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SOUNDS OF THE SELF: EXPLORING MUSIC AS A SELF-CONSTRUAL PRIMING TOOL

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Abstract: Markus and Kitayama (1991) identified two types of self-construal, namely interdependent and independent, that reflect cultural differences in self-perception. Based on this framework, research has shown that self-construal influences many aspects of behavior. To investigate causal hypotheses related to culture, researchers have developed various methods for priming self-construal, such as using cultural icons. Given that music is a cultural product that conveys cultural values, it holds potential as a means to prime interdependent and independent self-construals. This study explored whether music could serve as a self-construal priming manipulation. Thirty bicultural participants (ethnically Chinese Singaporeans) were randomly assigned to one of three conditions: a control condition, a Chinese music condition, or a Western music condition. Mixed-model ANOVA results showed significant main effects but no significant interaction effects. Specifically, participants reported significantly lower scores for both interdependent and independent self-construals at the post-test compared to the pre-test, regardless of the music condition. Further analysis revealed significant changes in particular self-construal dimensions, including self-direction vs. reception to influence, consistency vs. variability, and self-interest vs. commitment to others, between pre-test and post-test across all music conditions. These findings underscore the complexity of using music to prime self-construals, which may explain why no studies to date have utilized this priming method. Nonetheless, this study shows that music may influence self-construal perception, highlighting the profound impact listening to music, and even silence, can have on self-perception and identity. Further research is needed to establish the reliability of music-based priming and understand its underlying mechanisms.

Keywords: Self-Construal, Priming, Music, Culture, Bicultural

INTRODUCTION

Markus and Kitayama (1991) introduced the term self-construal to describe how individuals define and construe the self. While acknowledging the

existence of many possible self-construals, they identified two primary types that vary across cultural contexts. They theorized that in collectivistic cultures, such as those in East Asia, individuals construe the self as fundamentally interconnected with others, referred to as interdependent self-construal. Conversely, in individualistic cultures, such as the U.S., individuals construe the self as distinct and separate from others, referred to as independent self-construal. Scholars in cross-cultural psychology have shown that these self-construals influence many aspects of behavior including cognition, perception, and emotion (see Cohen & Kitayama, 2019, for an overview). To examine causal hypotheses related to culture, researchers have developed various self-construal priming methods, including the use of cultural icons (e.g., Hong et al., 2000), mostly in the form of visual stimuli. Since music is a cultural product that conveys cultural values, it could potentially be used to prime interdependent and independent selves associated with collectivistic and individualistic cultures (Tang, 2024). This would expand the methodological tools available to researchers when investigating between- and within-culture consequences of self-construal. This paper investigates whether music can serve as a self-construal priming manipulation.

Priming Manipulations of Self-Construal

The premise underlying self-construal manipulations is that all individuals, regardless of cultural background, possess the capacity for both interdependent and independent self-construals (Oyserman et al., 2002). According to the culture-as-situated-cognition theory, variations in self-construal are influenced by social and contextual factors (Oyserman, 2011; Oyserman & Lee, 2008). Similarly, the dynamic constructivist approach to culture emphasizes the interaction between individual, situation, and culture, suggesting that different self-construals emerge based on the availability and applicability of cultural cues (Hong et al., 2000; Hong & Mallorie, 2004). In other words, cultural practices and affordances contribute to the variability in how interdependent and independent self-knowledge is elaborated and accessed. Priming techniques can make self-knowledge associated with these self-construals temporarily more accessible, allowing researchers to experimentally investigate the influence of self-construal on behavior.

Researchers have employed various methods to prime self-construals (see Cross et al., 2011, for an overview of different manipulations). Two approaches that have been used extensively include the similarities and differences with family and friends task (Trafimow et al., 1991) and a pronoun

circling task (Brewer & Gardner, 1996; Gardner et al., 1999). In the former approach, participants are asked to think about what makes them similar to their family and friends (interdependent prime) or what makes them different from their family and friends (independent prime; e.g., Lee & Jeyaraj, 2014). In the latter approach, participants read a story and circle either plural pronouns (e.g., we, our, us; interdependent prime) or singular pronouns (e.g., I, me, mine; independent prime; e.g., Grossmann & Jowhari, 2018).

Researchers have also used cultural icons to prime knowledge associated with specific cultures. Although distinct from directly priming self-construal, activating culture-specific knowledge can be thought of as affording relevant self-construals. To my knowledge, the first reported use of this method involved presenting participants Chinese and American cultural symbols (Chinese dragon vs. American flag), legendary figures from folklore or cartoons (Chinese opera singer vs. Marilyn Monroe), and landmarks (Great Wall of China vs. Capitol Building; Hong et al., 2000; Hong et al., 2003). Following this, other researchers have used cultural icon priming to examine a wide array of behaviors between- and within-cultures including causal attribution (Hong et al., 2000; Hong et al., 2003), consumer impatience (Chen et al., 2005), cooperation in the prisoner's dilemma (Wong & Hong, 2005), memory strategies (Sui et al., 2007), assimilation toward the dominant culture (No et al., 2008), intolerance of bribery (Liu et al., 2017), and moral judgments (Hu et al., 2018).

Taken together, the abovementioned studies demonstrate that using cultural products as primes can elicit behaviors congruent with interdependent-independent self-construals or collectivist-individualist cultures. However, caution is warranted regarding the use of cultural products as priming manipulations.

First, the degree to which the cultural icon method actually primes self-construals versus other dimensions of culture remains unclear (Cross et al., 2011; S. Yang, 2017). Sui et al. (2007) found that Chinese undergraduate participants primed with American cultural icons produced fewer interdependent and more independent self-descriptions. In contrast, participants in the Chinese-prime and control conditions listed an equal number of interdependent and independent self-descriptions. In another study, Li et al. (2024) examined the effects of different cultural icons on Chinese

students' polycultural self-construal. Individualistic icons (e.g., Jesus, Santa Claus, Statue of Liberty, Hollywood) increased individuality and equality, Confucian icons (e.g., Confucius, Mencius, Chinese characters of "filial piety" [孝], Tomb Sweeping Day) increased relationality, and Chinese national icons (e.g., Lei Feng, Flag of the People's Republic of China, Tiananmen, Monument to the People's Heroes) increased collectivity and equality factors. Although both studies used the Ten Statements Test to measure self-construal, differences in coding strategies complicate comparisons. Moreover, only one study used a validated measure – i.e., the Polycultural Self-Construal Scale (Li & Wang, 2023). Nonetheless, these results suggest that cultural icons can indeed prime interdependent and independent self-construals, while also activating broader cultural dimensions unrelated to self-construal.

