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SOCIAL AND COGNITIVE FUNCTIONS OF MUSIC BASED ON THE EXAMPLE OF TUVAN THROAT SINGING

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СОЦИАЛЬНЫЕ И ПОЗНАВАТЕЛЬНЫЕ ФУНКЦИИ МУЗЫКИ НА ПРИМЕРЕ ГОРЛОВОГО ПЕНИЯ ТУВИНЦЕВ

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Music is pervasive across human cultures and throughout times. Particularly, music is of great importance socially. Like many cultures' use of music, throat singing or xöömei, the most distinguished aspect of Tuva's music, contributes significantly to social communication, emotional expression, social bonding and religious rituals. Acknowledgment and consideration of current social cognitive findings of music may thus provide a better insight into the nature of throat singing. To date, evidence has indicated that, similar to language, music is a fundamental channel of communication, and these two constructs may have common origins in a single communicative system. Moreover, music may modulate neural activity in the brain structures associated with emotions and alter our autonomic responses. In addition to information sharing, music thus has the capacity to convey emotions. This ability may further render music a powerful mechanism to facilitate social bonding and ritual practice, as individuals' internal states during these social events become synchronized

Музыка является неотъемлемой частью практически всех человеческих культур во все времена. Музыка выполняет множество социальных и познавательных функций. Горловое пение (хоомей) — наиболее известный вид музыкального искусства тувинцев — занимает важное место в общественной жизни: оно выражает общественные связи, показывает эмоции исполнителей, сопровождает социальное общение и религиозные ритуалы. Признание и постижение общественных и познавательных аспектов музыки могут помочь лучше понять природу горлового пения. До настоящего времени исследования указывали, что, подобно языку, музыка является одним из основных каналов коммуникации. Более того, музыка может модулировать нервную деятельность в мозговых структурах, связанных с чувствами и видоизменять наши автономные реакции. Таким образом, в дополнение к функции обмена информацией, музыка способна передавать чувства. Это помогает музыке выступать мощным механизмом для установления общественных связей и выражения ритуальной практики, поскольку способствует синхронизации внутреннего состояния индивидуумов во время тех или иных общественных действий.

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through musical engagement.

In conclusion, I suggest that those social cognitive perspectives may point toward new directions for a continuing discourse on our understanding of throat singing.

Keywords: Tuva; Tuvans; music; throat singing; function of music

В заключение автор напоминает, что упомянутые общественные познавательные функции горлового пения могут стать новым направлением для исследований в области тувинской музыки.

Ключевые слова: Тува; тувинцы; музыка; горловое пение; функции музыки

Introduction

Music is pervasive across human cultures and throughout times. Appreciation for it appears to be a predisposition. Infants as young as four months already tend to favor consonant music rather than a dissonant one (Zentner, Kagan, 1996).

Equally intriguing is the finding that infants are better at detecting changes in diatonic melodies which conform to keys of major or minor scales, rather than melodies that violate these conventions (Trehub, Thorpe, Trainor, 1990). However, our drive to engage in music and with its reasons for existence has not been readily explained.

On one hand, music may represent an evolutionary adaptation with biological significance, such as being a sexually selected trait that aids courtship in a manner similar to bird singing (Darwin, 2007). On the other hand, music may be merely an invention of humans (Patel, 2010) or a byproduct that evolves to support language (Pinker, 1999).

Despite the ongoing debate surrounding the evolutionary status of music, it is widely conceived that music serves important social functions. For example, music involves communication, notably during parent–child singing of lullabies (Trehub, 2003). Moreover, music has capacity to convey emotion and is an important potential source of pleasure (Blood, Zatorre, 2001; Menon, Levitin, 2005).

Music may also bind groups of people together to increase solidarity and thereby help early humans to thrive (Roederer, 1984). Last but not the least, music is widely observed and constitutes an abstract representation in human communal and religious rituals (Alcorta, Sosis, 2005; Becker, 2001).

Throat singing or xöömei, the most distinguished aspect of Tuva's music, revolves around the principle that a vocalist produces multiple notes at one time. The lower note is the fundamental tone of the voice and sounds like a sustained drone. The second corresponds to one of the harmonic partials. This unique singing style makes no exception in terms of their roles in social functions, particularly given that throat singing has a rich bond to Tuvan culture and traditions (Levin, Edgerton, 1999).

