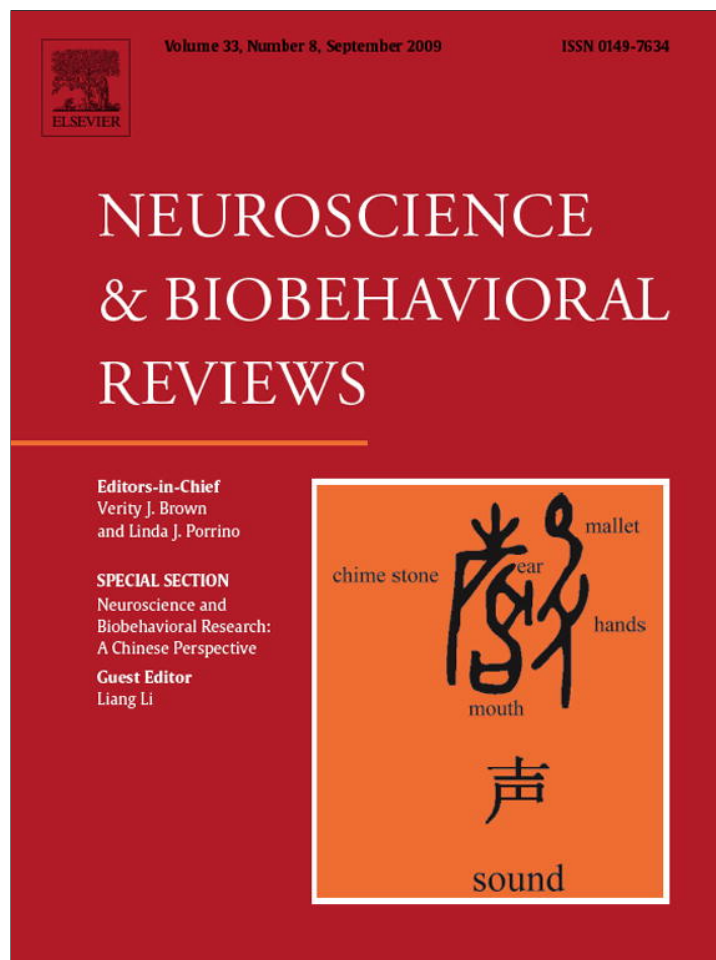


Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

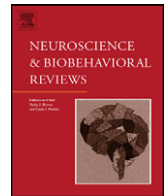
In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



Contents lists available at ScienceDirect

Neuroscience and Biobehavioral Reviews

journal homepage: www.elsevier.com/locate/neubiorev

Editorial

The First International Symposium on Neurobehavioral Science (China, July 2009)

There is a long tradition in China of discussion about the relationship between body and spirit. The famous *Theory of Spiritual Perishability* proposed by the Chinese ideologist, FAN Zhen (circa 450–515 A.D.) in the Southern Dynasties, exerted considerable influence on Chinese scholars for over fifteen hundred years. This theory likens the relationship between the body and the spirit to that of the blade of a knife and the sharpness of the blade: the existence of the spirit depends on the body, while the function of the body is instantiated as the spirit. Even prior to the writings of FAN Zhen, Chinese people had noticed and tried to express the relationship between the external world and the mental representation of the world. For example, the earliest archaic Chinese pictograph characters, which were scripts inscribed on animal bones or tortoise shells, appeared in the Shang Dynasty (16–11th century, B.C.). One of the characters, shown on the front cover of this issue, means “sound”. More than simply the word for “sound”, this archaic character reflects the deep understanding of Chinese ancients about the nature of sound, with several inter-associated properties: (1) the cause (a pair of mallets brandished by hands), (2) the source (the beaten chime stone), (3) the body representation (the ear as the organ for receiving sounds), (4) the mental representation and subsequent oral imitation and (5) the social interaction implied by the communication of the sound between different people.

Today, the Chinese Government has made, and continues to make, significant investment in Chinese universities and research institutes, to support the growth in studies of cognition/neuroscience. This investment is now starting to pay dividends in the form of significant and highly regarded research output from Chinese scientists in the fields of psychology, cognition, and neuroscience.

Largely due to the influence of traditional Chinese culture and philosophy, some Chinese neuroscientists believe that the ultimate goal of neuroscience is to reach a comprehensive understanding of the relationship between neural mechanisms, cognitive functions, behavioral actions, and social interactions. To explore their shared interests in cross-level investigations and to mark the coming age of modern Neurobehavioral Science in China, from June 27th to 30th, 2009, the First International Symposium on Neurobehavioral Science was held in the mountain resort of Lushan, Jiangxi Province, PR China. Participants from the USA, Canada and the UK joined colleagues from Peking University, Beijing and the Chinese Academy of Sciences, Beijing. Their topics of presentations widely covered Human Psychophysics, Cognitive Neuroscience, Animal Behavioral Models, Neurophysiology, and Molecular Neurobiology. Some presentations at the symposium are reflected in five review

