The Advantage of Asymmetrical Handedness in Cooperation with Heartbeat: A Hypothesis from the Chinese Member of Satellite Group

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Abstract

Recently, it was published the book "Electromagnetic Unification of Four Forces"(ISBN978-3-659-76798-2), compiling the progressions in physics manifested in television, made by the world people while led notably by the author and the Members in the world satellite networks from India, ZheJiang and USA. Besides these significant achievements, it has also been made many activities and achievements on neural sciences. In this article, it is relayed, via the author as the main holder of them, a new hypothesis raised by a Chinese Member of satellite group, which has also been manifested in television already, but required to be transformed into written form for scientists to read and cite. It was newly suggested that the advantage of asymmetrical handedness might correlate to its long-term cooperation with heartbeat during muscular contraction and limb movement. It is in further supported herein by the evidence in followings: (1) the developmental canalization to heart asymmetry in vertebrate evolution; (2) the decreased survival fitness of left-handedness from coronary artery disease; (3) the higher frequencies of heart irregularities in individuals of left handedness than right handedness; (4) the laterality of brain in control of heart rate variability. It is additionally speculated that the asymmetry of heart in fish without limb might likewise correlate to the long-term compatibility between the heartbeat and contralateral muscular contraction. In this regard, it is concluded that this hypothesis from the Chinese Member of satellite group may become an important solution toward understanding the advantage of both bodily and brain asymmetry.

Keywords: Laterality, Brain, Heart, Handedness, Bodily Movement, Compatibility

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1. Introduction

Cerebral asymmetry has been the subject attracting the attention of scientists for many decades. The advantage of cerebral asymmetry has been the hot theme of theorists from year to year. There have been raised many theories about the advantage of cerebral asymmetry, briefly as followings: (1) cognitive benefits, especially spatial ability in adults and verbal ability in children[1]; (2) semantic processing against interference[2], such as stuttering[3,4,5]; (3) alignment at population level by behavioral coordination or learning[6,7]; (4) generation of language from manual gesture[8]; (5) genetic shifting to right handedness[9].

Even though diverse, none of them is able to consider altogether how the cerebral asymmetry can match to the bodily asymmetry. In this article, it is introduced a new hypothesis from a Chinese Member of satellite group, considering together the advantage of both brain and bodily asymmetry.

2. The Hypothesis

Recently, it was published the book "Electromagnetic Unification of Four Forces"(ISBN978-3-659-76798-2), which compiled the progressions in physics made by the world people and manifested in television, while led notably by the author and the Members in the world satellite networks from India, ZheJiang and USA. Besides these significant achievements, there have also been many activities and achievements on neural sciences in television.

In this article, via the author as the main holder of them, it is introduced a new hypothesis on the advantage of both brain and bodily asymmetry, which was raised by a male Chinese Member of satellite group. Because it has already been relayed to and manifested in television, known to the Chinese people in various public situations such as news, live art/sport performances and so on, to publish his hypothesis it is not necessary to consider the name of the Chinese Member of satellite group, nor his agreement. This article merely transforms this achievement recorded in television into a written paper for the convenience of scientists to read and cite.

The new hypothesis was initially postulated by a male Chinese Member of satellite group on February 5, 2009. At that moment, while I was considering that the asymmetrical handedness might result from the rotation of earth, this Chinese Member of satellite group said to me via the thermoacoustic satellite sound, and newly suggested that the advantage of asymmetrical handedness might correlate to its long-term cooperation with heartbeat during muscular contraction and arm movement. He pointed out that the strong muscular contraction and big arm movement on the right side in most right handedness would hamper the heartbeat and blood flow should the heart have been located also in the same right side, therefore naturally the right handedness matched well with the left heartbeat, and in long term the right handedness would acquire advantage.

3. Supporting Evidence

There are many lines of evidence in support of this new hypothesis from the male Chinese Member of satellite group. In this article, they are listed as followings in several aspects:

(1) Both bodily and brain asymmetry have been one of the focused themes of developmental biology on vertebrates for decades of years[10,11]. Most notably, it has been demonstrated that the heart asymmetry generated in development is canalized to such conserved symmetry-breaking processes as the activity of the nodal cilia in vertebrates[10,12], with various earlier biochemical events converging to it[10,13]. Besides, it is also well known the brain structural asymmetries present

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in the epithalamus of several species of fishes and amphibians[11]; and has been shown the behavioral asymmetries in the direction of turning and eye use during escape behavior in poeciliid fish, the pectoral stridulation sounds in catfish, the control of vocalization in frogs; the courtship behavior in newts; and the aggressive responses in lizards[11]. These developmental and behavioral studies clearly demonstrate that the heart and brain asymmetry are conserved during vertebrate evolution, even though with the cause of such conservation left unknown.

