in ethically complex scenarios.

Social Intuitionist Model

The Social Intuitionist Model argues against the conventional Rationalist Model, suggesting that moral judgments primarily arise from rapid, intuitive processes rather than deliberate reasoning (Haidt, 2001). Moral intuitions are fundamental, while reasoning serves as a post hoc justification for those intuitions. Previous studies have indicated a weak link between moral action and moral reasoning, whereas moral actions are strongly associated with moral emotions. Given that music is renowned for its ability to swiftly elicit emotions, it emerges as a potentially important factor in shaping moral intuitions.

Research has demonstrated that background movie music can significantly influence audience emotions and their connections with characters, thereby affecting both empathic concern and empathic accuracy (Hoeckner et al., 2011; Tan et al., 2017). For instance, suspenseful music can heighten emotional arousal and critical analysis, leading to stricter moral evaluations and reduced character likability. Conversely, positive-valence music can paradoxically increase tolerance for unethical behavior by overriding analytical processing (Ziv et al., 2011).

In this study, we aimed to examine how music evokes emotions and influences moral judgments. To do this, we replaced the original soundtrack of morally controversial

* Zhiying Wang and Zihua Yu made equal contributions. Rongrong Chen is the Corresponding author.

In D. Barner, N.R. Bramley, A. Ruggeri and C.M. Walker (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society* ©2025 the author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY).

movie excerpts with either positive or negative music. We then observed the participants' emotional responses and their subsequent moral judgments. This design allows us to directly investigate the relationship between emotional tone and moral judgment, leading us to the following research question:

RQ1: How does emotionally evocative background music influence moral judgments regarding characters' actions in morally controversial film excerpts?

Construal Level Theory

Construal Level Theory suggests that individuals begin their understanding of a situation from their direct experiences of the here and now. To move beyond this initial point, individuals create mental models of things that are not directly experienced. The further removed an object is from direct experience, the higher the level of construal becomes (Liberman & Trope, 2008). In line with this framework, close social ties (lower-level construal) tend to elicit context-specific judgments, whereas distant relationships (higher-level construal), encourage more abstract and generalized moral evaluations that can be applied across a wide range of scenarios (Lo et al., 2019).

However, previous research has also found that increased social distance can lead to a reduction in moral strictness, with individuals becoming more accepting of unfair behavior toward strangers (Tumasjan et al., 2010). When making decisions on behalf of strangers (greater social distance and consequently a higher-level construal), participants become less sensitive to fairness in moral behavior and are often more willing to accept unfair proposals. This effect appears to be particularly pronounced among male groups (Kim et al., 2013; Szczepaniak et al., 2024).

To investigate whether higher-level construal results in stricter or more lenient moral judgments, and how this process is influenced by music, we presented participants with movie excerpts depicting the same moral dilemma featuring characters of different races (i.e., foreign films and their Chinese remakes). The research question posed was:

RQ2: How does social distance, manipulated through the racial similarity between movie characters and the audience, affect moral judgments in moral dilemmas?

Path Model of Blame

An action is generally considered intentional when it is deliberately planned and aimed at a foreseeable outcome (Forguson, 1989). Moral judgments take into account not only the outcomes of actions but also the intentions behind them, including the beliefs and desires of the protagonist. This is illustrated in the Path Model of Blame (Malle et al., 2014), which identifies intentionality as a crucial determinant of moral responsibility and influences how observers assign blame. This model is supported by extensive literature; for instance, Young et al. (2007) and Cushman (2008) demonstrated that Theory of Mind processes, especially intention attribution, play a central role in moral evaluations, particularly in scenarios involving failed attempts to cause harm. Duan et al. (2012) also highlight the cognitive integration of intentionality and causality in moral responsibility judgments. These findings underscore the complexity of moral reasoning and its sensitivity to the intentional components of narratives.

Accordingly, our study incorporated both intentional and unintentional harmful actions in the stimuli and compared participants' moral judgments between these two conditions. Specifically, we posed the following research question:

RQ3: How does perceived intentionality (intentional vs. unintentional actions) influence moral judgments in emotionally evocative film excerpts, and how might this be shaped by emotional background music?

Methods

Participants

We invited ninety-two college students (51 females and 41 males, aged 18-23 years) to this study using a snowball sampling method. Participants who scored above 25 on the Beck Depression Inventory (Beck et al., 1996) or above 60 on the Positive and Negative Affective Scales (Huang et al., 2003; Watson et al., 1988) were excluded to minimize bias from severe depression or mood fluctuations that might affect data interpretation. This process resulted in the exclusion of four individuals, leaving a total of 88 participants (49 females and 39 males). This study adhered to the ethical principles outlined by the Institutional Ethics Review Committee. Prior to the experiment, all participants provided written informed consent.

Moral Dilemmas in Film Excerpts

We selected two sets of morally controversial film scenes depicting complex ethical dilemmas (Figure 1).



Figure 1: Illustration of the two moral dilemma excerpts from two foreign films (right panel) and their Chinese remakes (left panel).

