Universal Journal of Educational Research 2(7): 526-529, 2014
DOI: 10.13189/ujer.2014.020705 http://www.hrpub.org

The Effects of Ethnicity and Embodied Cognition on the Processing of Affective Concepts by Adolescents

Liusheng Wang[1, 2,*], Junyan Qi[1], Ting Liu[1]

[1]School of Education, Nantong University, Nantong, 226007, China
[2]School of Psychology and Cognitive Science, East China Normal University, Shanghai, 200062, China
* Corresponding Author: Willow76@ntu.edu.cn

Abstract Mainland Tibetan classes and schools are products of a multi-ethnic nation and are becoming an important part of the educational system in China. However, experimental research on the cognitive and affective development of adolescents in mainland Tibetan classes and schools is rare. The present study consisted of an experimental exploration of the processing of affective concepts by adolescents in mainland Tibetan schools compared with such processing by Han adolescents in the same city. The study design involved a single mixed experiment. Fifty-one seventh-grade students from mainland Tibetan school and Han school in China were required to conduct the lexical decision task. The results of the experiment showed a main effect of body comportment. Adolescents responded faster in a tongue-out state than in a natural state. Mean reaction times did not differ significantly for the Tibetan and Han adolescents. These results indicate that body comportment (body represents) implicitly could affect the affective concepts processing regardless of ethnicity and, furthermore, that the policy of mainland Tibetan schools has improved multiethnic integration in the school and education system of China.

Keywords Concepts Processing, Embodied Cognition, Adolescent, Mainland School, Tibetan Classes and Schools

1. Introduction

In order to intensify the training and development of Tibetan talents and to fully utilize high-quality educational resources of mainland, the government of China made a major policy decision to open mainland Tibetan classes and schools in 1984. Mainland Tibetan classes and schools are schools or a single class in Han schools located in Han cities in which all students are Tibetan from Tibet, most of them are sons or daughters of Tibetan farmers and herdsmen. Besides the curriculums and contents taught at traditional Chinese schools, the students of mainland Tibetan classes and schools should learn both Chinese language and Tibetan language. Up until 2009, 53 mainland high schools were qualified to recruit Tibetan adolescents. An accumulative total of 36,727 Tibetan adolescents were recruited into mainland Tibetan schools as middle school students, 30,370 Tibetan adolescents were recruited as high school students, and nowadays 18,640 adolescents registered at different mainland Tibetan classes and schools [1]. Mainland Tibetan schools are well equipped with modern teaching equipment and good teachers; thus, the Tibetan adolescents who attend these schools are well educated. Mainland Tibetan schools are an effective contribution to the development of the Tibetan people.

Most students in mainland Tibetan schools live far away from their families since they live in dormitories at the schools. They are also typically unable to visit parents who have stayed in Tibet. A few scientific research studies have examined the psychological development of adolescents in mainland Tibetan schools, including, for example, the correlation between personality traits and coping styles [2], self-efficacy and academic achievements [3], subjective well-being [4], and a comparison of Tibetan and Han students' personalities [5]. These studies were conducted using questionnaires as research instruments to analyze the social development of adolescents in mainland Tibetan schools. However, little attention has been paid to the cognitive and affective development of these Tibetan students, such as their processing of affective concepts, through experiments which could provide a deeper understanding of these adolescents' psychological mechanics.

Concept processing involved in a lexical decision task could reveal the cognitive function of adolescents. In order to better explore the concept processing of adolescents, body comportment was introduced into the design to reveal the inner representation of participants. Embodied cognition theory proposes that modal simulations, bodily states, and situated action underlie cognition [6]. Mental access to concepts is based on the internal creation of embodied experiences; the areas of the motor and pre-motor cortex associated with specific body parts (i.e., the hands, legs, and mouth) become active in response to motor language

referring to those body parts [7]. Furthermore, the way humans move and comport their bodies is one expression of the way they (literally) carry their culture. In pre-wired embodiments, body comportment triggers basic, evolutionarily prepared affective and cognitive reactions that subsequently prime more complex representations [8]. Thus, culture is embodied so that social and cognitive processes influence one another.

