

Original Article



The Era-Dissociation Effect of Lyrics on Music Aesthetics: Evidence from Chinese Popular Music

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Abstract:

The influence of lyrics on music aesthetics has long been a prominent research topic in the fields of aesthetics, musicology, and psychology. However, empirical studies have yielded inconsistent findings concerning the effects of lyrics. Accordingly, the present study examines the effect of lyrics on music aesthetics across historical periods. We selected representative popular music from the late 20th century, known as “era music”, and representative popular music from the contemporary period, known as “modern music”, both with and without lyrics, as materials. After listening to each music clip, participants sequentially completed aesthetic rating, preference rating, and familiarity rating tasks. We found that the aesthetic rating and its inter-subject correlation for era music with lyrics were significantly higher than those for the version without lyrics, while no significant difference was observed between the two versions of modern music. These results illustrate the era-dissociation effect of lyrics in music aesthetic ratings, suggesting the era-dissociation characteristics of lyrics and the difference in individual subjective aesthetic standards.

Keywords: popular music, music aesthetics, music composition era, lyrics, era-dissociation effect of lyrics

1. Introduction

Lyrics are integral to music aesthetics, shaping the listener's aesthetic experience through storytelling, emotional expression, and thematic communication [1,8,31]. The influence of lyrics on musical aesthetics has long been a prominent topic in aesthetics, musicology, and psychology [14]. Extensive researches have examined the effect of lyrics on music aesthetics from three perspectives: emotional perception, aesthetic judgment, and preference judgment [9]. The influence of lyrics on music emotional perception

and preference judgment has been extensively examined in prior researches [6,29]. However, empirical researches investigating the effect of lyrics on music aesthetic judgement remain relatively limited.

Among the limited studies examining the influence of lyrics on musical aesthetic ratings, findings generally suggested that lyrics modulate individuals' aesthetic judgement of music. However, whether lyrics facilitate or impair music aesthetics has varied across different researches.

Some researches proposed that music without lyrics is aesthetically more pleasing. For instance, Brattico *et al.* (2011) conducted a study in which participants were asked to evaluate musical clips from various genre, presented with and without lyrics, in terms of music preference, emotion, and aesthetic perception. The results revealed that participants expressed a stronger preference for music clips without lyrics and rated them as more aesthetically pleasing compared to those with lyrics. Similarly, Hargreaves, Messerschmidt, and Rubert (1980) recruited participants with and without musical training to investigate aesthetic judgement of popular music with lyrics and classical music without lyrics. They found that classical music without lyrics was perceived as more aesthetically pleasing and of higher quality compared to pop music with lyrics, although the latter was regarded as more popular. In contrast, other researches propose that lyrics constitute a crucial element of song composition, influencing the rhythm, rhyme, and structural integrity of the music, thereby shaping listeners' aesthetic experiences^[16]. Similarly, Obermeier *et al.* (2016) have indirectly demonstrated that lyrics enhance individuals' aesthetically pleasing experiences of music. Specifically, they examined participants' aesthetic ratings of music clips with lyrics that varied in both rhythm and structure. Lyrics were categorized into four types: lyrics with both rhythm and rhyme, lyrics with rhythm but without rhyme, lyrics with rhyme but no rhythm, and lyrics with neither rhythm nor rhyme. They found that participants reported stronger aesthetic experiences for music featuring lyrics with both rhythm and rhyme.

It is worth noting that the aforementioned findings reveal significant discrepancies concerning the effect of lyrics on individuals' music aesthetic judgment in different researches. We believe that this discrepancy might be attributed to the following reasons. Firstly, while investigating the role of lyrics in music aesthetics, most researchers fail to ensure that the musical genre remains consistent between versions with and without lyrics. In other words, the musical genre of the version with lyrics differs from that of the version without lyrics. Aesthetic judgments of different musical genre vary significantly^[4,5]. Consequently, this experimental manipulation might confound the effects of musical genre on music aesthetics with the effects of lyrics, leading

to inconsistent findings regarding the effects of lyrics on music aesthetics. Future research should employ music clips with a consistent genre to examine the effects of lyrics on music aesthetics. Secondly, as an essential constituent of music, lyrics reflected the social, cultural, and political context of a specific period, while embodying the spiritual ethos and societal dynamics of their temporal milieu^[13,33]. The creative characteristics of lyrics in music demonstrate an intricate linkage to broader sociocultural trajectories^[15]. With the ongoing transformation and development of eras, the effect of lyrics on aesthetic evaluation might be moderated by composition era of music. Thus, a comprehensive analysis of the effect of lyrics on aesthetic experience necessitates an examination of music's composition era.