The **Unintentional Action Set**, characterized by a lack of both belief and desire in the harmful action, features the Indian film *Drishyam* (2015) and its Chinese remake *Killing by Mistake I* (2019). These excerpts portray a scenario in which a mother and daughter accidentally kill a blackmailer

in self-defense and subsequently conceal the body. The **Intentional Action Set** includes the American film (*John Q*, 2002) and its Chinese remake (*Killing by Mistake II*, 2021), depicting a father who takes hostages at a hospital to demand a heart transplant for his critically ill son, following the hospital's refusal.

We used CapCut (Shenzhen FaceMeng Technology Co., China) to edit the excerpts by trimming, modifying background music, and adding captions.

Emotion Induction by Music

Following Kreutz et al. (2007), we selected two classical pieces of music to evoke distinct emotions. Specifically, we used Haydn's Symphony No. 70 in D major to elicit positive emotions, such as happiness, and Fauré's Élegie, Op. 24 in C minor for violoncello and orchestra to evoke negative emotions, such as sadness.

Emotional Response Assessment

After watching each film excerpt, participants rated their emotional states across eleven dimensions using a 7-point Likert scale (Steffens, 2020). These dimensions included *Aggression*, *Anger*, *Connectedness*, *Fear*, *Happiness*, *Peacefulness*, *Relaxation*, *Reflectiveness*, *Sadness*, *Tenderness/Love*, *and Tension*. The Cronbach's alpha coefficients for these dimensions in four conditions ranged from 0.81 to 0.91.

Moral Judgment Assessment

We employed and adapted Chinese version of the Moral Foundations Questionnaire (MFQ) (Graham et al., 2009; Graham et al., 2011; Zhang & Li, 2015) to assess participants' moral judgments concerning each film excerpt across three dimensions: (1) Harm, (2) Fairness, and (3) Authority. This assessment comprised 14 items, each rated on a 6-point Likert scale (see Appendix I for details). Specifically, the Harm dimension emphasizes individuals' emotional perceptions of behaviors within moral events. The Fairness dimension emphasizes perceptions of social justice, while the Authority dimension focuses on judgments regarding social traditions and rules. A higher total score in each dimension indicates stricter moral judgments. In our dataset, the Cronbach's alpha coefficients for these dimensions ranged from 0.65 to 0.70.

Experimental Procedure

To avoid overexposure to the film excerpts, which could impact viewers' emotional responses and moral judgments, each participant viewed the same excerpts a maximum of twice (see Figure 2). Accordingly, we randomly assigned participants to one of four conditions, with 22 participants in each group: 1. Unintentional Action Set (no music followed by positive music); 2. Unintentional Action Set (no music followed by negative music); 3. Intentional Action Set (no music followed by positive music); and 4. Intentional Action Set (no music followed by negative music). After watching each excerpt, participants evaluated their emotional responses and moral judgments regarding the protagonist's behavior. The experiment was conducted online using the *Credamo* platform and took approximately 30 minutes to complete.

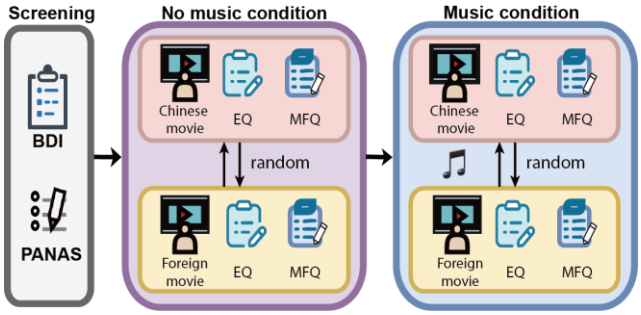


Figure 2: Illustration of the experimental procedure. After an initial screening, participants viewed a film excerpt depicting moral dilemmas, either from a Chinese film or a foreign film, without any background music. They then provided their emotional and moral evaluations. This process was repeated using the same excerpts, but this time with either positive or negative background music.

Data Analysis

To confirm the effectiveness of music in inducing emotions, we conducted paired sample t-tests to examine the changes in emotional responses between the music and non-music conditions.

To address **RQ1**, we conducted 2 (participant group) × 2 (music intervention) mixed analysis of variance (ANOVA) to determine if positive or negative music prompted stricter or more lenient decisions along three moral dimensions.

As all participants viewed the movie excerpts without music, we conducted paired sample t-tests to examine the effects of social distance (i.e., Chinese vs. Foreign movie excerpts) on moral judgment (**RQ2**). We had distinct participant groups viewing movie clips with either positive or background music. Therefore, we employed a 2 (social distance: Chinese vs. Foreign) × 2 (Music: positive vs. negative) ANOVA to investigate the interaction effect between music and social distance.

To address **RQ3**, we conducted separate independent t-tests to further explore whether participants' moral judgments differ when exposed to different types of intentional harmful actions across the three music conditions.

Last, we conducted Pearson's correlation analyses to uncover the association between emotional response and moral judgment.

Transparency and Openness

The data and stimulus materials of this study are available at https://osf.io/pyvft.