Sticking one's tongue out (Tongue-out, for short) is part of a traditional Tibetan etiquette for paying respect on an honored person. Sometimes it expresses a warm welcome for good friends or relatives [9]. However, tongue-out is not an expression of respect among people with a Han ethnic background. Among Han people, tongue-out is an action expressing loveliness or naughtiness when making face; it can also express a sense of surprise. As such, tongue-out should have a special cultural connotation for Tibetan people.

Therefore, the research questions of the current study were as follows: (1) Can the processing of affective concepts be affected by body comportment? (2) How do the effects of body comportment on affective concept processing differ between adolescents in mainland Tibetan schools and adolescents in Han middle schools? The hypotheses were as following: (1) Body comportment could affect the processing of lexical decisions; (2) The Tibetan adolescents responded faster in tongue-out than Han adolescents did. In order to examine these research questions, we designed one 2×2×2 mixed experiment with body comportment, ethnicity, and valence of word as the independent variables and reaction time as the dependent variable.

2. Method

2.1. Participants

Participants were 51 students from two types of middle schools in China. One group was from a Han middle school (13 males, 14 females) and the other group was from a mainland Tibetan middle school (11 males, 13 females). Both middle schools were located in the same city in a broader context of Han culture. All participants were seventh-grade students in middle school with normal or corrected-to-normal vision. All participants signed consent agreements. No participant reported any history of psychiatric disorder.

2.2. Materials

The stimuli used were 40 Chinese words from a data set named the *Chinese Affective Words System* [10], in which each word consists of 2 Chinese characters. Half were of positive valence (mean =6.76, SD =.23) and half were of negative valence (mean =3.08, SD =.26). Ratings were obtained on a 9-point scale, 1 stands for negative, 5 stands for neutral, 9 stands for positive. There was a significant difference in valence, t (38) =48.13, p <.001. The familiarity of the words was taken into consideration as well; for the familiarity of positive valence words, mean =5.159, SD =.06; for the familiarity of negative valence words, mean =5.160, SD =.05. The difference in familiarity of words was not significant, t (38) =0.375, p >.05. Furthermore, 20 pseudo-words were used as interference stimuli. All the stimuli were presented by E-prime software.

2.3. Procedure

The experiment consisted of two stages whose interval time was four weeks. Each participant posed in one of two body comportments involving natural state and tongue-out comportment while doing the experiment in the first stage, and posed in the other body comportment in the second stage (Fig. 1).

Figure 1. Body comportment. upper: natural state;below: tongue-out state.

Participants were required to conduct the lexical decision task in each stage. Participants identified the word displayed on the computer screen as either a real or pseudo-word as quickly and accurately as possible by pressing the left or right key on the response box. Response keys corresponding to real or pseudo-words were counterbalanced. Each trial began with a 1000 ms fixation, followed by the presentation of the stimulus, which was then replaced by a blank screen for 1000 ms. Each stimulus remained on the screen until a response was made (Fig. 2). All the stimuli were presented randomly. Another 4 trials were conducted as a practice block before the experiment.

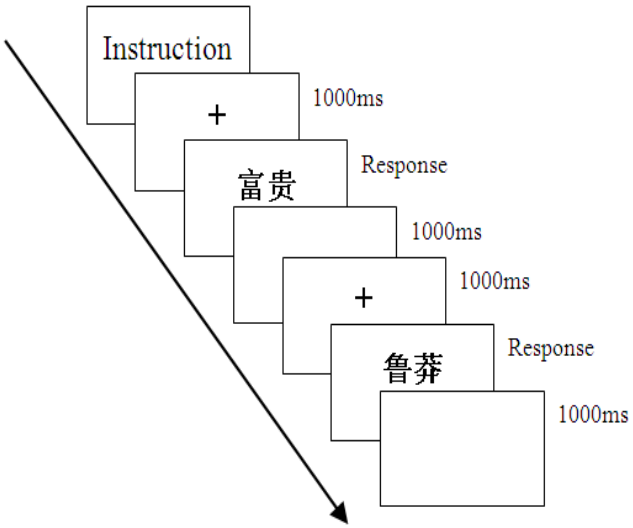

Figure 2. Illustration of the experimental procedure.

3. Results

The responses to pseudo-words and incorrect responses to real words were not analyzed. The criterion for an extreme reaction time was one of less than 150 ms or more than 3,000 ms [11]. Data left further were dealt with 3 SD criterion. As such, 15.68% of the data were removed.