Accordingly, the present study aims to examine the effect of lyrics on music aesthetic judgement, addressing the aforementioned gap in existing empirical research. Investigating this issue not only enriches the theoretical frameworks of musicology, aesthetics, and literary studies, but also deepens our understanding of the inherent nature of music aesthetics^[10]. We focused on the genre of popular music and categorize them into two cohorts based on their composition era. Each musical clip is presented in dual formats including version with lyrics and version without lyrics. Participants in the experiment were tasked with completing three structured ratings sequentially: aesthetic judgment, preference judgment, and familiarity judgment. We predicted that lyrics will moderate individuals' music aesthetic ratings, with the moderating effect contingent upon the historical context of the song's creation.

Method

Participants

Seventy college students (16 males and 54 females, aged 18-25 years) who were not majoring in music, art or literature voluntarily participated in this experiment. Participants were randomly assigned to one of two groups: the lyrics group or the no-lyrics group. None of the participants had received professional training in music or the arts, nor did they have any specific preferences for music styles and music genre. Participants signed an informed consent form prior to the experiment and received compensation upon completion. The experimental

procedures were approved by the Ethics Committee of South China Normal University (SCNU-PSY-2024-187).

Materials

The experimental materials were popular music created in two periods: 1979–1989 and 2015–2022. Popular musics in former period are referred to as “era music”, such as “A Spray of Plum Blossoms” performed by Yu-Ching Fei, and those in latter period are referred to as “modern music”, such as “I Miss You So Much” performed by Sodagreen. Initially, three musicology experts were invited to select 26 popular songs belonging to the two periods. The popularity of era music is indicated by notable achievements such as winning prestigious awards (e.g., the Top Ten Chinese Golden Melody Awards, the First Prize at the Tokyo Music Festival TBS, the Hong Kong Film Awards, the Best Original Film Song Award, etc.), or by its status as the theme song of a widely recognized film. The popularity of modern music is indicated by exceeding 5 million plays on TikTok, ranking in the top 10 on major music platforms, or winning influential song ranking awards. The 26 songs were all meet the above criteria of popularity.

To further assess the representatives of each song within its respective era category, three additional musicology experts independently evaluated the degree to which each song reflected its era. Ultimately, 22 songs were selected, with 11 songs from each era, that effectively represented their respective categories. Subsequently, the loudness of all songs was normalized to a uniform decibel level using Adobe Audition CC 2022 (v22.0.0.96). The chorus sections of the songs were extracted and edited into music clips, both with and without lyrics. The duration of each music clip was between 25 and 30 seconds.

Procedure

This study employed a 2×2 mixed experimental design, with “music lyrics” as the between-subjects variable, comprising two conditions: music with lyrics and without lyrics, and “music era” as the within-subjects variable, consisting of two conditions: era music and modern music. The dependent variables were participants’ aesthetic

ratings, preference ratings, and familiarity ratings of the music clips.

The experimental program was developed using Psychtoolbox^[7] compatible with Matlab 2023b (MathWorks, Natick, MA). The background of the experimental program was black. Participants completed the experiment in a controlled laboratory environment. The music clips were delivered binaurally via headphones at the maximum volume level acceptable to each participant.