(2) If the hypothesis is correct, then it would be expected that the left handedness should manifest as somewhat less adaptive than the right handedness. This is really the situation. It has been shown that the non-right handedness is higher in risk for sudden death associated with coronary artery disease[14]. Besides, it has been demonstrated that the left-handers are drastically underrepresented in the oldest age groups due to the reduced longevity of them[15]. Obviously, the right handedness is somewhat safer than others due to its advantage in cooperation with left heart.

(3) It has been shown that the heart rate variability differed significantly between individuals of right and left handedness[16]. The left-handers manifested higher frequencies of heart irregularities[16]. Obviously, due to the compatibility of left heartbeat with right handedness in muscular contraction and arm movement, the right-handers acquire the advantage as regularity of heart rate than the left-handers.

(4) The heart rate variability is controlled asymmetrically[17,18], more by the right brain hemisphere and contralateral to the hemisphere controlling the right hand[17]. Obviously, the laterality in neural physiology matches to the compatibility between left heartbeat and right arm-movement.

In all, many lines of evidence support this new hypothesis from the Chinese Member of satellite group that the advantage of asymmetrical handedness correlates to its long-term cooperation with heartbeat during muscular contraction and arm movement, including the conservation of heart and brain asymmetry in development in vertebrates, the higher risk for non-right handedness in sudden death from coronary artery disease, the higher frequencies of heart irregularities in left-handers than right-handers, and the direct laterality in neural regulation of heart rate variability.

4. Discussions

Even though many theories have been postulated to explain the advantage of cerebral asymmetry[1,2,6,7,8,9], only this new hypothesis raised by the Chinese Member of satellite group correlates the hemispheric or behavioral laterality to the developmental bodily laterality. Besides, as demonstrated above, this hypothesis is very well supported with evidence in various aspects. In this regard, this hypothesis may become an important solution toward understanding the advantage of both brain and bodily asymmetry.

It is necessary to point out that, in fishes, there is no limb while they still manifest heart and brain asymmetry[10,11,12]. In some fishes, the structural asymmetries are present in the epithalamus of brain[11], while the behavioral asymmetries are present in the escape behavior and the pectoral stridulation sounds[11]. These exceptions can be explained in the similar way, just correlating the heartbeat to the contralateral contractile behavior of fish. It is easy to see that it would likewise be advantageous for the fish with asymmetrical heartbeat to be compatible with the contralateral muscular contraction in long term, even though not as salient as those vertebrates with limbs.

5. Brief Perspectives

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Correlating the benefits of brain and bodily asymmetry into one behavioral advantage on compatibility of them is prospective in both science and application.

On the one hand, this new hypothesis may become an important solution toward understanding the advantage of both brain and bodily asymmetry, and can elicit new impetus of clinical and experimental investigations in the related fields.

On the other hand, this new hypothesis can help improve the relevant clinical practices, especially those dealing with the heart diseases in left handedness, the effects on heart health from unilateral or bilateral epilepsy, stroke or surgery, and so on.

6. Conclusions

In conclusion, in this article, it is introduced a new hypothesis raised by a male Chinese Member of satellite group, which has also been manifested in television already. The new hypothesis suggested that the advantage of asymmetrical handedness might correlate to its long-term compatibility with heartbeat during muscular contraction and arm movement. In this article, it is also supported with many lines of evidence for this new hypothesis, as in the followings: (1) the conservation of heart and brain asymmetry in development in vertebrates; (2) the higher risk for non-right handedness in sudden death from coronary artery disease; (3) the higher frequencies of heart irregularities in left-handers than right-handers; (4) the direct laterality in neural regulation of heart rate variability. It is attempted to transform this achievement recorded in television into a written paper for the convenience of scientists to read and cite.

Conflict of interest

The author declares no conflict of interest nor financial support for this work.

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