Second, most studies using cultural icons have recruited bicultural participants (Chen et al., 2005; Hong et al., 2000; Hong et al., 2003; Liu et al., 2017; No et al., 2008; Wong & Hong, 2005). They typically include individuals heavily influenced by or exposed to two cultures through immigration (e.g., Korean or Chinese Americans) or extensive westernization of a society (e.g., Hong Kong and Singapore). These participants are considered well-suited for the cultural icon priming method because they are expected to have ready access to both interdependent and independent self-construals. Nevertheless, some studies have successfully used cultural icon primes with monocultural participants from relatively homogenous cultural contexts (e.g., Chinese individuals from mainland China; Hu et al., 2018; Li et al., 2024; Sui et al., 2007), and found evidence of behavior congruent with interdependent-independent self-construals or collectivist-individualist cultures. Altogether, this implies that cultural icon primes can be effective for both bicultural and monocultural participants. A common feature across these studies is the use of cultural icons relevant to the participants. For instance, Chen et al. (2005) used Singaporean symbols (e.g., Singapore national flag, Merlion, Sentosa, and the Singapore Airlines model) when recruiting participants from a Singaporean university. This underscores the importance of selecting icons that are accessible and meaningful to the target participant group to ensure effective priming of relevant self-construals.

Music as a Priming Manipulation of Self-Construal

Priming manipulation is a well-established experimental method in cognitive and social psychology (Bargh, 2014). In cognitive psychology, priming involves the spread of activation between mental representations. For example, hearing action verbs activates both working memory for language processing and motor representations for movement (Perani et al., 1999). In social psychology, priming refers to the readiness of mental representations to influence responses. Priming manipulations, therefore, involve the carryover effects of one situation or type of experience into subsequent contexts. Priming effects often occur without the individual's awareness, as shown by Higgins et al. (1977), where exposure to personality traits shaped participants' impressions of others without their conscious recognition.

Although not explicitly framed as priming effects, studies show that music can produce carryover effects across diverse contexts. Background music has been found to influence various behaviors, often without participants' awareness, such as the pace of shopping and overall sales volume in supermarkets (Milliman, 1982), whether they stayed in open public spaces (Aletta et al., 2016), and the perceived pleasantness and overall impression of food (Fiegel et al., 2014). Additionally, research has demonstrated that personality, cultural identity, and cultural values are closely linked to music preferences, such that strangers can make accurate judgments about people's ethnicity and personality based on their preferred music (Marshall & Naumann, 2018; Rentfrow et al., 2009; Rentfrow & Gosling, 2006). In other words, music can effectively communicate cultural characteristics.

Given the substantial cultural variability in musical structures (Stalinski & Schellenberg, 2012), it logically follows that specific music styles can reflect and represent different cultural contexts and values (e.g., Chinese music with collectivism, Western music with individualism). For example, research has shown that lyrics of Chinese popular songs emphasized collectivistic themes, while U.S. pop songs reflected more individualistic themes (Rothbaum & Tsang, 1998; Rothbaum & Xu, 1995). When comparing the official Spotify Top-50 chart playlists across countries, Liew et al. (2023) found that the lyrics in Singaporean playlists contained more socially oriented words and collective pronouns (e.g., "we") than those in the U.S. playlists. Consequently, music has the potential to prime interdependent and independent self-construals (Tang, 2024). As Frith (1996) notes, music "constructs our sense of identity through

the direct experiences it offers of the body, time and sociability, experiences which enable us to place ourselves in imaginative cultural narratives" (p. 124).

The Present Study

This exploratory study aimed to investigate whether music can serve as a self-construal priming manipulation. While researchers have successfully employed the cultural icon priming method using pictures, to my knowledge, no studies to date have explored the potential of auditory stimuli like music. Incorporating music as a priming tool could broaden the range of methodologies available for examining between- and within-culture consequences of self-construal.

Previous studies involving cultural icons have predominantly relied on implicit measures of self-construal (e.g., Hong et al., 2000; Hong et al., 2003), with only a few employing explicit measures, such as the Ten Statements Test or the Polycultural Self-Construal Scale (Li et al., 2024; Sui et al., 2007). To answer the research question of whether music can serve as a self-construal priming manipulation, multiple self-construal measures were used to triangulate the findings.

I also acknowledge the ongoing scholarly debate regarding the (in)adequacy of a simple interdependent vs. independent self-construal dichotomy for capturing cultural differences worldwide (Matsumoto, 1999; Vignoles et al., 2016). Moreover, there is empirical evidence that different priming manipulations activate different self-construal dimensions (S. Yang, 2017). To account for this complexity, I included an eight-dimensional model of self-reported ways of being interdependent and independent (Vignoles et al., 2016; S. Yang, 2017). The model comprises: *self-reliance vs. dependence on others, self-containment vs. connectedness to others, difference vs. similar to others, self-interest vs. commitment to others, consistency vs. variability, self-direction vs. reception to influence, self-expression vs. harmony,* and *decontextualized vs. contextualized self*. These dimensions capture distinct expressions of interdependence and independence, leading to unique self-construal profiles across cultural contexts. Incorporating this model allowed for a more nuanced analysis of how music primes self-construals.