In each trial, the sequence began with the presentation of a fixation point (“+”) at the center of the screen for 500 ms, to direct participants’ attention and allow them to prepare. This was followed by the text prompt, “Please listen carefully to the music”, displayed at the center of the screen, while a randomly selected music clip was played binaurally through the headphones. After listening, participants were directed to the task interface, where they sequentially rated aesthetic, preference, and familiarity of the music clip using a Likert scale ratings (ranging from 1 to 7). The order of the tasks was counterbalanced across participants. In the aesthetic rating task, 1 represented “not beautiful”, and 7 represented “beautiful”; in the preference rating task, 1 represented “dislike”, and 7 represented “like”; in the familiarity rating task, 1 represented “unfamiliar”, and 7 represented “familiar”. Participants were instructed to rate according to their true feelings. Upon completion of the three rating tasks, a 10-second standard tone was played, participants were instructed to listen carefully to the standard tone. This was intended to neutralize any residual effects from the music clips presented in the current trial and to prevent carryover effects that could potentially influence the auditory perception of the music clip in subsequent trials. The flowchart of each trial is shown in Figure 1. A total of 22 trials were included in the experimental procedure, which had an approximate duration of 30 minutes. Prior to the experimental procedure beginning, all music clips were randomly presented once, allowing participants to become familiar with each clip and thereby minimizing variability in familiarity both across clips and participants.

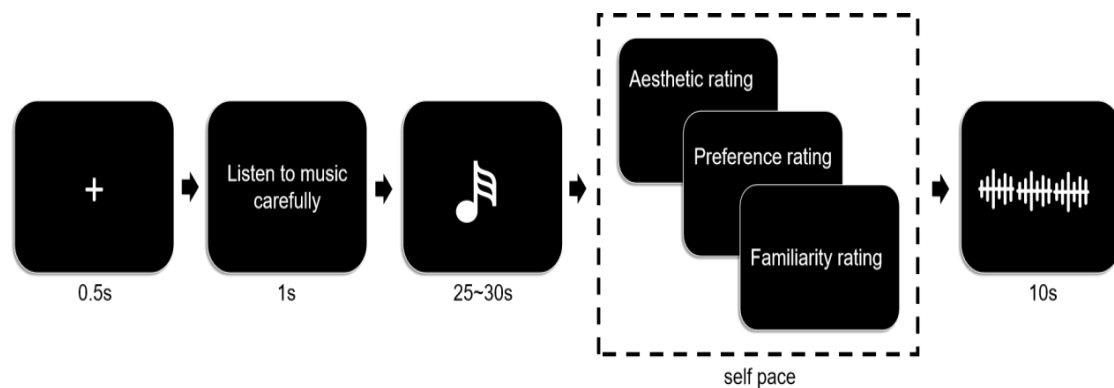


Figure 1: Flowchart of the Experimental Trial Procedure

Data Analysis

The original data of the experimental results were cleaned and standardized using custom code in Matlab 2023b (MathWorks, Natick, MA). Then, two analyses were conducted.

Firstly, the lmerTest package^[25] within R^[3] was employed to conduct a mixed-effects model analysis on the standardized data. We developed four models totally. In all models, the dependent variable was the standardized aesthetic rating. Model 1: Music lyrics were included as a fixed variable. Model 2: The music era was included as a fixed variable to explore its effect on music aesthetic ratings. Model 3: Both music lyrics and music era, along with their interaction, were included as fixed variables to examine the moderating effect of music era on the relationship between music lyrics and music aesthetic ratings. Model 4: Considering that music preferences and familiarity may influence aesthetic judgments^[9,10], we expanded Model 3 by incorporating standardized familiarity and preference ratings as additional fixed variables to control for their potential effects. To account for random errors stemming from sampling biases in both the participant and song samples, participant IDs and song IDs were included as random intercepts in all four models.

