Artificial Self- Awareness In Over Time

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Abstract

Self-awareness results from consciousness of existence in time and space. Thought and consciousness are distinguishing factors between humans and machines having artificial intelligence. No algorithm has been offered for artificial self-awareness based on Thinking. Previous studies have not studied the relationship between consciousness, thinking and time. This study studied the relationship between Self-awareness, thinking, memories and speech over time. A deep logical connection exists between consciousness, thinking, and time. Based on this research findings, an algorithm can be designed for artificial consciousness and Self-awareness.

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1. Introduction

Self-awareness which is the result of knowing consciousness is one of the matters that neurologists have considered for many years. Some animals have levels of self-awareness [1][2][3]. In the MSR Test designed by "Gordon Gallup Jr." a deep relationship was shown between consciousness, self-awareness and related memories. Mental damage and memory can affect self-awareness quality [4][5]. The origin of human consciousness is from his awareness of location over time and recalling the memories can be related to consciousness levels. remembering memories has a direct relationship with consciousness. Activating memories, and integrating information in the brain are directly related to Self-awareness [6][7]. relationship of self-awareness and memory is fully known in Alzheimer's disease [8][9][10]. Perception of time by the brain is a very complex issue. The brain does not store time in memory and sometimes saves a lengthy memory in separate

and short events [11]. The human brain saves concepts instead of general information. Consequently, remembrance of memories has a deep conceptual relationship with new events [12]. Man's memory has a deep relationship with speech and language[13][14]. Integration of information in the brain makes access to the related information faster[15][16].

Predictive coding of auditory information is a natural process in the human brain[17]. Many brain activities have been simulated in modern neural networks. Simulation of the relationship between memory and feelings, and also sensory neural networks express the possibility designing of artificial consciousness[18][19].

In this study, a different pattern was designed based on the six-dimensional space-time theory[20][21], and the brain function as well as data transfer based on brain entanglement [22].

2. Time

Dimension 'z' is imaginary from the perspective of two- dimensional creatures on the surface of a ball that is expanding, and they experience dimension 'z' in the direction of the " time " dimension. Each motion on the surface of a two-dimensional sphere is evaluated in proportion to the 'z' axis.
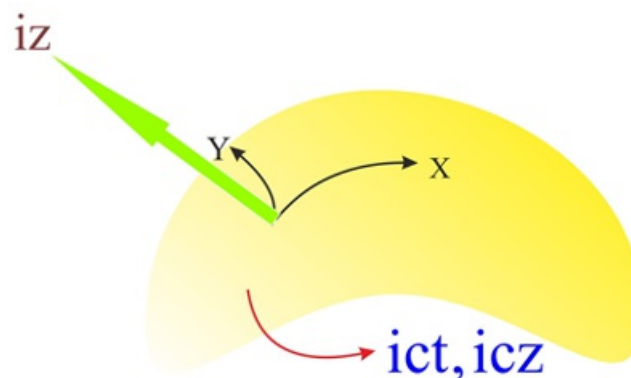

Figure 1. Dimension 'z' is imaginary for two- dimensional creatures on the surface of the sphere.

In fact, the human brain investigates environmental changes, and it creates comprehension and imagination of time due to its activity on the basis of related memories. Each event has a wave function in space and time; the human brain saves the changes related to each object's wave function in memory.

On the basis of the six-dimensional time-space theory[22], the wave function has been built on repetitive moods in space–time depending on the object density. (2.1) Figure 2. Thus, the brain predicts other states of an event during the 'REM' sleep, and it recalls them from memory. This is due to the because of the categorization of daily information during sleep.