Results

Music Induced Emotion

Compared to the no-music condition, when movie excerpts were displayed with negative background music, participants showed 17.2% increase in aggression 43.6% increase in

reflectiveness and 32.6% increase in sadness ($t \geq 2.73$, $p \leq .008$, Cohen's $d \geq .37$, respectively) and 20.4% decrease in peacefulness ($t = 2.17$, $p < .05$, $d = .25$). In contrast, when film excerpts were played with positive background music, participants showed significant reduction in aggression, anger, connectedness, fear, and sadness ($t \geq 4.65$, $p < .001$, $d \geq .42$), and significant increase in happiness, relaxation, and tension ($t \geq 3.03$, $p \leq .003$, $d \geq .34$, see Appendix II for details).

Moral Judgments Across Music Conditions

Regardless of the emotional valence of the music, participants perceived higher levels of harm under the music condition compared to the no music condition ($F(1, 87) = 20.61$, $p < .001$, $\eta^2_p = .19$). No main effect was found for participant groups ($p = .20$). The interaction between music condition and participant group was significant ($F(1, 87) = 5.55$, $p = .021$, $\eta^2_p = .061$). Further post hoc comparisons using Bonferroni-corrected estimated marginal means indicated that the presence of negative music resulted in stricter moral judgments regarding harm violations (18.47 ± 3.33) compared to the no music condition (16.87 ± 2.86, $p = .046$). Additionally, within the two music conditions, the negative music group (18.47 ± 3.33) rated these violations significantly more harshly than the positive music group (17.22 ± 2.92, $p < .001$) (see Figure 3a).

Similarly, regardless of the emotional valence, the moral judgments along the Fairness dimension were significantly higher in the music condition compared with the no music condition ($F(1, 87) = 8.31$, $p = .005$, $\eta^2_p = .088$). However, neither main effect of group ($p = .855$) nor interaction ($p = .388$) was significant (see Figure 3b).

In the Authority dimension, we did not find any significant main effects for the music condition ($p = .87$), participant group ($p = .38$), or their interaction ($p = .52$) (see Figure 3c).

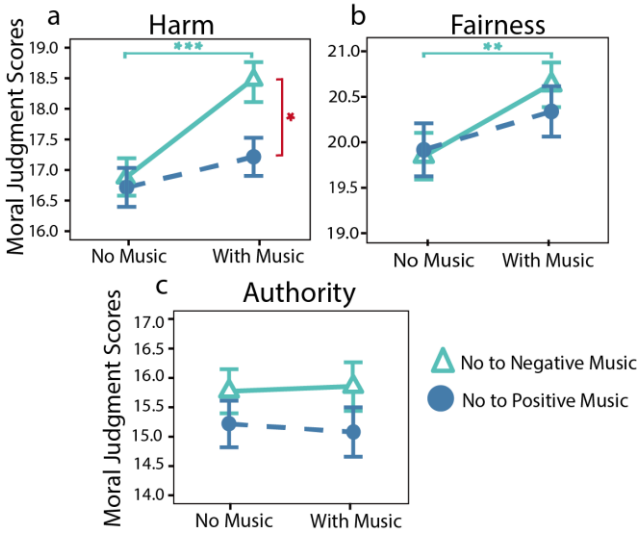


Figure 3: Comparison of moral judgments across three dimensions, (a) Harm, (b) Fairness, and (c) Authority, in conditions with no music and with either negative or positive music cues. ** $p < .01$, and *** $p < .001$.

Moral Judgments Across Chinese and Foreign Movie Excerpts

When the movie excerpts were displayed without music (see Figure 4a), participants' moral judgments of Fairness increased by approximately 8.85% when viewing the Chinese movie excerpts compared to the foreign ones (paired $t(87) = 5.31$, $p < .001$, $d = 0.57$). In contrast, moral judgments related to the Authority dimension decreased by 4.45% when participants viewed the Chinese movie excerpts compared to the foreign ones (paired $t(87) = -2.18$, $p = .032$, $d = 0.23$). Participants did not show any differences in their perceived harm between the Chinese and foreign movie excerpts ($p = .27$).

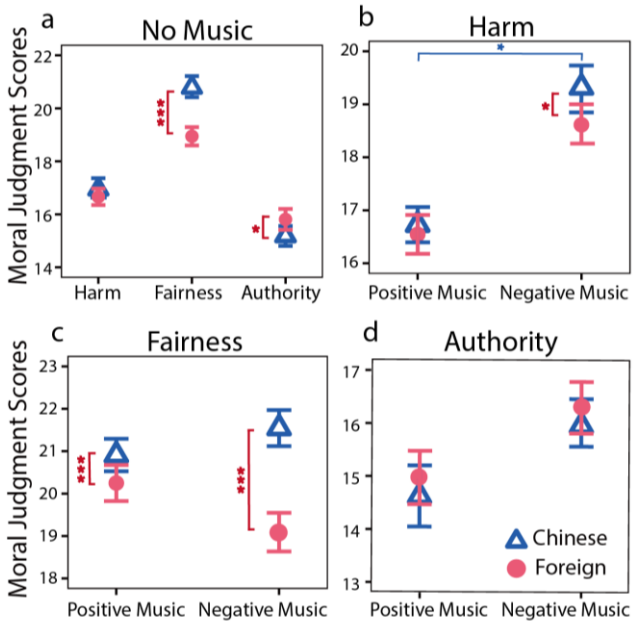


Figure 4: (a) Participants' moral judgments in the absence of music. (b-d) Participants' moral judgments when movie excerpts were accompanied by either positive or negative music. * $p < .05$, ** $p < .01$, and *** $p < .001$.