Table1. Mean reaction time and standardized error of comportment, ethnicity, and valence (ms)

Factor	Condition	*M*	*SE*
Comportment	Natural	1081.43	37.32
	Tongue-out	821.71	23.68
Ethnicity	Han	928.06	28.20
	Tibetan	975.08	29.86
Valence	Positive	933.66	29.07
	Negative	969.48	28.96

A body comportment (natural vs. tongue-out) × ethnicity (Han vs. Tibetan) × valence of word (positive vs. negative) repeated measures analysis of variance (ANOVA) was conducted. The results showed a main effect of body comportment, F (1, 49) = 75.88, p < .001, η^2 = .608. The participants responded faster in tongue-out (M = 821.71 ms, SE = 23.68) than in a natural state (M = 1081.43 ms, SD = 37.32), indicating a significant role of the body in affective concept processing. There was marginal significant main effects for valence, F (1, 49) = 3.675, p = .06. There was no main effects for ethnicity, F (1, 49) < 1, p > .05 (Table 1). There were not any significant interactive effects, p > .05. In terms of changes in reaction time between the two comportments, Han participants (236.56 ms) experienced changes similar to those experienced by Tibetan participants (282.88 ms), t (100) = .908, p > .05.

4. Discussion

The results of this study indicate the significant role of the body in affective concept processing in both adolescents in a Han middle school and adolescents attending a mainland Tibetan school. Body comportment affected the processing of affective concepts, i.e., adolescents responded faster in tongue-out of body comportment than in a natural state of body comportment. When adolescents posed in these two body comportments, they experienced different levels of tension in their action system. A tongue-out state stands for loveliness, naughtiness, or a warm welcome, depending on one's ethnic background (i.e., Han or Tibetan). Therefore, they were in different bodily states. According to classic cognitive theories, the core knowledge representations in cognition are a modal data structures processed independently of the brain's modal systems for perception, action, and introspection [12]. However, the result of the current study provided supportive evidence for the embodiment of concepts. Theories of embodied cognition hold that higher cognitive processes operate on perceptual symbols and that concept use involves partial reactivations of the sensory-motor states that have previously occurred during experiences with the world [13].

Although adolescents conducted the experimental task explicitly and did not perceive the effects of body comportment on their task, their reaction times in different bodily states were significantly different when processing the affective concepts. Therefore, body comportment implicitly influences their concept processing. As embodied cognitive theory claims, concepts are assumed to be embodied in the sense that interactions with other individuals and with objects lead to the formation of their conceptual memory traces in modality-specific brain areas, which typically process the corresponding sensory and action-related information [14].

With respect to the ethnicity of the adolescents, there was no difference between the two groups in their processing of affective concepts, and there was also no difference in the changes between the two body comportments. Although the adolescents in the mainland Tibetan school were born in Tibet and lived in the context of Tibetan culture during their childhoods, they responded as fast as Han adolescents when processing the affective concepts. It seemed that this result was in contradiction with embodied cultural cognition which claims that the body constitutes an important carrier of cultural values and imperatives [15]. One explanation might be as follows: Adolescents may be influenced by macro-level components (such as the nation-state's designation of some groups as minority nationalities or ethnic groups, and the social scientific construction of ethnicity) and micro-level components (such as the student's family and community background, significant life events, campus status hierarchies, campus interactional experiences, and status negotiation by the student) [16]. Tongue-out is a culturally specific expression among Tibetan people; however, the connotation of this action has gradually

changed among the younger generation. Before 50's 20th century, bending gently and sticking out the tongue slightly is the traditional Tibetan etiquette. Said in Tibetan custom improvement, when you see the guest, you should clasp your hands as common courtesy. Bending and sticking out the tongue are not feasible. As time goes go, it is not a common etiquette today[17, 18]. Tongue-out is becoming a common signal as Han adolescents to express loveliness, naughtiness, or a relaxed feeling. Additionally, adolescents in mainland Tibetan schools have learned the Chinese language and stayed in a mainland city for several years; According to the national curriculum standards, middle school based on the national curriculum, less on the local curriculum. The courses are basically about mainstream culture. The courses about Tibetan culture are rarely. The influence of Han culture has penetrated in all aspects of Tibetan students' life. Tibetan students in those schools understand their national customs poorly. Some students even showed their imitated psychology to the Han culture[19]. Thus, their long immersion in mainland culture has improved the Tibetan adolescents' concept processing and lessened the gap between the two groups. This indicates that the policy of mainland Tibetan schools has improved multiethnic integration in the Chinese school system.