$$\int_x^X \int_t^t |\Psi(x,t)|^2 dt dx = 1, \quad |\Psi\rangle = b_1 \left|\tilde{\psi}_1\right\rangle + b_2 \left|\tilde{\psi}_2\right\rangle + \cdots + b_n \left|\tilde{\psi}_n\right\rangle$$

$$|\tilde{\Psi}\rangle = \alpha_1 \left|A_1\right\rangle + \alpha_2 \left|A_2\right\rangle + \alpha_3 \left|A_3\right\rangle + \alpha_4 \left|A_4\right\rangle + \alpha_5 \left|A_5\right\rangle + \alpha_6 \left|A_6\right\rangle$$

$$b_\mu = x_\mu + ti, X_\mu = \left(x_1, x_2, x_3, x_4, x_5, x_6\right) \Rightarrow b_\mu b_\mu{}^* = \left(\frac{1}{3}\right) \qquad (2.1)$$

$$\int_0^{2\pi} \left|\psi(x,t)\right|^2 dx = 1 \rightarrow \frac{2\pi}{6} \Rightarrow \left(\frac{2\pi}{3}\right), \left(\frac{\pi}{3}\right), (\pi), \left(\frac{2\pi}{3}\right), \left(\frac{4\pi}{3}\right), \left(\frac{5\pi}{3}\right), (2\pi)$$

$$A_1 = \pm \left(\frac{\pi}{3}\right), A_2 = \pm \left(\frac{2\pi}{3}\right), A_3 = \pm (\pi), A_4 = \pm \left(\frac{4\pi}{3}\right), A_5 = \pm \left(\frac{5\pi}{3}\right), A_6 = \pm (2\pi),$$
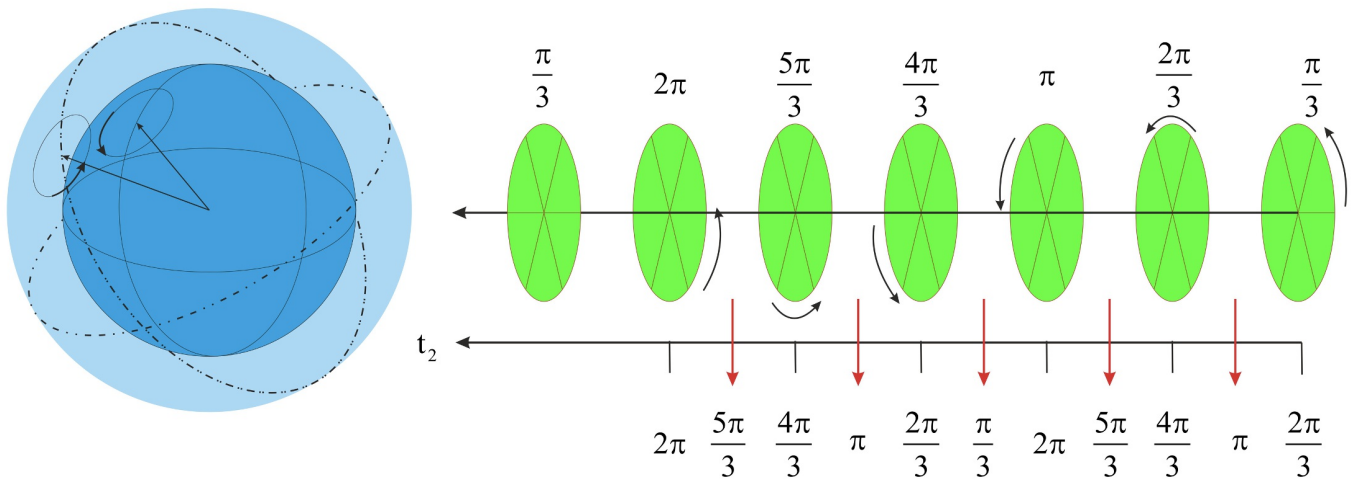
$$\iota = 1, 2, 3, 4, 5, 6$$

Figure 2. The wave function has been built of repetitive state in space–time and the brain can predict other states of the wave function for an event.

The changes related to the wave function of each event are saved and integrated into the short-term memory in the form of a compressed pulse. during classification, similar information is recalled from long-term memory with regard to the type and place of pulse saving. Most of the time, the brain decides to delete similar information, such as the machine's horns voice etc... but at special times, information is saved. Information saving depends on man's thought. For example, when you are thinking deeply and the voice of a crow attracts your attention, then the brain saves that memory; whereas, if it doesn't attract your attention, then you haven't any memory of the crow's voice that day.