When we introduced background music to the movie excerpts, we observed distinct patterns.

In the Harm dimension, the main effect of music was significant ($F(1, 86) = 19.00$, $p < .001$, $\eta^2_p = .18$), indicating that there was generally stricter moral judgment regarding harm in the negative music conditions compared to the positive music conditions, across both Chinese and foreign films. Additionally, there was a significant interaction between music and social distance ($F(1, 86) = 4.15$, $p = .045$, $\eta^2_p = .046$). However, the main effect of social distance was not significant ($p = .16$). Further Bonferroni-corrected post hoc comparisons revealed that, under negative music, Chinese movie excerpts (18.91 ± 3.46) led to higher moral judgment scores compared to foreign ones (18.02 ± 3.17, $p = .017$, see Figure 4b).

In the Fairness dimension, consistent with the no music condition, social distance yielded a significant main effect ($F(1, 86) = 29.36$, $p < .001$, $\eta^2_p = 0.26$), the moral judgment

scores for Chinese movie are higher than foreign movie in both positive and negative music conditions (see Figure 4c). Neither the main effect of music condition (p = .65) nor the interaction between music and social distance was significant (p = .723).

Lastly, in the Authority dimension, we did not observe any significant main effects for either social distance (p = .10), or music (p = .34), or their interaction (p = .61, see Figure 4d).

Moral Judgments Across Intentional and Unintentional Action Sets

Moral evaluations were significantly influenced by perceived intentionality across all three music conditions. In the no music condition, participants rated intentional actions more harshly than unintentional ones in both the Harm (t(174) = 3.19, p < .01, d = 0.48), and Authority (t(174) = 2.733, p = .008, d = 0.41) dimensions. No significant difference emerged for Fairness. Similarly, in both positive and negative music conditions, intentional actions were judged more harshly in the Harm dimension (t(87) = 4.760, p < .001, d = 0.722; t(87) = 2.723, p = 0.008, d = 0.413), while no significant effects emerged for Fairness or Authority (p > .10).

Emotion and Moral Judgment

When viewing Chinese movie excerpts without music, Fairness judgment was positively correlated with *Sadness* (r = .23, p < .05), while Authority was correlated with *Sadness* (r = .28, p < .01) and *Tenderness/love* (r = .30, p < .05, see Appendix III for the details of the correlation analyses). In contrast, when viewing foreign excerpts without music, Fairness was negatively correlated with *Reflectiveness* (r = -.28, p < .01).

When negative music was played as the background music for Chinese movie excerpts, perceived Harm was positively correlated with *Anger* (r = .34, p < .05), perceived Authority was positively correlated with *Tension* (r = .35, p < .05) and perceived Fairness was positively correlated with *Reflectiveness* (r = .32, p < .05). In contrast, no such association was observed for the foreign movie excerpts.

When positive music served as the background, we observed significant associations between emotional responses and moral judgments for both Chinese and foreign movie excerpts. In the case of Chinese movies, perceived Harm was correlated with *Aggression*, *Anger*, and *Connectedness* ($r \geq .30$, p < .05). Additionally, perceived Authority showed a positive association with Peacefulness (r = .33, p < .05). Similarly, for foreign films, perceived Harm was linked to *Anger, Connectedness*, *Sadness*, and *Tension* (r ≥.31, p < .05). Conversely, perceived Authority was negatively associated with *Peacefulness* (r = -.32, p < .05).

Discussion

Consistent with the recent findings highlighting the significant role of emotions in shaping moral judgments, and recognizing music as a powerful emotional regulator (Steffens, 2020), our results confirm that different musical conditions influence moral judgments. This addresses our first research question (RQ1). Specifically, in our study, college students exhibited stricter moral judgments regarding the perceived Harm dimension when watching movie excerpts accompanied by negative background music, compared to conditions with no music or positive music. Interestingly, playing positive music in the background also resulted in stricter judgments on the Harm dimension when compared to the no music condition. This finding contrasts with previous research (e.g., Chen et al. (2024), which suggests that positive emotional states typically lead to more lenient moral judgments.

Regarding RQ2, our study indicates that social proximity impacts perceptions of social equity. Audiences made stricter fairness judgments when viewing Chinese movie excerpts, which aligns with previous research (Bentahila et al., 2021). Conversely, under the Authority dimension, foreign movie excerpts received harsher judgments, challenging some conclusions made by Bentahila et al. (2021) and revealing a complex interplay between music and social distance.

Regarding RQ3, consistent with Cushman (2008), the moral judgments along the Harm dimension were consistently higher for the Intentional Action Set than the Unintentional Action set of the movie excerpts, across all three musical conditions. Below, we discuss the findings in more detail.