Since the first study employing cultural icon primes was conducted with bicultural individuals (i.e., Hong Kong Chinese; Y. Hong et al., 2000), this

study similarly recruited bicultural participants: ethnically Chinese Singaporeans. In Singapore, traditional Chinese values are deeply embedded in familial and everyday socialization processes. However, Western values and beliefs are also pervasive, introduced through formal education, legislation, and mass media (Ang & Stratton, 1995; Brooks & Wee, 2014; Ho, 2006; Sheehy, 2004; Tamney, 1996). Furthermore, Singapore's Bilingual Education Policy ensures that ethnically Chinese Singaporeans are proficient in both Mandarin and English, reflecting their hybrid sociocultural identity that embodies both Eastern and Western influences (Dixon, 2005; Pakir, 1993). Thus, ethnically Chinese Singaporeans are biculturally socialized individuals. Based on the evidence that music can have carryover effects in various contexts and that music can effectively represent different cultures, I hypothesized that exposure to Chinese music would prime interdependent self-construal, while exposure to Western music would prime independent self-construal.

METHODOLOGY

Preparation of Musical Primes

After consulting with music scholars, the researcher identified six musical pieces across various genres to represent Chinese culture (e.g., Traditional Chinese music, national anthem, Mandopop music, and Chinese movie soundtracks) and six to represent Western culture (e.g., Western Classical art music, national anthem, American pop music, and Western movie soundtracks). The national anthems and pop songs included lyrics, while the other pieces were instrumental (see Supplementary Materials Appendix A, Table 1).

Chinese music was selected over "Singaporean" music to avoid conflating national identity with cultural identity. The goal was to prime knowledge of Chinese culture, which emphasizes collectivistic values and social connectedness. Given Singapore's unique sociohistorical context, it is uncertain what cultural concepts Singaporean music would prime, as Singaporean identity incorporates both collectivistic and individualistic ideals.

Six participants from Singapore, with varying levels of musical expertise, listened to the music and rated each piece on how well it represented Eastern or Chinese culture, Western or American culture, collectivistic values, and

individualistic values, using a 5-point Likert Scale (1 = *not well at all* to 5 = *extremely well*). Participants also rated their familiarity with the music, how much they liked it, and how relatable they found it. These dimensions (i.e., familiarity, preference, and relatability) were evaluated because the dynamic constructivist approach to culture posits that different self-construals become activated when cultural cues are available, accessible, and relevant to the individual (Hong et al., 2000; Hong & Mallorie, 2004).

Participants in previous studies were exposed to cultural icons for at least 2-minutes. Unlike visual stimuli which is static, music unfolds over time. Thus, the researcher selected two pieces per priming condition to sustain attention and activate culture-related self-knowledge. Chinese music primes were rated highly for Eastern or Chinese culture and collectivistic values, and low in representing Western or American culture and individualistic values. Similarly, Western music primes were rated highly for Western or American culture and individualistic values, and low in representing Eastern or Chinese culture and collectivistic values. Musical selections were also required to be somewhat familiar, preferred, and relatable (see Supplementary Materials Appendix A, Figures 1a and 1b).

The Chinese prime condition included the National Anthem of China and the instrumental main theme from *Once Upon a Time in China*. The Western prime condition included *Love Story* by Taylor Swift and the main theme from *The Good, the Bad, and the Ugly*. Each condition contained one instrumental piece and one song with lyrics to signal the corresponding Eastern or Western culture. For the control condition, I used silence and brown noise. Samples of the music stimuli are provided in Supplementary Materials Appendix B, Table 2.

Participants

Participants were recruited through an online advertisement disseminated by the researcher through social media. Thirty ethnically Chinese Singaporean participants (aged between 21 and 67 years; mean = 36.90, *SD* = 12.10; 19 [63.33%] female, 11 [36.67%] male; all reported as non-disabled) participated in the study as paid volunteers.

Self-Construal Measures

Singelis' (1994) Self-Construal Scale (S-SCS)

The S-SCS consists of 15 items to measure interdependent self-construal and 15 items to measure independent self-construal with a Cronbach's α of .74 and .70 for both scales respectively (Singelis, 1994). Participants rated the statements on a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*).

Twenty Statements Test (TST)

The TST is a self-report measure where participants were asked to write down 20 different responses to the question "Who am I?" (Kuhn & McPartland, 1954). These statements are coded by the researcher as either interdependent if they describe socially defined relationships, roles, or statuses associated with group membership (e.g., "I am a Chinese"; "I am a software engineer"; or "I am a guitarist"), or independent if they describe physical characteristics, personal traits, or emotional states (e.g., "I am empathic"; "I am someone who loves smoothies"; "I am a confident person"). The number of interdependent and independent statements are then used as interdependent and independent self-construal scores respectively.

Yang's (2017) Self-Construal Scale (Y-SCS)

The Y-SCS consists of 48 items to measure eight dimensions of self-construal: *self-reliance vs. dependence on others, self-containment vs. connectedness to others, difference vs. similar to others, self-interest vs. commitment to others, consistency vs. variability, self-direction vs. reception to influence, self-expression vs. harmony,* and *decontextualized vs. contextualized self*. Each dimension was measured using six items, and a positive score reflected a tendency toward independence whereas a negative score reflected a tendency toward interdependence. Cronbach's α for all dimensions were reported to be mostly between .72 and .89 (S. Yang, 2017). Participants rated the statements on a 9-point Likert scale (from 1 = *doesn't describe me at all* to 5 = *describes me exactly*) with 0.5 as intervals (i.e., 1.5, 2.5, 3.5, 4.5). As recommended by V. L. Vignoles (personal communication, August 8, 2022), each dimension's score was ipsatized (i.e., the score of each dimension minus the overall average) to reduce the influence of acquiescent responding (Baron, 1996).