The brain can predict future states of wave function for several related events. Figure 3. Sometimes prediction of the future is observed with imaginary and non-significant images in sleep. On the basis of Freud's Dream Interpretation [23], sleep interpretation varies for every individual. For example, chocolate is 'bad' in one's culture, and its observation in sleep can express the occurrence of an unpleasant event in future. As a result of recalling similar information from memory, the brain simulates images of future events.
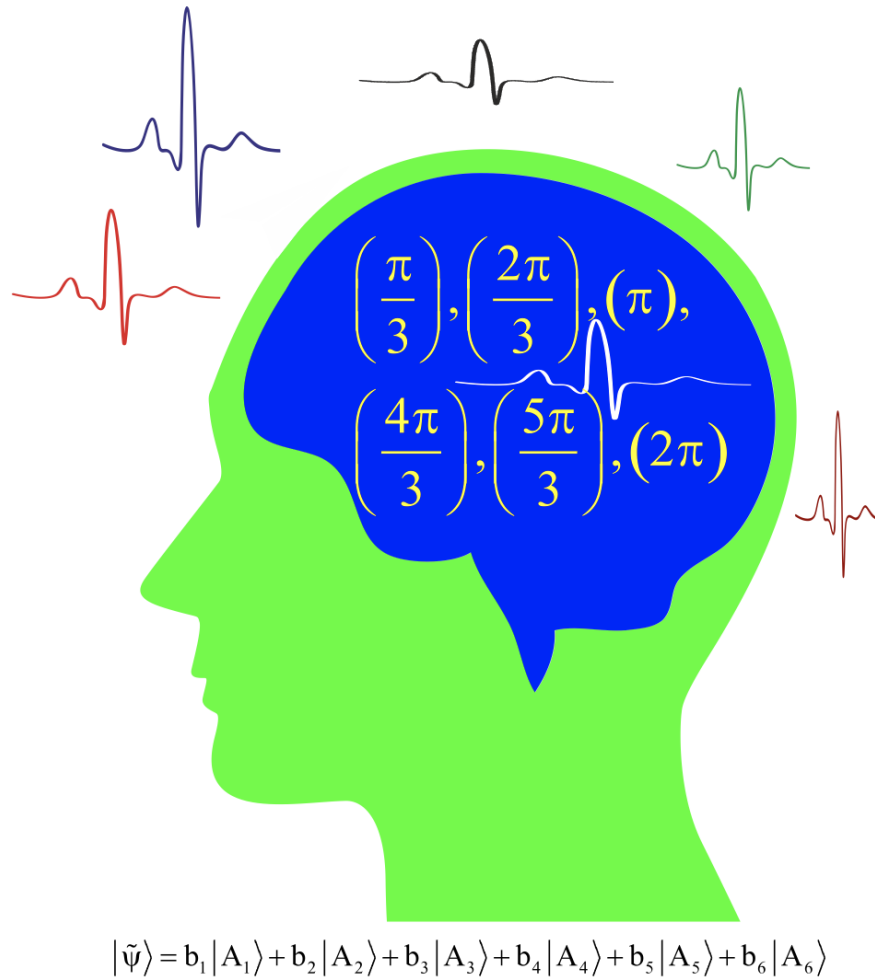
$$\left(\frac{\pi}{3}\right),\left(\frac{2\pi}{3}\right),(\pi),$$
$$\left(\frac{4\pi}{3}\right),\left(\frac{5\pi}{3}\right),(2\pi)$$

$$\left|\tilde{\psi}\right\rangle = b_1\left|A_1\right\rangle + b_2\left|A_2\right\rangle + b_3\left|A_3\right\rangle + b_4\left|A_4\right\rangle + b_5\left|A_5\right\rangle + b_6\left|A_6\right\rangle$$

Figure 3. In REM sleep the brain can predict other states of one wave function for an event due to comparison of daily information and similar information in memory.