Then, IS-RSA was performed on the aesthetic ratings in four conditions (era music with lyrics, era music without lyrics, modern music with lyrics, modern music without lyrics). The similarity of each pair of participants' aesthetic ratings was calculated as the euclidean distance between their aesthetic ratings for all the 26 music clips on each condition. Euclidean distance was chosen because it is also one of the most commonly used methods in RSA studies^[20,24],

and Pearson's correlation distance is not applicable for the uni-dimensional data here. Given that we have 35 participants in each condition, this calculation would yield four 35 (participants) x 35 (participants) similarity matrix. Then, we test the difference of the similarity matrix between era music with lyrics and modern music with lyrics, as well as the similarity matrix between era music with lyrics and modern music with lyrics. For the difference calculation of similarity matrix, the participants order (i.e., the order of the rows and columns) of the similarity matrix was randomly shuffled 5000 times. Each random shuffling generated a surrogate similarity matrix of correlation distances, which was used to recalculate the surrogate correlation distances difference. And the 5000 surrogate correlation distances difference formed a null distribution. The true correlation distances difference were compared with these null distributions to obtain p-values. To control the false discovery rate (FDR), these p-values were corrected with a threshold of $q < 0.05$.

Results

To investigate the effect of lyrics on music aesthetic ratings across various eras, we built four mixed effect models. The results of Model 1 indicated that a significant main effect of music lyrics ($b = -0.237$, S.E. = 0.118, $t_{68} = -2.007$, $p = 0.049$), showing that the aesthetic rating of the music with lyrics was significantly higher than that of the music without lyrics. The results of Model 2 showed that the main effect of the music era was not significant ($b = -0.133$, S.E. = 0.113, $t_{20} = -1.183$, $p = 0.251$). The results of Model 3 (Figure 2) demonstrated that both the main effect of music lyrics was significant ($b = -0.534$, S.E. = 0.126, $t_{87} = -4.250$, $p < 0.001$). The aesthetic rating of the music with lyrics was significantly

higher than that of the music without lyrics. The main effect of music era was significant ($b = -0.430$, S.E. = 0.120, $t_{26} = -3.573$, $p = 0.001$). Era music received significantly higher aesthetic ratings compared to modern music. Moreover, the interaction between music lyrics and the music era was also significant ($b = 0.594$, S.E. = 0.085, $t_{1448} = 6.968$, $p < 0.001$). The further simple effect analysis revealed that for era music, the aesthetic rating of the version with lyrics was higher than that of the version without lyrics ($b = -0.534$, S.E. = 0.158, $t_{68} = -3.384$, $p = 0.001$), whereas no significant difference was found for modern music ($b = 0.060$, S.E. = 0.136, $t_{68} = 0.438$, $p = 0.663$). The results suggested that the effect of music

lyrics on the aesthetic judgment of music varies across different music eras, that is, the era-dissociation effect of music lyrics on music aesthetic ratings. In addition, to further investigate how lyrics change with music era, we performed simple effect analysis in another dimension. The results showed that for music with lyrics, era music was significantly more aesthetically pleasing than modern music ($b = -0.430$, S.E. = 0.125, $t_{20} = -3.453$, $p = 0.003$). However, for the music without lyrics, there was no significant difference in aesthetic judgments between modern music and era music ($b = 0.164$, S.E. = 0.138, $t_{20} = 1.189$, $p = 0.248$). This results indicated that the era characteristics of music lyrics's development.