Effects of Music on Moral Judgment

Our findings support the Social Intuitionist Model (Haidt, 2001), indicating that emotionally evocative music has a substantial impact on moral judgments, especially regarding the dimensions of Harm and Fairness. Negative music heightened aversion to harmful or unfair behaviors, aligning with the findings of Zeigler-Hill et al. (2013), who discovered that negative emotions intensify aversion to antisocial actions. This underscores the model's emphasis on intuitive, emotion-driven processes in shaping moral judgments.

In contrast, the Authority dimension, which involves more deliberate reasoning and consideration of social norms, remained stable across music conditions. This suggests that while emotional stimuli can influence moral judgments in intuitive domains, their impact on reasoning-based dimensions is limited. This finding highlights the complexity of moral judgment processes and the interplay between intuitive, emotion-driven processes and deliberate reasoning.

Effects of Social Distance on Moral Judgment

Our findings demonstrate that both social distance and emotional background music significantly shape moral judgments. In the Fairness dimension, participants judged foreign film characters more leniently, consistent with research showing reduced moral sensitivity toward distant others (Kim et al., 2013; Szczepaniak et al., 2024). Conversely, in the Authority dimension, stricter evaluations of foreign characters suggest heightened concern for social norms when judging unfamiliar race groups. These patterns align with Construal Level Theory (Liberman & Trope, 2008), which posits that social distance activates higher-level,

abstract construal. Participants may have applied more generalized moral principles when evaluating racially dissimilar (foreign) characters, while domestic characters, perceived as socially closer, elicited more context-sensitive and emotionally engaged judgments.

Importantly, emotional music modulated these effects. Negative music intensified perceived harm for close social targets, suggesting that emotional arousal strengthens context-based moral processing when social proximity is high. This interaction supports the idea that low-level construal, elicited by close social distance, are more susceptible to affective cues (Lo et al., 2019). In contrast, when judging distant others, affective context had a weaker influence, consistent with more abstract and detached moral evaluation. Together, these findings underscore the complex interplay between social cognition and emotion in shaping moral decisions.

Affective Influence on Moral Judgment

Consistent with prior studies, our results indicate that negative music elicited stricter moral judgments in the Harm dimension, intensifying feelings of anger, tension, and reflection. Unexpectedly, positive music also evoked negative emotions such as aggression and sadness in this context, contradicting the expectations set forth by Kreutz et al. (2007). This suggests that incongruent or "contradictory" music, such as positive tones paired with morally disturbing scenes, may amplify emotional and moral responses. For instance, in films like *A Clockwork Orange* (1971), the use of joyful music accompanying violent scenes creates irony and emotional dissonance, which increases viewer discomfort (Gorbman, 1980; Zhuang, 2023). This contrast may lead audiences to interpret the actions as more morally severe. While this explanation remains speculative, it aligns with cinematic techniques that purposefully evoke complex emotional reactions. Further empirical studies are needed to determine whether ironic emotional framing consistently intensifies moral evaluation.

The Role of Intentionality in Moral Judgment

The study confirms that intentionality significantly influences moral judgments, particularly in the Harm dimension, where intentional actions were judged more harshly across all conditions. This finding aligns with the Path Model of Blame (Malle et al., 2014), which emphasize intentionality as a crucial determinant of moral responsibility. The results also suggest that observers assign blame based on perceived intent, consistent with Theory of Mind processes articulated by Young et al. (2007) and Cushman (2008). However, the Fairness and Authority dimensions remained stable, indicating that judgments in these areas may rely more on deliberative reasoning than on emotional intuition. Overall, the findings highlight the importance of considering intentionality in moral evaluations, especially in emotionally evocative contexts.

Limitation and Future Directions

This study offers insights into the relationship between music, emotion, and moral judgment; however, several limitations should be addressed in future research. First, the situational constraints of the study restricted the investigation to immediate moral judgments rather than more profound moral reasoning. Second, the reliance on a homogeneous group of college students from a single cultural background limits the generalizability of the findings. Future research should incorporate a more diverse participant pool to examine cross-cultural differences in moral judgment. Additionally, the exclusive use of classical music may have constrained participants' emotional engagement. Future studies could benefit from exploring the effects of various music genres and culturally familiar music. Finally, the role of dramatic irony in moral reasoning, particularly the dissonance between positive music and morally controversial content, merits further investigation.

Conclusion

This study examined the influence of emotional music on moral judgment by utilizing moral dilemmas depicted in film excerpts. The results revealed that negative music heightened sensitivity to issues of harm and fairness, leading to stricter moral evaluations compared to positive music. Interestingly, positive music unexpectedly resulted in harsher judgments related to harm when compared to the no music condition. This effect may be attributed to the increased ironic incongruity between the pleasant music and the morally controversial actions being portrayed.

Additionally, participants tended to apply stricter fairness standards to protagonists in domestic movies, while they judged authority figures more harshly in foreign movies. This finding suggests that social distance influences perceptions of psychological connection with oneself, resulting in varying moral standards being applied to individuals from different races.

These insights hold significant value for media production and cross-cultural communication, particularly in relation to moral decision-making in scenarios involving ethical dilemmas and contradictory behaviors.