In this mini review, I focus on discussing four interrelated social functions of music: communication, emotion, social bonding and ritual, and their potential relevance to the nature of throat singing. Hopefully, these social cognitive perspectives may contribute to a continuing discourse on our understanding of throat singing.

Music as a channel of communication

The Tuvan society has strong traditions of animism, the belief that natural objects have souls or are inhabited by spirits of rivers, mountains, and many other aspects of the world (Levin, Suzukei, 2006). Because Tuvan people believe that sound is a channel preferred by the spirits of nature to reveal themselves and to communicate with the other living beings, throat singing serves as specific language that Tuvan shamans developed to communicate with those spirits.

In addition to the spiritual context, throat singing is also performed in daily life from lulling a baby to sleep to calling animals from a distance (Pegg, 1992). Researchers even suggest that lullabies might be a formative force that contributes to the development of throat singing (Van Tongeren, 2002), which strengthens the idea that throat singing plays an essential role in social communication in Tuvan society.

Music is indeed a fundamental channel of communication (Kraus, Slater, 2016) and bears resemblance to language (Brown, 2000; Patel, 2003; Tillmann, 2012). Both music and language are organized according to given rules which combine basic components into higher-order structures. Moreover, decoding both constructs requires a fine-grained analysis of acoustic information which unfolds simultaneously over multiple timescales.

S. Brown proposes that music and language may have common origins in a single communicative system, then become separate capacities through a process of divergence and functional specialization (Brown, 2000). Such an intimate connection between music and language has been further corroborated by a growing body of cognitive neuroscientific evidence, indicating that overlapping and shared neural resources are recruited for musical and linguistic processing (Koelsch, 2011; Patel, 2012).

Moreover, music which emanates from language could further accentuate linguistic expression. This would account for the fact that songs generally contain words which often function as a kind of enhancement and stylization of the ideas being expressed in the text. Ancient Chinese literature, the Book of Documents or "Shanshu", also expresses the idea that "Singing prolongs the sounds of speech; The sounds of singing follow prolonged speech sounds; Musical pitches temper the sounds of singing". As can be similarly found in throat singing, xöömei phrases are often interspersed within Tuvan songs with topical words.

During the communication processing of sounds in music, our brains have to determine the physicality from the ears and interpret the underlying information

patterns that might inform us. However, our natural environments are complex, and there may be different inputs that integrate auditory information. Previous research has shown that visual information may affect the brain's ability to construct a percept of sound. As demonstrated by the McGurk effect (McGurk, MacDonald, 1976), when a syllable, "ba" for instance, is repeatedly dubbed on to a lip movement for "ga", we would perceive a hybrid percept, the syllable "da".

Similarly for the sounds as complex as music, evidence has shown that the perception of music performances can be significantly influenced by a performer's movements (Tsay, 2013). Intriguingly, throat singing is recognized as the quintessential achievement of Tuvans' mimesis based on perceptual cues from their surrounding environment. Legend says that Tuvans developed the art of throat singing by imitating the sounds of nature and the calls and cries of animals rich in harmonics (Levin, Edgerton, 1999).

Drawing on the aforementioned findings, could it be possible that natural inputs other than sounds have any influence during the development of throat singing? It would be intriguing to probe to what extent the ambient cues derived from Tuvans' inhabitants interact with the linguistic system and ultimately determine throat singing.

Music as communication of emotion

For Tuvan herders, throat singing also serves as a way to express feelings of exultation. As quoted in van Tongeren, anonymous singer once described:

> "Imagine you're a herdsman and you sit on your horse and you're going somewhere, far away. The moment that you're bored or when you are enchanted by something, like the steppes or the taiga, you immediately have to sing what you feel. If you sit on your horse and you sing, then it hears that you are singing. And it will go even faster, because it likes your songs" (Van Tongeren, 2002: 56).

From the social cognitive perspective, music is not only communicative in the sense of sharing information, but also concerned with transmission of emotions (Panksepp, Trevarthen, 2008; Roederer, 1984). Emotion often accompanies our musical experiences and emotional impact is one of the main reasons that people listen to music (Sloboda, O'Neill, 2001).