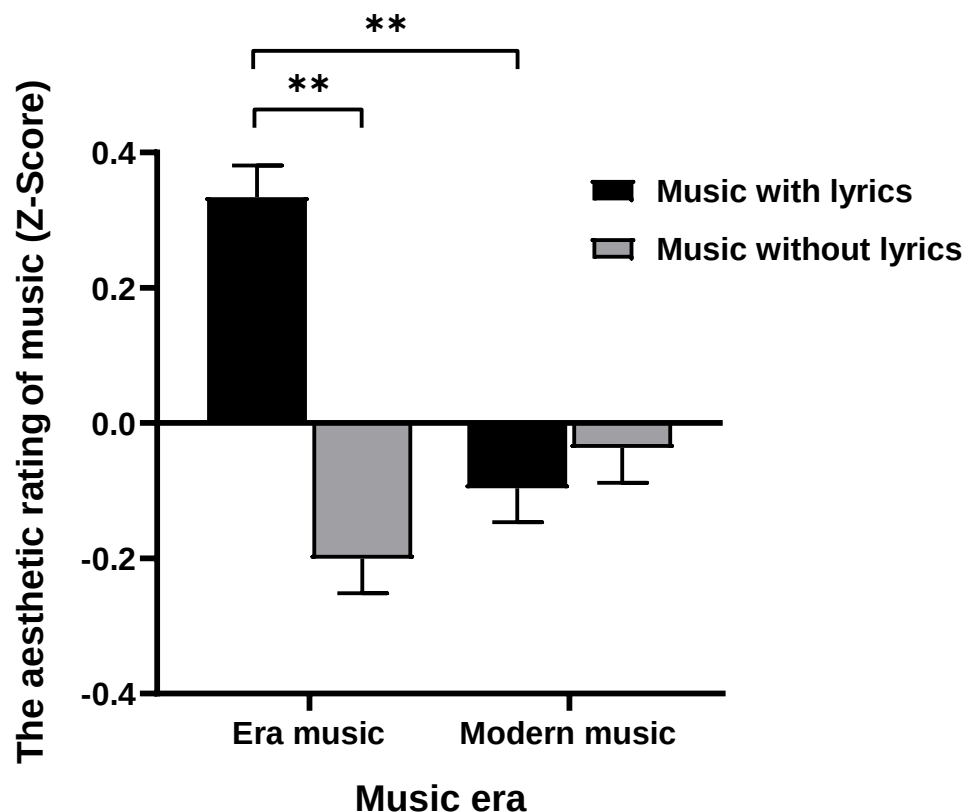


Figure 2: Effects of music era and Lyrics on Music Aesthetic Ratings

Note. Error bars represent standard errors. *** indicates $p < 0.001$, ** indicates $p < 0.01$.

After controlling for the potential interrupt effect of music preferences and familiarity in Model 4, similar results were obtained. The main effect of music lyrics ($b = -0.323$, S.E. = 0.109, $t_{89} = -2.953$, $p = 0.004$) and the music era ($b = -0.472$, S.E. = 0.089, $t_{27} = -5.275$, $p < 0.001$) was significant. Additionally, the main effect of the preference rating ($b = 0.436$, S.E. = 0.023, $t_{1529} = 18.884$, $p < 0.001$) and familiarity rating ($b =$

0.195, S.E. = 0.025, $t_{1381} = 7.884$, $p < 0.001$) was significant. Specifically, songs that were more preferred and familiar received higher aesthetic ratings than those that were unfamiliar and less preferred. The interaction between music lyrics and the music era was significant ($b = 0.571$, S.E. = 0.072, $t_{1446} = 7.901$, $p < 0.001$). The further simple effect analysis found that for era music, the aesthetic rating of the era music with lyrics was

significantly higher than that of the era music without lyrics ($b = -0.315$, S.E. = 0.155, $t_{69} = -2.003$, $p = 0.046$). However, for modern music, the aesthetic experience of modern music without lyrics was significantly higher than that of modern music with lyrics ($b = 0.191$, S.E.= 0.093, $t_{73} = 2.061$, $p = 0.043$). Results of simple effect analyses in another direction revealed that for music with lyrics, era music was rated as significantly more aesthetically pleasing than modern music ($b = -0.478$, S.E. = 0.112, $t_{19} = -$

4.252, $p < 0.001$). However, for music without lyrics, the difference in aesthetic judgments between modern and era music was not significant ($b = 0.097$, S.E.= 0.081, $t_{18} = 1.203$, $p = 0.244$). These results replicated the findings from Model 3, demonstrating that the era-dissociation effect of lyrics on the aesthetic rating of music is robust and unaffected by music preferences and familiarity. The results of all the mixed linear models are summarized in Table1.

Table 1: Results of the Mixed Linear Model of the Influence of music era and Lyrics on Music Aesthetic Ratings

Independent variable	Dependent variable: Aesthetic ratings			
	Model 1	Model 2	Model 3	Model 4
Intercept	0.119	0.067	0.334**	0.254**
Main effect				
Music lyrics	-0.237*		-0.534***	-0.323**
Music era		-0.133	-0.430**	-0.472***
Preference				0.436***
Familiarity				0.195***
Interaction				
Music lyrics $\times$ Music era			0.594***	0.571***

Note. *** represents $p < 0.001$, ** represents $p < 0.01$.