Procedure

Prospective participants were recruited through an online advertisement with a link to the study. After clicking the link, participants accessed the participant information sheet and scheduled an appointment. They were instructed to

complete the pre-test self-construal measures at least one day prior to their study visit. On the day of the visit, the researcher reviewed the participant information sheet again and obtained informed consent. Participants first completed an interview about their all-time favorite music for a separate research study. Subsequently, they were randomly assigned to one of three conditions – control, Chinese prime, or Western prime – with the researcher masked to the assignment. In the priming task, participants listened to each musical piece for at least 1-minute, during which they were tasked to describe the music. They then completed the self-construal measures again, along with demographic questions (e.g., age, gender, educational level, and musical expertise). Musical expertise was assessed using self-reported years of musical training and the musician rank item (i.e., *"Which title best describes you?"*) from the Ollen Musical Sophistication Index (OMSI; Ollen, 2006), based on findings that these are the best single-item measures for estimating musicality (Zhang & Schubert, 2019). The order of musical pieces and self-construal measures was counterbalanced to minimize order effects. The questionnaire and randomization were administered through Qualtrics^{XM}. Ethical approval was granted by the University of Sheffield's Ethics Review Procedure, overseen by the Department of Music.

Data Analysis

To assess whether the music primed different self-construals, the researcher conducted a mixed-model ANOVA with pre-test and post-test self-construal measures as the within-subjects variable and music conditions as the between-subjects factor. All analyses were performed using SPSS®28.

RESULTS

Descriptive Results

Participants were randomly assigned into three conditions: control (n = 10), Chinese music (n = 10), and Western music (n = 10; see Table 1). A Pearson's chi-square test of contingencies (with α = .05) revealed no statistically significant differences between conditions regarding gender, χ^2 (2, N = 30) = 0.29, p = .866. A Kruskal-Wallis ANOVA indicated no statistically significant differences between conditions in terms of age, H = 4.00, df = 2, N = 30, p = .136; education level, H = 3.82, df = 2, N = 30, p = .148; musical identity, H = 0.15, df = 2, N = 30, p = .928; or years of musical training, H = 0.77, df = 2, N = 30, p = .682. However, a significant difference was found in the number of days between pre-test and post-test, H = 6.25, df = 2, N = 30, p = .044. Post hoc analyses using a Mann-Whitney U test indicated that the number of days

lapsed for the control condition was significantly lower than that for the Western music condition, $U = 23.00$, $z = -2.05$, $p = .040$ (two-tailed); and the Chinese music condition, $U = 20.50$, $z = -2.26$, $p = .024$ (two-tailed).

Table 1: Participants: Demographic Information

	Control (n = 10) *M (SD)*	Chinese Music (n = 10) *M (SD)*	Western Music (n = 10) *M (SD)*	*p*
Age (Years)	31.70 (11.27)	40.80 (12.33)	38.20 (12.00)	.136
Gender, *n* (%)				.866
Female	7 (70.00)	6 (60.00)	6 (60.00)	
Male	3 (30.00)	4 (40.00)	4 (40.00)	
Disability, *n* (%)				
Yes	0 (0.00)	0 (0.00)	0 (0.00)	
No	10 (100.00)	10 (100.00)	10 (100.00)	
Education Level	4.60 (0.52)	4.90 (0.57)	5.10 (0.57)	.148
Musical Identity [a]	2.00 (0.67)	2.00 (0.82)	2.10 (0.32)	.928
Music Lessons (Years)	3.70 (4.92)	2.20 (3.08)	1.80 (2.57)	.682
Days Lapsed [b]	8.30 (8.33)	17.60 (8.14)	17.80 (10.00)	.044*

Note. [a] Musical identity was obtained using the Ollen Musical Sophistication Index (OMSI; Ollen, 2006) musician rank item. Musical identity was used because it was reported to be the best single-item measure that represents musical sophistication and musicality (Zhang & Schubert, 2019).
[b] Days lapsed refers to the number of days between the pre- and post-test of the self-construal measures.
* $p < .05$.

See Table 2 for the mean pre-test and post-test self-construal scores by condition. For brevity, only statistically significant findings are reported here; non-significant results are detailed in Supplementary Materials Appendix C.

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Table 2: Mean Self-Construal Scores at Pre-Test and Post-Test

	Control		Chinese		Western	
	Pre-Test *M (SD)*	Post-Test *M (SD)*	Pre-Test *M (SD)*	Post-Test *M (SD)*	Pre-Test *M (SD)*	Post-Test *M (SD)*
Singelis (1994) Self-Construal Scale						
Interdependent	78.10 (9.98)	73.80 (10.65)	73.10 (14.00)	67.00 (11.57)	72.70 (11.97)	69.60 (13.87)
Independent	76.10 (13.54)	72.50 (10.86)	76.60 (12.73)	73.20 (9.81)	77.40 (9.70)	75.90 (8.24)
Twenty Statements Test						
Interdependent	5.10 (4.98)	5.00 (4.88)	9.90 (4.77)	9.80 (5.14)	6.40 (6.17)	5.67 (6.50)
Independent	14.30 (5.44)	13.80 (5.29)	9.60 (4.33)	9.80 (5.14)	13.30 (6.17)	14.22 (6.46)
Yang (2017) Self-Construal Scale						
Difference vs. similar to others	0.42 (5.08)	-0.35 (5.28)	-1.46 (3.03)	-1.84 (2.77)	-2.97 (3.40)	-3.37 (5.10)
Self-containment vs. connectedness to others	-10.03 (6.63)	-9.05 (6.65)	-9.66 (6.21)	-10.79 (4.07)	-13.07 (4.10)	-11.41 (3.54)
Self-direction vs. reception to influence	-2.18 (4.26)	-1.15 (4.87)	-0.81 (3.01)	0.11 (2.03)	-1.47 (5.26)	-0.46 (3.79)
Self-expression vs. harmony	-4.53 (3.35)	-4.25 (4.10)	-5.76 (2.95)	-5.84 (3.15)	-2.52 (4.63)	-3.11 (2.78)
Consistency vs. variability	-7.43 (3.29)	-2.50 (4.37)	-3.81 (3.37)	2.44 (4.40)	-2.77 (5.41)	2.66 (5.21)
Decontextualized vs. contextualized self	0.02 (4.71)	-.045 (4.55)	-1.61 (4.94)	-0.94 (4.93)	-2.82 (3.98)	-0.86 (5.40)
Self-reliance vs. dependence on others	0.87 (4.59)	1.65 (5.27)	-0.51 (3.86)	0.81 (2.87)	0.38 (4.09)	1.14 (4.06)
Self-interest vs. commitment to others	-2.68 (3.76)	3.50 (4.51)	-3.81 (2.81)	3.29 (2.95)	-4.17 (3.87)	2.46 (3.32)

