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Title: Music as Social Bonding: A Cross-Cultural Perspective

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ABSTRACT (59 words)

We extend Savage et al.'s music and social bonding hypothesis by examining it in the context of Chinese music. First, top-down functions such as music as political instrument should receive more attention. Second, solo performance can serve as important cues for social identity. Third, a right match between the tones in lyrics and music contributes also to social bonding.

MAIN TEXT (993 words)

Savage et al.'s article makes an impressive attempt to integrate a broad array of theories on music evolution into their overarching music and social bonding (MSB) hypothesis. Here we propose three extensions which would enrich the MSB hypothesis from a cross-cultural perspective.

First, Savage et al. eloquently demonstrate how the design features of music are well-suited for social bonding, but they do so predominantly from a bottom-up perspective: the adaptive function of music is to meet the basic human needs such as mating, territory advertisement, infant care, and social cohesion. While such needs are spontaneous and the satisfaction of them allows humans to connect at an unprecedented level, social bonding can manifest itself on an even larger scale when music functions in a top-down manner to address the needs which are planned and intended. One example is the idea of music as a political instrument to maintain the social order.

At about the same time in history, Plato and Confucius began to examine the moral implications of music and to depict their own utopia of music. They both regarded music as intimately linked to virtue: “good music” cultivates self-constrained emotions and noble feelings, whereas “bad music” makes people over-indulge in sensual pleasure and therefore leads to moral decadence (Carr, 2006; Liu, 2014). The enormous ethical and educational strength of music makes a perfect tool for the governors to regulate citizens' behaviours, promote the morality, and eventually attain the goal of maintaining the social order.

Perhaps no other country had brought the idea of music as social bonding to the national level and practiced it more rigorously than Imperial China (221BC-1912AD) (Brindley, 2012). Throughout the history, *liyue zhidu* 禮樂制度 (the system of ritual and music) lies at the very core of Confucianism and had been heavily relied upon by the imperial courts to reinforce social bonding (Liu, 2014). According to Confucius, music and ritual (or propriety) are not only mutually dependent but they also complement each other: whereas the former is for the stratification of the society, the latter is for the harmonization and unification. Each social class has its own form of music to appreciate just as each planet revolves around the sun in its own orbit. Social bonding

can thus be maximized in such a well-ordered hierarchical society where everyone finds their own position and be content with what they have.

Second, as noted by Savage et al., the design features of music (e.g., music as cue to social identity) are most typically exhibited in group performance and are much less evident in solo performance. We would like to call attention to *guqin* 古琴 music, which serves as a strong cue to group identity but is most typically played and appreciated in solo (Van Gulik, 2011).

Guqin music has long enjoyed the highest prestige in Chinese musical culture owing much to its symbolization of what is considered to be the utmost virtue in Chinese philosophy: *tian ren he yi* 天人合一 (the unity between nature and human) (Lindqvist, 2006; Tien, 2015). A complete mastery of guqin is widely regarded as the foremost accomplishment one can expect from a scholar-official (or literati).

Traditionally, guqin music was circulated exclusively among small groups of intellectuals. Shared expertise on guqin music, therefore, has gradually become a strong cue to the membership of the elite social class (Lai & Mok, 1981). Such social hierarchy built upon the guqin culture is highly rigid. Sometimes, guqin schools function more like a sect, since they not only indoctrinate ways of playing, but also advocate a way of life. Moreover, most guqin masters are extremely cautious when recruiting their disciples. What they value most is not the technical virtuosity but whether the disciples can truly inherit the essential ideology and virtue embraced by their own guqin school. Every guqin school cherishes its own unique style of playing, making the same piece of music varies considerably from one school to the other. Whereas one can recognize the same piece of music interpreted in different national piano schools (e.g., Austro-German, Russian, French) with relative ease, it would be difficult to perform the same task across different guqin schools even for the trained ear.

Third, we also note the design features of music more from the perspective of music-language coevolution. The success of singing in tone languages depends crucially on both the tones in lyrics and the melodic contours in music. Tones are mainly used in languages such as Mandarin and Cantonese to assign distinctive lexical meanings to words. They can be characterized by their distinctive pitch contours depending on whether the fundamental frequency sustains, ascends or descends (Wang, 1973). Since pitch variation is also an essential feature in music, it is therefore important to examine the alignment between the tones in lyrics and their associated melodic contours (or the “tone-tune correspondence”) (Wee, 2007). Songs with a better tone-tune

alignment are perceptually more salient, thus attracting more people to sing and eventually promoting social bonding (Chao, 1956; Pian, 2000). A higher-than-chance tone-tune alignment has been found in a cross-comparison among nine tone languages although some cases of mismatch were also reported (Schellenberg, 2012).

Moreover, music and language could also interact and coevolve in a more implicit way. It has been proposed that the intervals of the chromatic scale by which many cultures create and represent music have evolved to reflect the spectral characteristics inherent in speech. Based on speech data from American English and Mandarin, Ross et al. (2007) showed that justly tuned chromatic intervals are embedded in the vowel formant ratios of speech, although this hypothesis has yet to be tested against many other languages.

Here we explore the idea of music as social bonding mainly from the perspective of Chinese music. However, given that music is such a human universal, it would be reasonable to examine the issue by taking into account other musical cultures before we can fully accept the validity of the MSB hypothesis.

Conflict of Interest

The authors declare no conflict of interest.

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