In addition, we further investigate the era-dissociation effect of lyrics on aesthetic ratings from the perspective of the behavioral representations of individual differences. IS-RSA analysis revealed significant inter-subject correlations in aesthetic ratings across all four experimental conditions ($p < 0.001$, FDR-corrected) as well as the conditions of musics with lyrics and without lyrics (Figure 3). Further analysis demonstrated that musical clips with lyrics exhibited significantly stronger inter-subject correlation in aesthetic ratings compared to the version without lyrics ($p < 0.001$, FDR-corrected) (Figure 4). Notably, the effect of lyrics on

individual difference of aesthetic ratings varies across musical eras: for era-specific music, lyrics significantly increase the inter-subject correlation of aesthetic ratings ($p < 0.001$, FDR-corrected), whereas modern music showed no significant difference between lyrical and instrumental versions ($p = 0.185$, FDR-corrected) (figure 4). Collectively, these findings suggest that lyrics enhance consistency between individuals in aesthetic ratings of music, particularly for era music. This indicates that lyrical components may play a more critical role in shaping shared aesthetic experiences for compositions, further supporting the era-dissociation effect of lyrics.

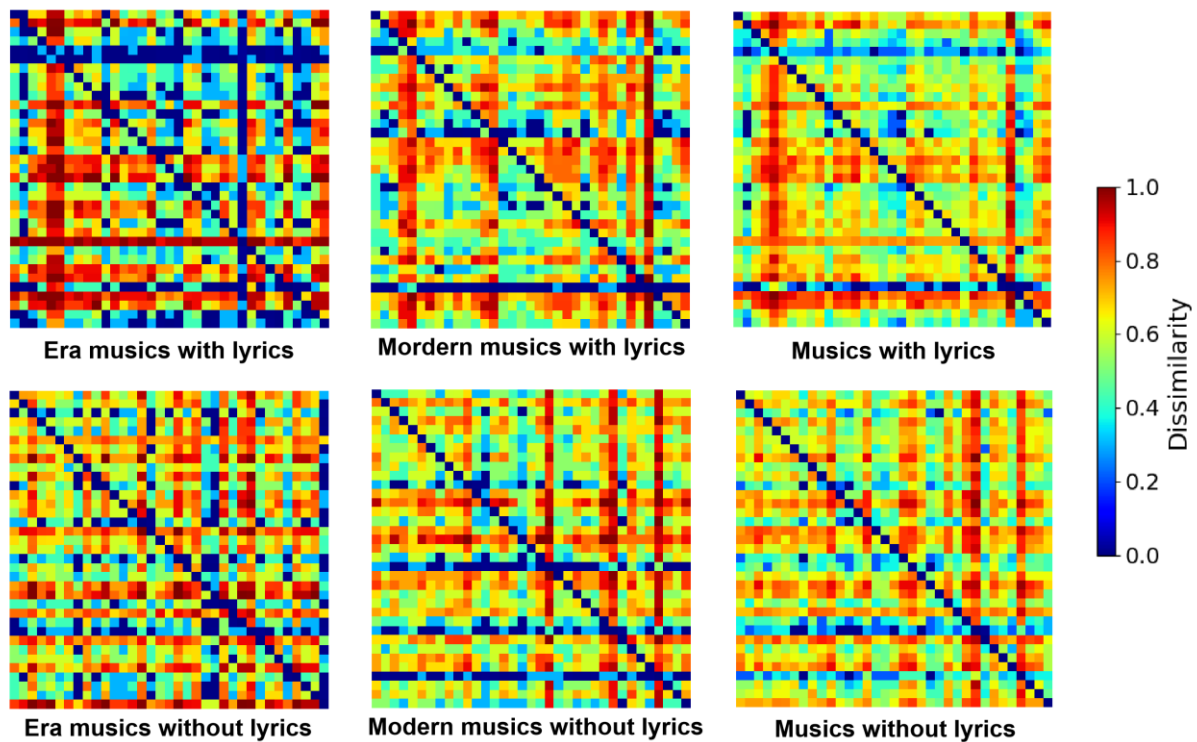


Figure 3: Individual Difference Representation of Music Aesthetic Ratings Under Six Experimental Conditions