3. Memory

Activity The brain is on the basis of related memories. When it hears a word like "sphere", it recalls the whole objects related to the sphere from memory. Figure 4. Or when it hears a person's name, it recalls the whole individual with that name from memory. Then if it hears the person's family name as well, and if the person is known for it, the whole of characteristics are recalled for that person.
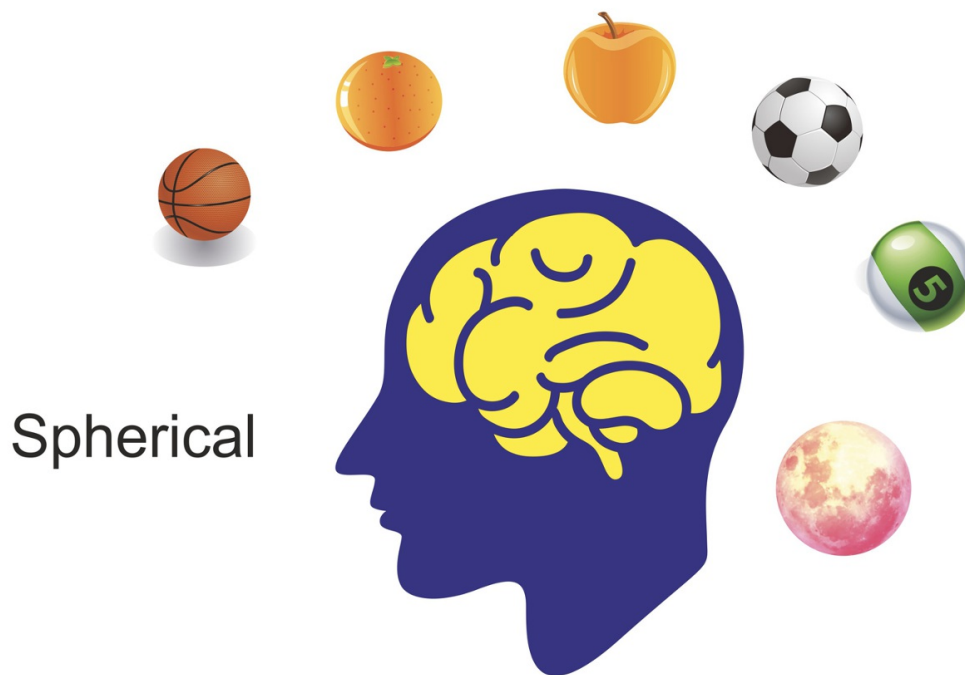
Figure 4. The brain recalls the whole information related to one word from memory.

Details are not stored in memory. This issue indicates that information is stored in memory in a compressed form.

4. Methods

For each object with all of its details, only a compressed pulse is saved in the brain and while remembrance, we don't remember many details of it.