Acknowledgments

Our work is supported by Guangdong Provincial Key Laboratory IRADS (2022B1212010006) and Guangdong Basic and Applied Basic Research Foundation (UICR0600025, UICR0300017). We also extend our gratitude to four anonymous reviewers for their insightful comments and useful suggestions.

References

Avramova, Y. R., & Inbar, Y. (2013). Emotion and moral judgment. *Wiley Interdisciplinary Reviews: Cognitive Science, 4*(2), 169-178. https://doi.org/10.1002/wcs.1216

Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck Depression Inventory–II. *PsycTESTS Dataset*. https://doi.org/10.1037/t00742-000

Bentahila, L., Fontaine, R., & Pennequin, V. (2021). Universality and cultural diversity in moral reasoning and judgment. *Frontiers in Psychology*, *12*(764360). https://doi.org/10.3389/fpsyg.2021.764360

Chen, H., Wang, Y., & Meng, W. (2024). The effect of cleansing initiation and moral event types on moral judgments: The moderating role of emotions. *Psychology: Techniques and Applications*, *12*(9). https://doi.org/10.16842/j.cnki.issn2095-5588.2024.09.003

Cushman, F. (2008). Crime and punishment: Distinguishing the roles of causal and intentional analyses in moral judgment. *Cognition*, *108*(2), 353-380. https://doi.org/10.1016/j.cognition.2008.03.006

Duan, L., Mo, S. L., Fan, C. Y., & Liu, H. S. (2012). The role of mental states and causality in moral judgment: Examination on Dual-process Theory of moral judgment. *Acta Psychologica Sinica*, *44*(12), 1607-1617. https://doi.org/10.3724/SP.J.1041.2012.01607

Forguson, L. (1989). *Common sense*. Routledge.

Gorbman, C. (1980). Narrative Film Music. *Yale French Studies*, *60*(60), 183-203. https://doi.org/10.2307/2930011

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, *96*(5), 1029-1046. https://doi.org/10.1037/a0015141

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, *101*(2), 366-385. https://doi.org/10.1037/a0021847

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, *108*(4), 814-834.

Hoeckner, B., Wyatt, E. W., Decety, J., & Nusbaum, H. (2011). Film music influences how viewers relate to movie characters. *Psychology of Aesthetics, Creativity, and the Arts*, *5*(2), 146-153. https://doi.org/10.1037/a0021544

Huang, L., Yang, T., & Ji, Z. (2003). Applicability of the positive and negative affect scale in Chinese. *Chinese Mental Health Journal*, *17*(1), 54-56.

Hume, D. (1960). *An enquiry concerning the principles of morals*. La Salle, IL: Open Court. (Original work published 1777).

Killen, M., & Dahl, A. (2021). Moral reasoning enables developmental and societal change. *Perspectives on Psychological Science*, *16*(6), 1209-1225. https://doi.org/10.1177/1745691620964076

Kim, H., Schnall, S., Yi, D.-J., & White, M. P. (2013). Social distance decreases responders' sensitivity to fairness in the ultimatum game. *Judgment and Decision Making*, *8*(5), 632-638. https://doi.org/10.1017/s1930297500003727

Kreutz, G., Ott, U., Teichmann, D., Osawa, P., & Vaitl, D. (2007). Using music to induce emotions: Influences of musical preference and absorption. *Psychology of Music*, *36*(1), 101-126. https://doi.org/10.1177/0305735607082623

Liberman, N., & Trope, Y. (2008). The psychology of transcending the here and now. *Science*, *322*, 1201–1205. https://doi.org/https://doi.org/10.1126/science.1161958

Lo, C. J., Tsarenko, Y., & Tojib, D. (2019). Does consumer‐firm affiliation matter? The impact of social distance on consumers' moral judgments. *Psychology & Marketing*, *36*(12), 1215-1225. https://doi.org/10.1002/mar.21270

Malle, B. F., Guglielmo, S., & Monroe, A. E. (2014). A theory of blame. *Psychological Inquiry*, *25*(2), 147-186. https://doi.org/10.1080/1047840x.2014.877340

Steffens, J. (2020). The influence of film music on moral judgments of movie scenes and felt emotions. *Psychology of Music*, *48*(1), 3-17. https://doi.org/10.1177/0305735618779443

Szczepaniak, Z., Gaboriaud, A., Quinton, J.-C., & Annique, S. (2024). The effects of social distance and gender on moral decisions and judgments. *Social psychology*, *55*(1), 25-36. https://doi.org/10.1027/1864-9335/a000537

Tan, S.-L., Spackman, M. P., & Wakefield, E. M. (2017). The effects of diegetic and nondiegetic music on viewers' interpretations of a film scene. *Music Perception: An Interdisciplinary Journal*, *34*(5), 605-623. https://doi.org/10.1525/mp.2017.34.5.605

Tumasjan, A., Strobel, M., & Welpe, I. (2010). Ethical leadership evaluations after moral transgression: Social distance makes the difference. *Journal of Business Ethics*, *99*(4), 609-622. https://doi.org/10.1007/s10551-010-0671-2