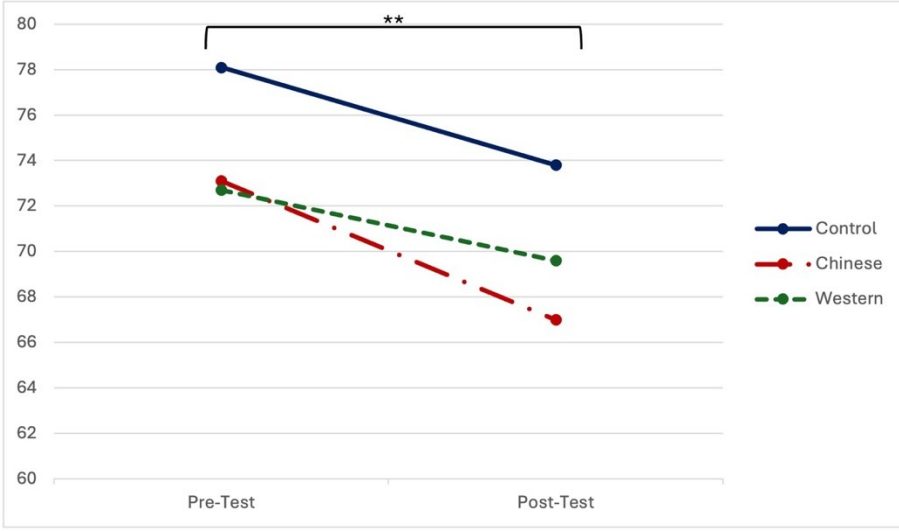
Note. For Yang's (2017) Self-Construal Scale, each dimension's score was ipsatized (i.e., the score of each dimension minus the overall average). A positive score indicates a tendency toward independence whereas a negative score reflects a tendency toward interdependence.

S-SCS

Interdependent Self-Construal

The main effect of the music prime condition was not significant, $F(2, 27) = 0.74$, $p = .489$, partial $\eta^2 = .052$, indicating no differences in interdependent self-construal between music conditions. The within-subjects main effect was significant, $F(1, 27) = 12.10$, $p = .002$, partial $\eta^2 = .309$, showing differences in interdependent self-construal between pre-test and post-test. The interaction effect was not significant, $F(2, 27) = 0.45$, $p = .640$, partial $\eta^2 = .033$, indicating that music conditions did not influence changes in interdependent self-construal between pre-test and post-test (see Figure 1a).

Figure 1a: Pre-Test and Post-Test Scores: S-SCS Interdependent Self-Construal



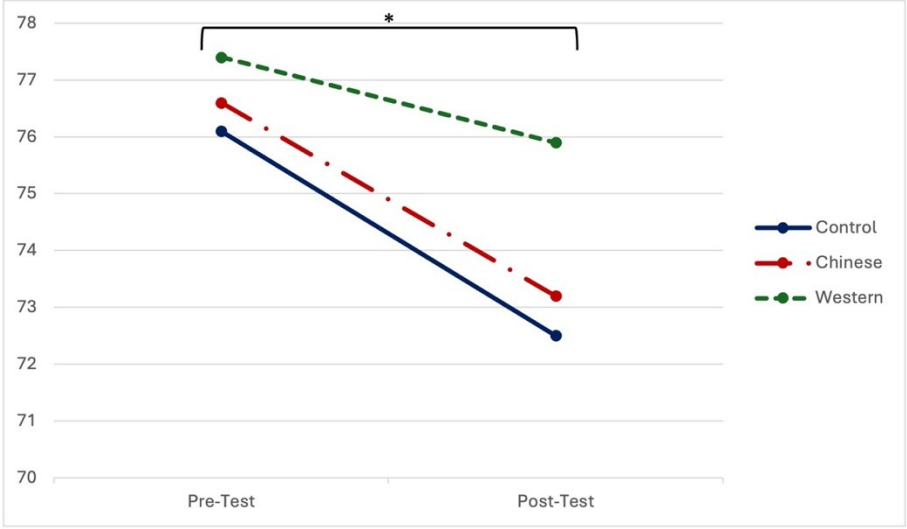
** $p < .01$.

Independent Self-Construal

The main effect of the music prime condition was not significant, $F(2, 27) = 0.14$, $p = .874$, partial $\eta^2 = .010$, indicating no differences in independent self-construal between music conditions. The within-subjects main effect was significant, $F(1, 27) = 6.01$, $p = .021$, partial $\eta^2 = .182$, indicating differences in independent self-construal between pre-test and post-test. The interaction effect was not significant, $F(2, 27) = 0.34$, $p = .718$, partial $\eta^2 = .024$,

indicating that music conditions did not influence changes in independent self-construal between pre-test and post-test (see Figure 1b).

Figure 1b: Pre-Test and Post-Test Scores: S-SCS Independent Self-Construal



* $p < .05$.

TST

There were no significant main effects or interaction effects for both interdependent and independent self-descriptions on the TST. Refer to Supplementary Materials Appendix C for more information.