On the basis of compressing information during Spike current[24], the saved information holds the main details, and a special part encodes each detail. The section related to its volume has separate memories for the types of volume. Each part is compressed on a pulse after recognition; while recalling by the memory, the pulse is dispatched to every section. Each section recalls similar pulse memory separately. For example, after hearing the word "spherical", you simultaneously recall spherical volume, tenderness of a spherical object and the whole spherical object from memory. In this method, there is only one pulse against each object and a particular network of IPSP inhibitory neurons decodes this pulse.
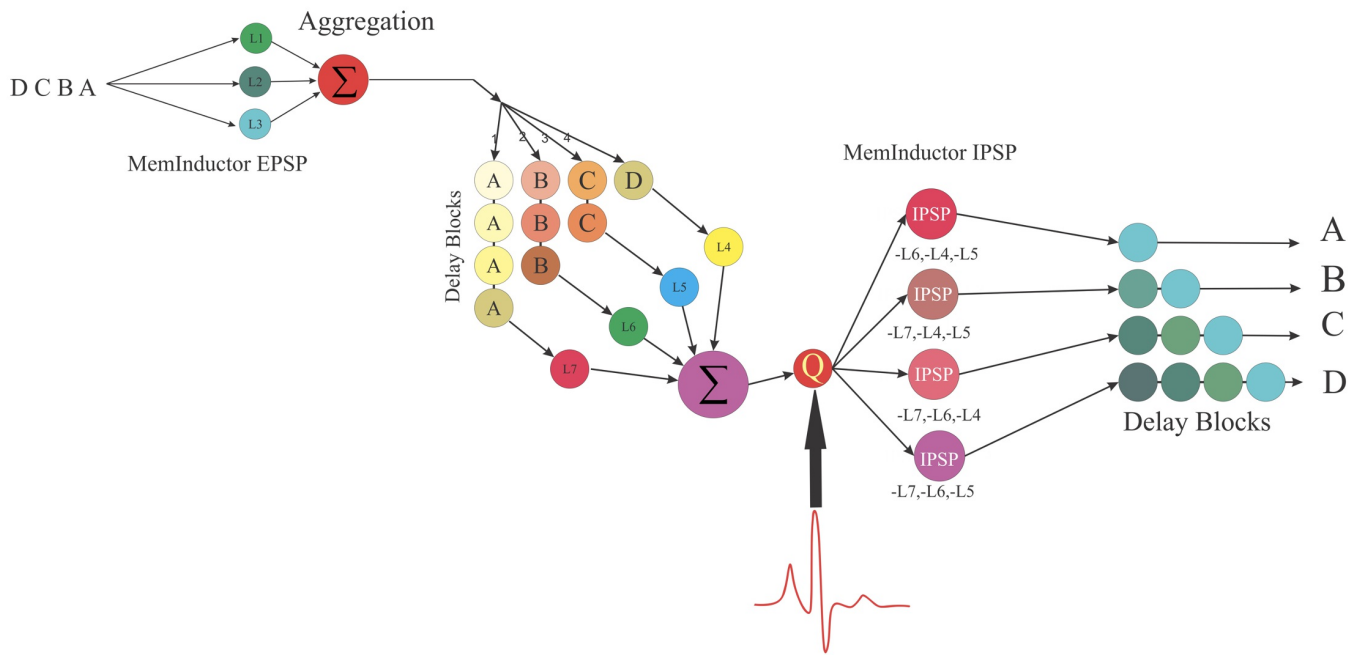
Figure 5. With deleting time and compressing information in the compressed pulses, data are saved in memory.

Animals in most species communicate with their parents in the same way when they are born. A compressed sound pulse that is recognized and decoded only by the same species.
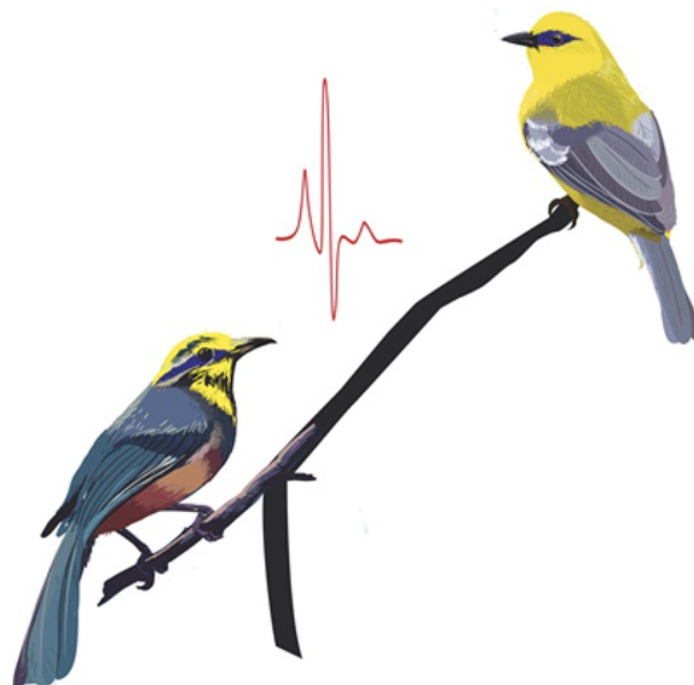

Figure 6. Bird brains recognize and decode the compressed vocal pulses special for their species.

5. Compressing speech in humans

With regard to the deep relationship of speech with thoughts in the brain, the speech numerical method was used for processing information.