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063-1070. https://doi.org/10.1037/0022-3514.54.6.1063

Young, L., Cushman, F., Hauser, M., & Saxe, R. (2007). The neural basis of the interaction between theory of mind and moral judgment. *Proceedings of the National Academy of Sciences*, *104*(20), 8235-8240. https://doi.org/10.1073/pnas.0701408104

Zeigler-Hill, V., Southard, A. C., Archer, L. M., & Donohoe, P. L. (2013). Neuroticism and negative affect influence the reluctance to engage in destructive obedience in the Milgram paradigm. *Journal of Social Psychology*, *153*(2), 161-174. https://doi.org/10.1080/00224545.2012.713041

Zhang, Y., & Li, S. (2015). Two measures for cross-cultural research on morality: Comparison and revision. *Psychological Reports*, *117*(1), 144-166. https://doi.org/10.2466/08.07.pr0.117c15z5

Zhuang, C. (2023). The roles of music in films. *ResearchGate*. https://www.researchgate.net/publication/376968918_The_Roles_of_Music_in_Films

Ziv, N., Hoftman, M., & Geyer, M. (2011). Music and moral judgment: The effect of background music on the

evaluation of ads promoting unethical behavior. *Psychology of Music*, *40*(6), 738-760. https://doi.org/10.1177/0305735611406579

Appendix I. Moral Judgment Assessment

The original 30-item Moral Foundations Questionnaire (MFQ), developed by Graham and colleagues (2009; 2011), encompasses five sets of moral intuitions: *Harm, Fairness, Ingroup, Authority*, and *Purity*. Given that Ingroup and Purity are less applicable to the moral judgments in our study, we have removed items from these two dimensions. Consequently, our final adapted Chinse version of the MFQ (Zhang & Li, 2015) consisted of 14 items from the other three dimensions, each was rated along a six-point Likert scale. Below, we present a table illustrating the specific items that we have slightly modified to align with the Unintentional Action Set of the film excerpts in this study.

No.	Items	Dimensions
1	Whether the victim was emotionally hurt* 段中的男人感情上受到了伤害	Harm
2	Whether the perpetrator cares about vulnerable people (vulnerable groups) 片段中用锄头的女孩关心处于弱势的人（弱势群体）	Harm
3	Whether the perpetrator is cruel 片段中的母女是残忍的	Harm
4	Sympathizing with victims is the most important virtue 同情片段中的男人是最重要的美德	Harm
5	Anyway, killing people is wrong 无论如何，杀人是不对的	Harm
6	Whether the perpetrator is treated differently 片段中用锄头的女孩被区别对待	Fairness
7	Whether the victim has unfair behavior 片段中的男人有不公正的行为	Fairness
8	The primary principle of government lawmaking is to ensure fair treatment of individuals 政府制定法律的首要原则是保证个人受到公平对待	Fairness
9	What society needs most is justice 社会最需要的是正义	Fairness
10	Whether the rights of the perpetrator are ignored* 片段中用锄头的女孩的权利被忽视	Fairness
11	Whether the perpetrator follows social traditions* 片段中用锄头的女孩遵循了社会传统	Authority
12	Does the behavior in the movie cause chaos and disorder 片段中的行为引起了混乱无序	Authority
13	Every child should learn to respect authority 每个孩子都应该学会尊重权威	Authority
14	If I were a soldier, even if I disagreed with the commander's orders, I would still comply with them# 假如我是一名士兵，就算我不同意长官的命令也会去遵守执行#	Authority

Note.

*: For reverse-scored questions, higher ratings reflect more lenient moral judgments.

#: We instructed participants to focus on the moral content conveyed by this sentence, rather than being constrained by the specific scenario presented here.

References

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, *96*(5), 1029-1046. https://doi.org/10.1037/a0015141

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, *101*(2), 366-385. https://doi.org/10.1037/a0021847

Zhang, Y., & Li, S. (2015). Two measures for cross-cultural research on morality: Comparison and revision. *Psychological Reports*, *117*(1), 144-166. https://doi.org/10.2466/08.07.pr0.117c15z5

Appendix II. Music Induced Emotions

Table 1 displays the changes in emotional responses across 11 dimensions after the *negative* music induction. We combined data from participants who watched either Intentional or Unintentional Action Sets of movie excerpts, resulting in 88 observations for the paired *t*-test analyses.

Table 1: Emotional Responses in the No Music and Negative Music Conditions

Variables	No Music		Negative Music		*Paired-t*	
	Mean	SD	Mean	SD		*p*
Aggression	3.60	1.73	4.22↑	1.65	2.73	**0.008**
Anger	3.81	1.67	3.86	1.80	0.28	0.78
Connectedness	3.75	1.64	4.31↑	1.63	-2.99	**0.004**
Fear	2.22	1.90	2.59	1.91	1.80	0.075
Happiness	0.51	0.99	0.44	0.86	-0.85	0.40
Peacefulness	2.16	1.69	1.72↓	1.86	-2.17	**0.033**
Relaxation	1.32	1.54	1.20	1.43	-0.70	0.49
Reflectiveness	1.63	1.62	2.34↑	1.69	3.68	**<0.001**
Sadness	2.98	1.79	3.95↑	1.67	4.22	**<0.001**
Tenderness/love	1.31	1.54	1.18	1.63	-0.88	0.38
Tension	2.97	1.72	3.00	1.86	0.19	0.85

Table 2 displays the changes in emotional responses across 11 dimensions following the *positive* music induction. We combined data from participants who watched either Intentional or Unintentional Action Sets of movie excerpts, resulting in 88 observations for the paired *t*-test analyses.