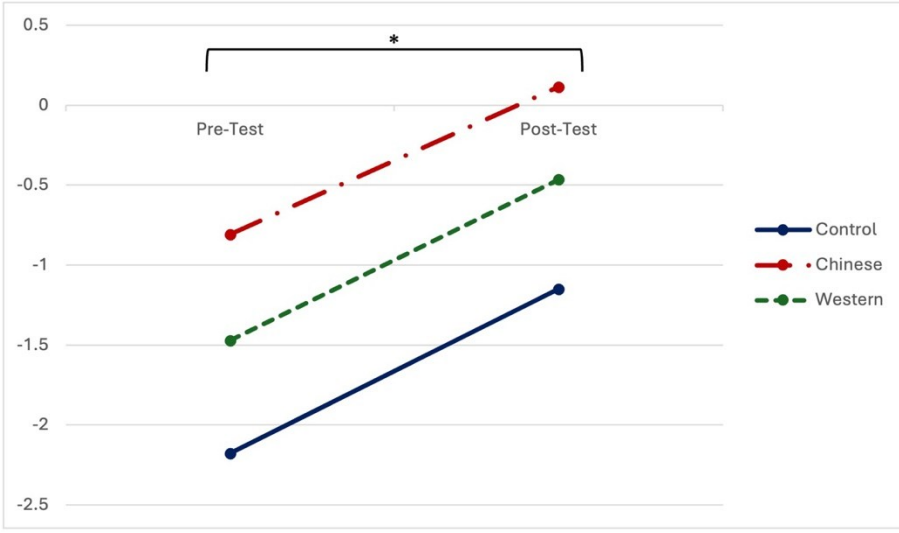
Y-SCS

There were no significant main effects or interaction effects for the following Y-SCS factors: difference vs. similar to others, self-containment vs. connectedness to others, self-expression vs. harmony, decontextualized vs. contextualized self, and self-reliance vs. dependence on others. Refer to Supplementary Materials Appendix C for more information.

Self-Direction vs. Reception to Influence

The main effect of the music prime condition was not significant, $F(2, 27) = 0.30$, $p = .746$, partial $\eta^2 = .021$, indicating no differences in the self-direction vs. reception to influence factor between music conditions. The within-subjects main effect was significant, $F(1, 27) = 4.57$, $p = .042$, partial $\eta^2 = .145$, indicating differences in this factor between pre-test and post-test. The interaction effect was not significant, $F(2, 27) = 0.01$, $p = .995$, partial $\eta^2 = .000$, indicating that music conditions did not influence changes in this factor between pre-test and post-test (see Figure 2a).

Figure 2a: Pre-Test and Post-Test Scores: Self-Direction vs. Reception to Influence

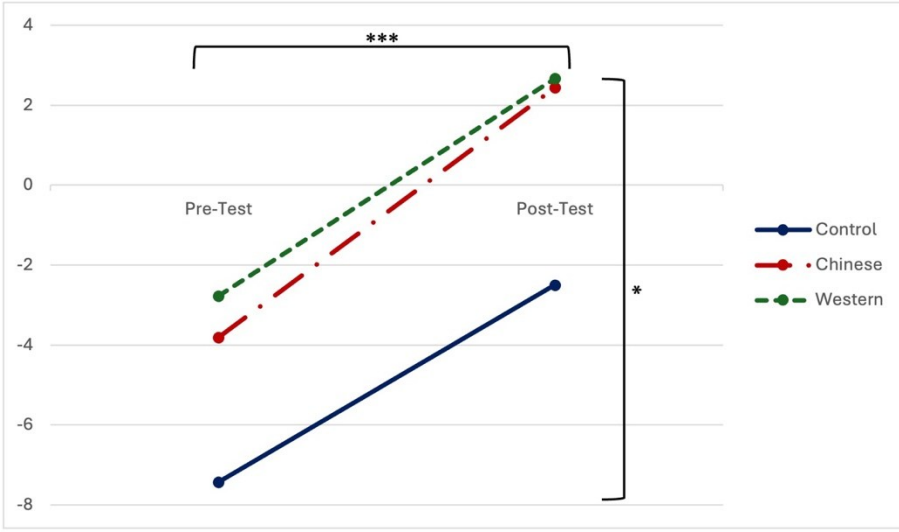


* $p < .05$.

Consistency vs. Variability

The main effect of the music prime condition was significant, $F(2, 27) = 4.21$, $p = .026$, partial $\eta^2 = .238$, with participants in the Chinese prime ($M = -0.69$, $SD = 3.74$) and Western prime ($M = -0.05$, $SD = 3.73$) conditions rating the consistency vs. variability factor higher than those in the control condition ($M = -4.96$, $SD = 3.73$). No significant differences were found between the Chinese and Western prime conditions. The within-subjects main effect was significant, $F(1, 27) = 89.78$, $p < .001$, partial $\eta^2 = .769$, indicating differences between pre-test and post-test. The interaction effect was not significant, $F(2, 27) = 0.43$, $p = .653$, partial $\eta^2 = .031$, showing that music conditions did not affect changes in this factor between pre-test and post-test (see Figure 2b).

Figure 2b: Pre-Test and Post-Test Scores: Consistency vs. Variability

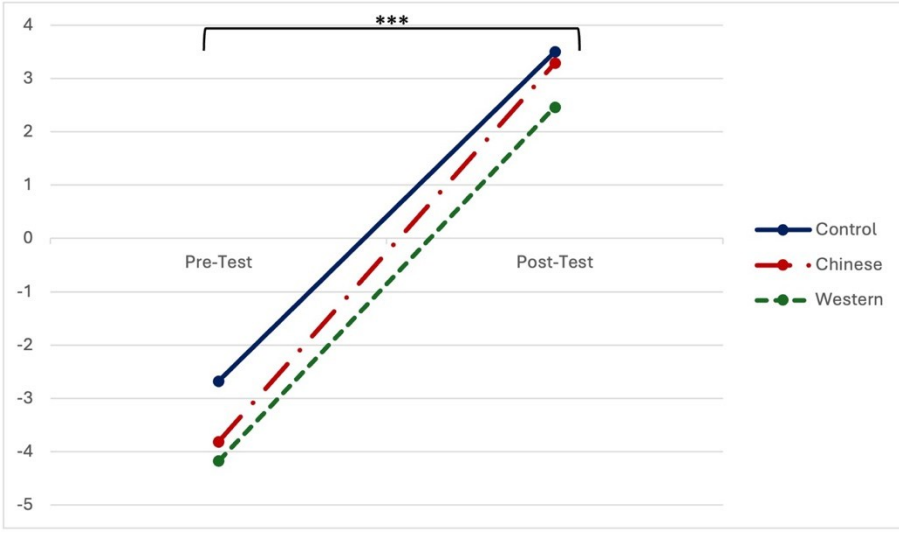


*** $p < .001$, * $p < .05$.

Self-Interest vs. Commitment to Others

The main effect of the music prime condition was not significant, $F(2, 27) = 0.35$, $p = .710$, partial $\eta^2 = .025$, indicating no differences in the self-interest vs. commitment to others factor between the music conditions. The within-subjects main effect was significant, $F(1, 27) = 255.23$, $p < .001$, partial $\eta^2 = .904$, showing differences in this factor between pre-test and post-test. The interaction effect was not significant, $F(2, 27) = 0.41$, $p = .669$, partial $\eta^2 = .029$, indicating that music conditions did not influence changes in this factor between pre-test and post-test (see Figure 2c).