Acknowledgments

This research was sponsored by Ministry of Education grants 11YJC1900025 and Jiangsu Educational Science Planning grant C-a/2011/01/23. The authors thank Ministry of Education of P. R. China. and Jiangsu Educational Science Planning Office for the supports to the research.

REFERENCES

[1] Han, X., Democratic reform created new land for modern education development of Tibetan Tibetan Education,, 2009(3): p. 7-10.

[2] Chang, X., J. Shi, and D. Ma, Correlation between personality traits and coping styles for junior high school students from Tibetan in Shanghai. Medical Journal of Chinese People's Health, 2013. 25(1): p. 94-97.

[3] Ran, R., Y. Huang, and J. Yu, The relationship between self-eficacy and academic achievement of junior high school students in the mainland Tibetan class /school. Journal of Jiangsu Teachers University of Technology, 2012. 18(1): p. 78-83.

[4] Zhang, C., R. Ran, and Y. Xu, Correlation between social support, coping style and subjective well-being of junior high school students in the mainland Tibetan school. Chinese Journal of Health Psychology, 2010. 18(6): p. 728-730.

[5] Ran, R. and H. Fang, A comparative study of personality traits of the off-Tibetan and Han students in junior high school. Journal of Jiangsu Teachers University of Technology, 2010. 16(1): p. 56-60.

[6] Barsalou, L.W., Cognitive and neural contributions to understanding the conceptual system. Current Directions in Psychological Science, 2008. 17(2): p. 91-95.

[7] Bergen, B. and J. Feldman, Embodied concept learning, in Handbook of Cognitive Science: An Embodied Approach, P. Calvo and T. Gomila, Editors. 2008, Elsevier Science: San Diego. p. 313-331.

[8] Cohen, D. and A.K.Y. Leung, The hard embodiment of culture. European Journal of Social Psychology, 2009. 39(7): p. 1278-1289.

[9] Regongduojieka, Custom and ritual in Gannan area. China Tibetology,, 1993(2): p. 91-99.

[10] Wang, Y., L. Zhou, and Y. Luo, The pilot establishment and evaluation of Chinese affective words system. Chinses Mental Health Journal, 2008. 22(8): p. 608-612.

[11] Wang, C. and D. Peng, The roles of surface frequencies, cumulative morpheme frequencies, and semantic transparencies in the processing of compound words. Acta Psychologica Sinica, 1999. 31(3): p. 266-273.

[12] Barsalou, L.W., Grounded cognition: past, present, and future. Topics in Cognitive Science, 2010. 2(4): p. 716-724.

[13] Niedenthal, P.M., et al., Embodiment of emotion concepts. Journal of Personality and Social Psychology, 2009. 96(6): p. 1120-1136.

[14] Kiefer, M. and F. Pulvermüller, Conceptual representations in mind and brain: theoretical developments, current evidence and future directions. Cortex, 2012. 48(7): p. 805-825.

[15] Leung, A.K.Y., Embodied cultural cognition: how culture is carried by our bodily experiences, in Department of Psychology. 2005, University of Illinois: Urbana.

[16] Kayongo-Male, D. and M.B. Lee, Macro and micro factors in ethnic identity construction and educational outcomes: minority university students in the People's Republic of China. Race Ethnicity and Education, 2004. 7(3): p. 277-305.

[17] Kang, X., Nationalism or universal principles--Zhang Yintang's thought in two leaflets on enlightening and improving Tibetan Custom. Journal Of Tibet Nationalities Institute (Philosophy and Social Sciences), 2010. 31(1): p. 36-39.

[18] Luo, S., Three Tibetan folk. Tibet Geographic, 1996. 2: p. 22-23.

[19] Gao, C. and X. Li, The Influence of Tibetan ethnic minority's customs in Diqing area on their children's socialization. Studies in Preschool Education, 2006(7-8): p. 33-36.