Table 2: Emotional Responses in the No Music and Positive Music Conditions

Variables	No Music		Positive Music		*Paired-t*	
	Mean	SD	Mean	SD		*p*
Aggression	3.85	1.68	3.00↓	1.87	-4.65	**<0.001**
Anger	3.81	1.65	2.85↓	1.86	-5.28	**<0.001**
Connectedness	3.78	1.79	2.69↓	1.88	-5.79	**<0.001**
Fear	1.97	1.78	1.24↓	1.66	-6.92	**<0.001**
Happiness	0.45	0.90	0.82↑	1.21	3.03	**0.003**
Peacefulness	1.72	1.73	1.95	1.80	1.06	0.30
Relaxation	1.02	1.29	1.86↑	1.83	3.89	**<0.001**
Reflectiveness	1.70	1.83	1.42	1.71	-1.65	0.10
Sadness	3.28	1.75	1.76↓	1.86	-6.93	**<0.001**
Tenderness/love	1.15	1.57	1.05	1.42	-0.67	0.50
Tension	2.80	1.68	3.61↑	1.40	4.18	**<0.001**

Appendix III. Emotional Responses and Moral Judgments

Table 3 presents the correlations coefficients between moral dimensions (Harm, Fairness, and Authority) and eleven emotional dimensions across different conditions. These conditions include Chinese and foreign scenarios with no music, negative music, and positive music.

Table 3: Correlations between Moral Judgments and Emotional Responses

Types	Aggression	Anger	Connectedness	Fear	Happiness	Peacefulness	Relaxation	Reflectiveness	Sadness	Tenderness/love	Tension
Chinese No Music (n=88)											
Harm	0.020	0.0060	0.032	-0.071	0.027	-0.034	0.12	-0.050	0.078	0.13	0.051
Fairness	-0.046	0.13	0.18	-0.089	-0.096	-0.15	-0.050	0.012	**0.23***	-0.025	-0.050
Authority	0.060	0.16	**0.22***	-0.068	0.12	-0.19	-0.051	-0.050	**0.28****	**0.30****	0.16
Foreign No Music (n=88)											
Harm	-0.014	0.17	0.20	0.052	0.17	-0.053	0.039	0.088	0.18	0.17	-0.11
Fairness	0.029	0.11	0.11	-0.0090	-0.18	0.018	-0.094	**-0.28****	0.050	0.050	-0.077
Authority	0.059	-0.087	0.063	0.13	-0.10	-0.19	-0.20	-0.011	0.060	0.097	0.081
Chinese Negative Music (n=44)											
Harm	0.14	**0.34***	0.23	0.054	-0.19	-0.14	-0.20	-0.019	0.074	-0.27	0.26
Fairness	0.054	0.24	0.25	0.069	-0.16	-0.037	-0.0080	**0.32***	0.14	-0.14	0.11
Authority	0.29	0.19	0.11	0.25	0.048	-0.28	**-0.33***	0.21	0.28	-0.096	**0.35***

Note. * $p < .05$, ** $p < .01$

Types	Aggression	Anger	Connectedness	Fear	Happiness	Peacefulness	Relaxation	Reflectiveness	Sadness	Tenderness/love	Tension
Foreign Negative Music (n=44)											
Harm	-0.074	0.11	0.18	0.13	-0.16	0.12	-0.042	0.27	-0.14	-0.096	-0.015
Fairness	0.051	0.092	0.19	-0.13	-0.065	0.19	0.13	0.013	-0.28	-0.13	-0.14
Authority	0.046	-0.062	0.038	0.081	0.095	-0.051	-0.17	0.066	-0.051	-0.15	0.16
Chinese Positive Music (n=44)											
Harm	**0.30***	**0.33***	**0.34***	0.16	0.041	-0.15	-0.012	0.053	0.081	0.17	0.21
Fairness	0.26	0.20	0.23	0.23	-0.20	-0.13	0.0010	0.065	0.019	0.021	0.097
Authority	0.078	0.051	0.14	-0.11	-0.096	**0.33***	-0.087	0.10	0.19	-0.088	0.021
Foreign Positive Music (n=44)											
Harm	0.28	**0.32***	**0.31***	0.28	0.18	-0.19	-0.23	0.22	**0.48****	0.054	**0.31***
Fairness	-0.078	-0.19	-0.0090	0.020	0.036	0.0010	0.094	0.048	-0.077	0.22	0.017
Authority	**0.30***	0.26	0.010	0.0030	-0.15	**-0.32***	-0.28	-0.11	0.20	-0.016	0.18

Note. * $p < .05$, ** $p < .01$