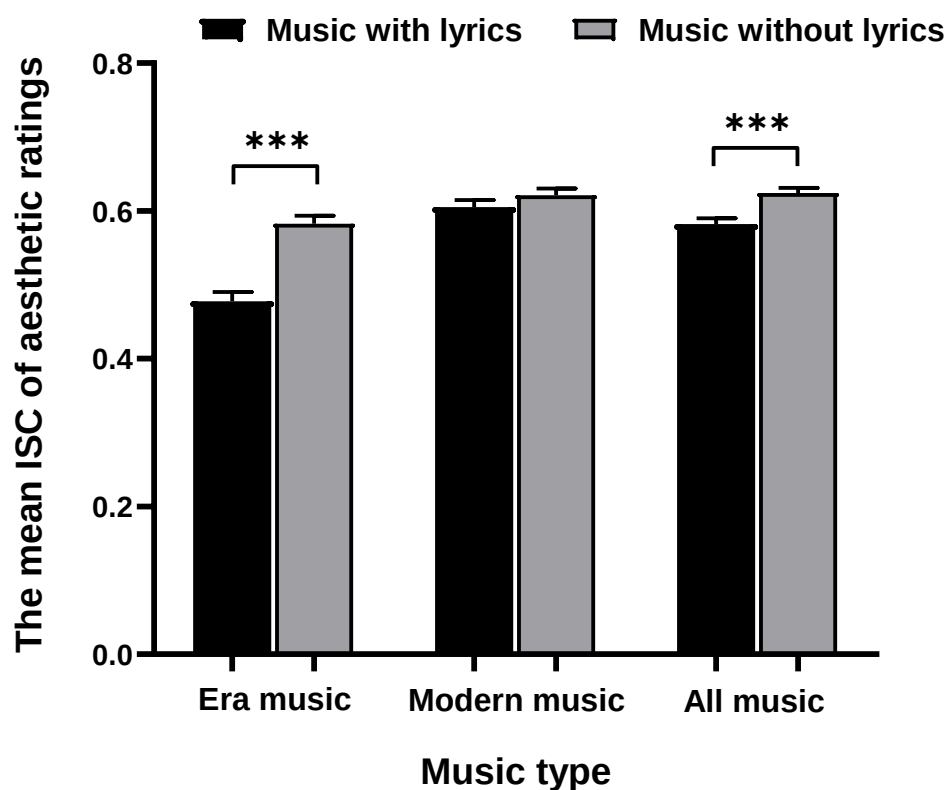


Figure 4: The Difference of Inter-Subject Correlation of Music Aesthetic Ratings between Different Experimental Conditions

Note. Error bars represent standard errors. *** indicates $p < 0.001$, ** indicates $p < 0.01$. ISC indicates inter-subject correlation

Discussion

The present study aimed to explore the effect of lyrics on the aesthetic judgment of music across

different eras. The findings showed that for era music, the version with lyrics was judged to be more aesthetically pleasing than its instrumental counterpart, whereas no significant difference was observed for modern music. These results indicated an era-dissociation effect of lyrics on music aesthetic, highlighting the developmental differences in the creation of song lyrics across eras, as well as the evolving subjective standards of aesthetic judgment over time.

We found that the lyrics of a musical composition can enhance individuals' aesthetic judgment, which is consistent with the results of most previous studies^[8,18,26]. Previous studies have found that the melody and lyrics of a song have specific meaning^[11,14,23]. Song's lyrics profound influence extends across various aspects of human aesthetic experience, as demonstrated by its ability to modulate emotions, enrich the meaning of the song and facilitate individuals to understand the song's meaning^[12,28].