Figure 2c: Pre-Test and Post-Test Scores: Self-Interest vs. Commitment to Others



*** $p < .01$.

DISCUSSION

This study investigated whether music listening could serve as a method to prime interdependent and independent self-construals. While participants' self-construals differed between pre-test and post-test, these changes were not influenced by the type of music, suggesting that the shifts were unrelated to specific music conditions. One possible explanation is that these changes reflect ontogenetic development in self-construal across the lifespan (Guo et al., 2008; Snyder, 2023). However, this seems unlikely given the participants' age range (21-67 years) and the brief interval (1-3 weeks) between pre-test

and post-test. Instead, it is possible that participants were particularly sensitive to the auditory stimuli, including silence and brown noise in the control condition. In other words, the auditory stimuli across conditions influenced participants' self-construal.

Based on the S-SCS, participants reported lower interdependent and independent self-construal scores at the post-test compared to the pre-test across all music conditions. Upon reviewing participants' descriptions of the stimuli, it was evident that most participants recognized the silence in the control condition. Several participants remarked that the silence caused them to reflect on themselves. For instance, one participant described it as "emptiness, peace with own thoughts and background sounds that can be heard through the headphones, an inaudible barrier to keep me in my own sphere and away from others when I want to be alone." This experience likely encouraged self-focus, which might explain the lower interdependent self-construal scores (cf. Cross et al., 2011).

Descriptions of the brown noise track were more varied. While some participants accurately identified it as "static/white noise," others associated it with vivid imagery, such as "a waterfall," "a car driving on the road or the highway," "waves along with the winds blowing," or "airplanes taking off." One participant reported a strong emotional response, describing it as "unpleasant, [and] evokes feelings of work, stress and a mind that is unable to relax." Interestingly, the brown noise also prompted some participants to think about others. For example, one noted, "it sounds like white noise that people listen to when they want to feel calm." This experience of associating brown noise with social contexts may account for the lower independent self-construal scores (cf. Cross et al., 2011).

Taken together, these descriptions suggest that both silence and brown noise in the control condition may have influenced participants' self-construal. Previous research using the cultural icon priming method has employed various types of images in the control condition, such as landscapes (Hong et al., 2003; Hu et al., 2018; Li et al., 2024), meteorological phenomena like clouds (Liu et al., 2017; No et al., 2008), geometric figures (Hong et al., 2000; Wong & Hong, 2005), or flowers and fruits (Sui et al., 2007). In these studies, the control condition either did not influence behaviors (e.g., Liu et al., 2017) or produced effects similar to one of the prime conditions (e.g., Sui et al.,

2007), indicating that that prime condition reflected participants' default self-construal. In contrast, this study found that participants' self-construal changed between pre-test and post-test, even in the control condition. This suggests that silence and brown noise may not be as neutral as intended, as individuals may hold unique associations and personal responses to these types of sounds as described earlier. One implication is that greater care must be taken when selecting stimuli for the auditory control condition. Future research should consider different audio stimuli (e.g., audiobooks, nature sounds) or explore cross-modal control stimuli (e.g., pictures of musical notation, performances, or instruments; cf. Cross et al., 2011).

Based on the S-SCS, participants in the Chinese music condition reported lower interdependent self-construal scores, whereas participants in the Western music condition reported lower independent self-construal scores at post-test compared to pre-test. These findings contradict the hypothesis that listening to Chinese music would prime interdependent self-construal, whereas listening to Western music would prime independent self-construal. The researcher proposes that the priming manipulation may have triggered a contrast effect rather than the expected assimilation effect (Kobylińska & Karwowska, 2014). Simply put, a contrast effect refers to a reaction opposite to what the priming manipulation intended. For example, Kobylińska and Karwowska (2007, 2014) found that shorter exposure to primes produces assimilation effects, while longer exposure leads to contrast effects. In the present study, participants listened to each musical excerpt for at least one minute. Since music is a complex stimulus, extended exposure could engage deeper cognitive processing, yielding contrast effects as participants processed additional information about the music. Future research could test this by comparing short and longer exposure durations.

Assimilation and contrast effects are also influenced by individual differences, such as how bicultural identity is organized within an individual (Benet-Martínez, 2012; Benet-Martínez & Haritatos, 2005). Bicultural identity integration (BII) refers to the extent to which bicultural individuals perceive their dual cultural identities as overlapping or compatible. Individuals high in BII find it easy to integrate both cultures into their daily lives, while those low in BII view their cultural identities as conflicting and a source of internal tension. Research in cultural psychology has shown that individuals high in BII tend to respond to cultural primes in a convergent way, whereas those low in BII respond in a divergent manner (Benet-Martínez et al., 2002; Cheng et

al., 2006; Friedman et al., 2012; Mok & Morris, 2009, 2013; Zou et al., 2008). Since this study did not measure BII, the researcher can only speculate that the participants may have had low BII, perceiving Chinese and American cultures as incompatible. This perceived incompatibility could explain the contrast effects observed in this study. Future studies should include BII to account for such individual differences.