Cognitive neuroscientific studies to date have demonstrated that music may modulate neural activity in the brain structures associated with emotions (Koelsch, 2010). Particularly, during listening to pleasure music, dopaminergic neural systems which are associated with reward (a construct involving in craving or wanting states) can be activated (Blood, Zatorre, 2001; Menon, Levitin, 2005). In addition, there is a close connection between music and our physiological responses (Gomez, Danuser, 2007; Krumhansl, 2002). For example, fast and staccato music may evoke faster breathing, higher minute ventilation, skin conductance, and heart rate. In principle,

tempo, accentuation, and rhythmic articulation are the features that most strongly correlate with physiological responses.

Although it is unclear whether different styles and techniques of throat singing are correlated with different kinds of emotions, the link between musical structures and emotions has been previously reported (Bresin, Friberg, 2011; Scherer, 1995). Evidence suggests that sadness may be conveyed by slow tempos, low intensity and legato articulation, whereas happiness is conveyed by fast tempo, high intensity and staccato articulation. Gomez and Danuser's study (Gomez, Danuser, 2007) further reveals that mode, harmonic complexity, and rhythmic articulation can better characterize whether emotional experience is negative or positive, whereas tempo, accentuation, and rhythmic articulation can better discriminate whether emotion is in high or low intensity. Therefore, internal structure of the music plays an essential role in the induction of specific emotions and this principle may be applicable to throat singing.

Music as a means of social bonding

Throat singing should not only be construed as a form of communication, but also be considered in terms of how the music style is embedded in social contexts. For example, throat singing is frequently performed at weddings or a celebration at a nobleman's in Mongolia (Pegg, 1992). Similarly in most cultures, music is employed in consequential events such as seasonal festivals. Through music engagement, individuals' emotional states in these social events are shared and become synchronized, thereby generating heightened pleasure and decreasing conflicts, and the feelings of social cohesion is ultimately fostered (Benzon, 2001; Mithen, 2005; Roederer, 1984).

In early eras, social bonding could arise from community dancing to music, manifested by the coordinated movements of military drills (McNeill, 1995). Such coordinated drills resulted in camaraderie via physical or emotional synchrony, a phenomenon which today can still be witnessed at football games or rock concerts. One recent study provides supporting evidence that when rhythmic activities like music are performed by groups of people, they tend to become synchronized, which reflects social coordination (Kirschner, Tomasello, 2010).

In this empirical study, two groups of 4-year-old children either interacted with one another in the context of traditional music that included dancing, singing and playing or interacted with one another without music. The results show that subsequently, children in the music group increased spontaneous cooperative and helpful behavior relative to the control group. Thus, joint music making encourages individuals to keep collective intention and emotions to behave more cooperatively towards one another. To summarize, music, possibly throat singing as well, offers an opportunity

for group catharsis and thereby facilitates the formation or manifestation of group identity.

Music in religious contexts

In the past, throat singing seemed to be reserved for shamans and was an important preparation for the shamanic rituals (Van Tongeren, 2002). It is possible that throat singing stems from such ritual practice. In an equivalent line, in many cultures, music is used to enter trance, a base for shamanism and early religions (Richter, Ostovar, 2016). Generally speaking, music is inseparable from communal and religious ritual (Becker, 2001). Human rituals share basic structural components of pattern, sequence and repetition. These components are amplified and intensified via the incorporation of recurrent music (Alcorta, Sosis, 2005).

As described above, music has the capacity to induce emotional effects. In addition, our autonomic functions, including respiration, and cardiovascular function, are altered in response to eternal musical rhythm (Gomez, Danuser, 2007). Not surprisingly, emotion, especially happiness, is frequently evoked in religious ritual (Becker, 2001) and participants engaged in ritual trance demonstrate changes in autonomic functions (Alcorta, Sosis, 2005). Together, the capacity of music to entrain automatic states and emotions is instrumental in imbuing human rituals with emotional significance. This process may provide the basis for creating and synchronizing motivational states in ritual participants (Alcorta, Sosis, 2005; Alcorta, Sosis, Finkel, 2008).

Conclusion

Humans are intensely social creatures and music is an important social endeavor. The pursuit of music may stem from our biological-based social nature, which continues to motivate musical activity from the past to the present. Music is a powerful means of human communication by which people can share meanings as well as emotions. This ability renders music a robust mechanism for creating cohesive groups and shaping human rituals. Like many cultures' use of music, throat singing is also prioritized around communication, social gathering, or shamanic rituals. Given the significant contribution of throat singing in the social domain of the Tuvan society, current social cognitive findings and approaches to music may stand as an excellent medium for better understanding the nature of throat singing.

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