In addition, we selected representative popular music from the late 20th century, known as "era music", and representative popular music from the contemporary period, known as "modern music". We found that era music with lyrics was perceived as more aesthetically pleasing than the same music without lyrics, whereas no such effect was observed in modern music, which illustrates the era-dissociation effect of lyrics in music aesthetic ratings. We believed that this might be due to the following reasons from three aspects. Firstly, there are marked differences in the lyrical characteristics between era musics and modern musics. Our results showing that era musics with lyrics were more aesthetically pleasing than modern musics with lyrics support this point. Looking back at the development of Chinese popular music, since the late 20th century, Chinese popular music has begun to flourish. The lyrics of popular music were created in a time when the boundaries between literature and art were very blurred, which was both a part of music and a part of literature^[32]. Against this historical backdrop, the lyrics of popular music in the late 20th century contained rich cultural and ideological elements, often utilizing rhetorical devices such as symbolism, metaphor, and synecdoche. The expression of emotion and meaning was delicate and profound, with high artistic value, which had a profound influence on

the aesthetic judgment of the song^[22]. Therefore, the lyrics of era music had both literary and aesthetic value, and era music with lyrics better embodied the soul of the song^[35]. However, in the current context of the period dominated by multimedia, popular music has become popular through platforms like TicTok, with a broad dissemination range^[17]. Given its mass audience and the fast-paced nature of its spread, the lyrics of modern music have a trend towards simplicity, with few rhetorical devices and direct expression of emotions and meanings^[34]. Therefore, the aesthetic and literary value of lyrics in modern music has diminished, and their influence on aesthetic judgment is also reduced. In summary, the characteristics of lyrics from different eras differ greatly. The lyrics of era music possess significant literary and artistic, while the lyrics of modern music are superficial and trivial, with a broad audience^[27].

Secondly, individuals' subjective music aesthetic standards are not fixed, but are influenced by bottom-up objective factors of the music. Specifically, when the literary value of the song's lyrics is high, the lyrics become an important basis for listeners to appreciate the music. Lyrics of era music possess significant literary, and aesthetic value, therefore listeners perceive those with lyrics more beautiful than those without lyrics. However, when the literary value of the lyrics is low, listeners' aesthetic judgment is more reliant on the melody and rhythm of the music. In the case of modern music, the lyrics tend to be simplistic and vulgar. Consequently, when appreciating modern music, listeners focus more on the melody, making the difference between music with or without lyrics less significant. This has important implications for the research on individual music aesthetic standards.

Finally, lyrics with high literary value promote the aesthetic appreciation of a song, which may be related to the inherent nature of musical beauty. Specifically, musical beauty might be a deeper, more lasting emotion, where an individual's judgment of musical beauty is not limited by superficial preferences or popular opinions, but rather driven by deeper emotional and cognitive processing of music. This aligns with the view of classical aesthetic theory^[21]. Classical aesthetic theory suggests that a beautiful artwork should have lasting appeal, which is reflected not only in

its influence during its creation period but also in its ability to transcend time and resonate across different cultures and eras^[19]. Truly beautiful art often contains profound themes and emotions, allowing listeners to uncover new interpretations with each appreciation, leaving a lasting impression^[2]. The study of the nature of beauty has long been a key research topic in aesthetics, literature, psychology, musicology, and even education^[30]. This study provides some inspiration and reflection for research in this area.

The present study has certain limitations. Firstly, only college student were recruited in the present study, future studies can consider larger and more diverse samples and methods to improve the reliability and generalization of the results. Secondly, The era-dissociation effect of lyrics in popular music might not be fully applicable to other musical genres. Future studies can consider using a variety of different kinds of musical genres to further verify the effect of lyrics in aesthetic judgment. Finally, the era-dissociation effect of lyrics on aesthetic judgment was concluded from the results of Chinese musics, which is intrinsically linked to the distinctive characteristics of national era development. Consequently, it remains unclear whether these conclusion can be generalized to Western music. Future research should consider using Western music from various historical eras.

The present study aimed to explore the effect of lyrics on the aesthetic judgment of music across different eras. We found that era music with lyrics was judged to be more aesthetically pleasing than its instrumental counterpart, whereas no significant difference was found for contemporary music. These results indicated the era-dissociation effect of lyrics on music aesthetic, highlighting the developmental differences in the creation of song lyrics across eras, as well as the evolving subjective standards of aesthetic judgment over time.

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