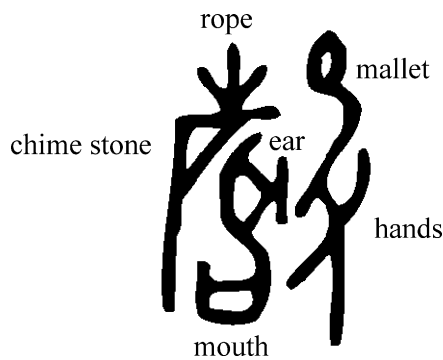
articles that appear in this issue of the journal *Neuroscience and Biobehavioral Reviews*. Reviews from other participants in the meeting will be submitted to the journal in the future.

In this issue, the paper by Li et al. reviews studies of top-down modulation of prepulse inhibition of the startle reflex (a model of sensorimotor gating) in humans and those in rats at levels of behavior, neurophysiology, anatomical circuitry, and transmitter receptors. The authors also emphasize the notion that investigation of top-down modulation of prepulse inhibition is critical for establishing new animal models for studying both cognitive features and neural bases of schizophrenia. The paper by Ye and Zhou reviews both behavioral and neuroimaging evidence concerning how a general executive control system is employed for controlling interference in language comprehension, speech production, and in bilingualism. The arguments proposed by the two authors may have profound implications for the cognitive modularity of the language system. The paper by Xiong et al. reviews the neural circuitry consisting of a subcortico-cortico-subcortical tonotopic loop supplemented by neuromodulatory (e.g., cholinergic) inputs for establishing large-scale and sound-specific auditory plasticity. It also discusses the relationship between the function of this circuitry and auditory learning. The paper by Yu et al. reviews studies on functions of the receptors of the calcitonin gene-related peptide (CGRP) which is widely distributed in peripheral and central nervous systems and plays an important role in the transmission and modulation of pain information. Yu et al. also summarize recent pharmacological studies on the roles of the CGRP-receptor antagonists and agonists in pain-related behavioral responses. The paper by Zhang et al. reviews the critical mechanisms for the development of opioid tolerance and dependence: the opioid-receptor trafficking. Particularly, the authors describe their current understandings of opioid-receptor phosphorylation, endocytosis and desensitization after repeated agonist treatments, and also discuss the role of G-protein coupled receptor kinases in opioid-receptor phosphorylation.

Science does not progress if scientists work in isolation. We are now living in a world in which the variety of research methods being used in cognitive science and neuroscience has never been greater. Most importantly, there is no reason why field boundaries should limit or restrict the exchange of scientific ideas. Review journals, such as *Neuroscience and Biobehavioral Reviews*, offer an important opportunity to map the long journeys that have been made with many little steps. We hope that, in highlighting these articles, we will inspire our colleagues within China to share their ideas widely and benefit from the rich exchange that will follow.

We also hope to stimulate the interest of our colleagues outside China, to look again at the research activity in China and engage with us in productive collaboration to the benefit of all.

In the Shang Dynasty (16–11th century, B.C.) of China, the earliest archaic Chinese pictograph characters appeared as scripts that were inscribed on animal bones or tortoise shells. The front cover of this issue presents one of the characters, meaning “sound” (pronounced as /sheng1/). This character seems to tell us that Chinese ancients had a comprehensive understanding of different, but inter-related, properties of sounds. First, a sound should have a cause—a pair of mallets brandished by hands. And then, when the chime stone, which is hung with a rope, is beaten, it becomes the sound source. In fact, the combination of “hands”, “mallets”, “rope”, and “chime stone” forms another archaic character representing a type of the oldest percussion instrument (pronounced as /qing4/). More interestingly, the concept of the “sound” for Chinese ancients in the Shang Dynasty extends far beyond the physical scope. Surrounded by the character /qing4/, an “ear” and a “mouth” imply the organ representation and the mental representation of the sound, respectively. Moreover, the combination of “ear” and “mouth” forms the character meaning “hearing”(pronounced as /ting1/). Finally, if a person plays the percussion instrument and another person who “hears” the instrument sings with the beating rhythm, the social interaction between different individuals occurs. Thus, the character of the “sound” reflects that even more than three thousand years ago, Chinese people noticed and tried to express the relationship between the external world and the body/mental representations of the world.



Liang Li*

*Peking University, Department of Psychology, 5 Yiheyuan Road,
Beijing 100871, China*

Jun Yan

*Department of Physiology and Pharmacology, Hotchkiss Brain
Institute, Faculty of Medicine, University of Calgary, 3330 Hospital
Drive NW, Calgary, Alberta T2N 4N1, Canada*

*Corresponding author. Tel.: +86 10 6257 6804;

fax: +86 10 6276 1081

E-mail address: liangli@pku.edu.cn

(Liang Li)

juyan@ucalgary.ca

29 July 2009