Another possible interpretation stems from social comparison theory (Festinger, 1954). This theory suggests that individuals understand themselves relative to similar others, meaning that self-perception is context dependent. Research has demonstrated that a person's behavior can change depending on the referent group. For instance, Dijksterhuis et al. (1998) found that when undergraduate participants were primed with stereotypes associated with high intelligence (e.g., professors), they performed better on a knowledge test, reflecting an assimilation effect. Conversely, when participants were primed with exemplars like Einstein, they performed worse, demonstrating a contrast effect. Similarly, Heine et al. (2002) showed that when the referent group was manipulated (i.e., comparing participants with Japanese or North Americans), participants' self-reported self-construals conformed to expected cultural differences. In the present study, rather than priming self-related knowledge tied to interdependent and independent self-construals, the Chinese and Western music conditions may have led participants to think about Chinese and American people. This could have prompted social comparisons, resulting in participants perceiving themselves as relatively less interdependent compared to Chinese people and less independent compared to American people. This interpretation may also explain the absence of differences in self-descriptions on the TST, despite participants reporting lower interdependent and independent self-construals through the S-SCS.

The results also showed that participants in the Chinese music condition reported lower independent self-construal and participants in the Western music condition reported lower interdependent self-construal at the post-test compared to the pre-test. Viewed from this perspective, the results seem to partially support the hypothesis. Nevertheless, I acknowledge the critiques regarding the interdependent-independent dichotomy and the concerns surrounding self-construal measurement (Heine et al., 2002; Matsumoto, 1999; Vignoles et al., 2016). To address these issues, the researcher used the Y-SCS to further explore how music primes self-construal. The results

revealed higher post-test scores, reflecting a tendency toward the independent pole, on factors such as self-direction vs. reception to influence, consistency vs. variability, and self-interest vs. commitment to others across all music conditions.

These findings, based on the Y-SCS support the hypothesis that listening to Western music primes independent self-construal, suggesting an assimilation effect. In the Western music condition, participants listened to *Love Story* by Taylor Swift and the main theme from *The Good, the Bad and the Ugly*. The lyrics of *Love Story* describe a romance that defies parental disapproval, culminating in a marriage proposal. The storyline of the latter follows three gunslingers competing to unearth buried Confederate gold during the American Civil War. Both emphasize themes of defying others' opinions, persevering through varying circumstances, and pursuing personal goals – concepts aligned with independent self-construal factors such as self-direction, consistency, and self-interest. As such, listening to these musics may have primed these notions, resulting in higher independence scores on these self-construal factors.

The Y-SCS results, however, did not support the hypothesis that listening to Chinese music would prime interdependent self-construal. Instead, participants in the Chinese music condition showed a tendency toward independent self-construal. They listened to China's National Anthem ("义勇军进行曲" [yiyongjun jinxingqu] or "March of the Volunteers") and the instrumental main theme from *Once Upon a Time in China*. Despite its nationalist elements, the anthem's lyrics emphasize resistance and resilience against adversaries. The latter, a series of Hong Kong films, intertwine themes of Chinese nationalism with the inevitable spread and acceptance of western cultures. While both pieces highlight collective identity and nationalism, they also implicitly emphasize self-direction, consistency, and self-interest, albeit on a group or national level. Consequently, listening to these musics may have primed the corresponding independent self-construal concepts.

Alternatively, a contrast effect may explain the results. Research in cognitive and social psychology indicates that contrast effects can occur when participants become aware of the priming manipulation or realize its influence on the target task (Glaser & Banaji, 1999; Lombardi et al., 1987; Newman & Uleman, 1990; Strack et al., 1993). Participants might have recognized the

overt cultural cues in the Chinese music and lyrics, and responded by rejecting or suppressing associated collectivistic values. This aligns with research showing a global shift toward individualistic values, particularly in places like Singapore (Chang et al., 2003; Santos et al., 2017; R. Yang, 2023). While these interpretations are speculative, future research is needed to explore the mechanisms behind these effects.

Several limitations of this study should be considered. First, the small sample size, while meeting assumptions of normality and homogeneity of variance, limits statistical power. A larger sample would enhance the robustness of the findings. Additionally, the sample consisted solely of bicultural individuals from Singapore, which may limit generalizability. Second, self-selection bias is a concern, as participants with a particular interest in music may have been more likely to participate, potentially skewing the results. Third, the self-construal priming experiment followed an interview about participants' favorite music, which could have influenced outcomes by attenuating the intended priming effects. Additionally, although the researcher was masked to the priming assignment, the researcher's presence in the room as participants completed the post-test questionnaire may have introduced social desirability bias. Finally, the priming stimuli included both instrumental music and songs with lyrics. While each condition contained one instrumental piece and one song, it is unclear whether participants paid equal attention to the lyrics, which may have influenced the priming effect. Future research should address these limitations by using a larger and more diverse sample, a more controlled experimental design, and exploring how different types of music affect self-construal.

CONCLUSION

In conclusion, this study investigated whether music could serve as a self-construal priming manipulation. The findings indicated that participants' self-construal changed from pre-test to post-test across all music conditions, suggesting that factors beyond music influenced self-perception. Nevertheless, the researcher argues that all auditory stimuli, including silence and brown noise, might have affected how individuals perceive and construe the self. Although no differences were observed in self-descriptions on the TST, participants reported lower interdependent and independent self-construal scores at post-test compared to pre-test. Through further analysis, the music used in this study appeared to influence specific self-construal

factors, namely self-direction vs. reception to influence, consistency vs. variability, and self-interest vs. commitment to others. These results highlight the complexities and nuances of using music as a priming manipulation, perhaps explaining why, to my knowledge, no studies to date have explored this priming method. As the first study to explore music as a potential priming manipulation, I have presented possible interpretations and offered recommendations to support this line of inquiry moving forward. While further research is needed to establish the reliability and mechanisms of music-based priming, this study lays important groundwork and underscores the profound impact music can have on self-perception and identity. As Bono aptly said, "music can change the world because it can change people."

Informed Consent Statement
Participants provided informed consent before taking part in the study.

Conflict of Interest
I have no conflicts of interest to disclose.

Ethics Statement
This study received ethical approval via the University of Sheffield's ethics review procedure, as administered by the Department of Music.

Author Contributions
I contributed to the conception, design, execution, and analysis of the study. I also drafted and revised the manuscript for submission.

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Data Availability Statement

The dataset, stimuli, and analysis of this paper can be found at: https://doi.org/10.15131/shef.data.28676423.

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