Speech is made of various syllables. Syllables are made of consonants and vowels. The human infant learns consonants and vowels based on the difficulty of pronunciation and learns simpler syllables earlier.

On the basis of fractal structure dependent on the golden constant in the neural network, letters are encoded with a Fibonacci sequence.

a u i h y ë	1	ا او ای ه ی
æ ɛ Ω	2	ٕ
b , p , m	3	ب پ م
r ,z ,l	5	ر ز ل
t, d,n,z.	8	ت د ذ ط ظ ص ض ز
ʔ, ɣ,h,x	13	ع غ ق ح خ
dʒ,s, tʃ, ʃ, ʒ	21	ج چ س ش ژ
f,v, c	34	ف و ژ

Table 1. Consonants and vowels are encoded on the basis of learning type in the brain based on the Fibonacci sequence.

The semantic relationship of synonym words is specified by aggregation and evolution of numbers. In such a manner that aggregation and evolution of numbers related to various words are grouped in one framework. (5.1). According to the mirror work in music and art[25], as well as the symmetrical structure of the neural network in the brain and the semantic interpretation of information[26], numbers are coded and interpreted.

$symmetric\ coding\ of\ numbers \Rightarrow xy \to xy \times yx$

$aggregation\ of\ numbers \Rightarrow xkps \to x + k + p + s$

In persian $\Rightarrow Kindness, Love, Affection, Loyalty, Sorrow$

$Love = \text{ʔeʃːʁ}\ in\ speech = \text{ɛʃɣ}$

$Kindness \Rightarrow 3 + 2 + 1 + 2 + 3 + 2 + 8 = 21 \Rightarrow 21 \times 12 = 252 \Rightarrow 2 + 5 + 2 = \textcolor{blue}{9}$

$Love \Rightarrow 2 + 21 + 13 = 36 \Rightarrow 36 \times 63 = 2268 \to 2 + 2 + 6 + 8 = 18 \to 1 + 8 = \textcolor{blue}{9}$

$Affection \Rightarrow 3 + 2 + 5 = 10 \Rightarrow 10 \times 10 = 100 \to \textcolor{red}{1}$

$Loyalty \Rightarrow 34 + 2 + 34 + 1 = 71 \Rightarrow 71 \times 17 = 1207 \to 1 + 2 + 0 + 7 = 10 \to \textcolor{red}{1}$

$Sorrow \Rightarrow 13 + 2 + 3 = 18 \Rightarrow 18 \times 81 = 1458 \to 1 + 4 + 5 + 8 = 18 \to 1 + 8 = \textcolor{blue}{9}$ (5.1)

Consequently, a unique meaning can be regarded for numbers the Concentration intensity of that meaning varies in Different numbers.

Semantically, the words are grouped with various Concentration intensities of meanings.

Interpretation	Number
unique And The Opposite	1
Generate And The Opposite	2
Material And The Opposite	3
Hegemony, Wisdom And The Opposite	4
Happy And The Opposite	5
Time And The Opposite	6
Love,Holy And The Opposite	7
Power And The Opposite	8
METAPHYSICAL And The Opposite	9

Table 2. The meaning of each number was obtained according to the meaning of hundreds of synonymous words.

6. Discussion and results

As a result of this research, it seems that there is a deep connection between Self-awareness and time. Our understanding of time is formed in the brain. And the brain operates based on related memories. Although the passage of

Awareness and will are the two factors dependent on each other. Free will results from consciousness and the authority to have machines with consciousness is an unavoidable affair. Designing a neural network based on the presented method in this paper can be an effective step for producing consciousness in machines with artificial intelligence. as well as more complex patterns of words and numbers can be effective for this method.

Acknowledgements

References

1. ^Lei, Y. (2023). Sociality and self-awareness in animals. Frontiers in Psychology, 13, 1065638. https://doi.org/10.3389/fpsyg.2022.1065638

2. ^Lage, Caio A., De Wet Wolmarans, and Daniel C. Mograbi. "An evolutionary view of self-awareness." Behavioural Processes 194 (2022): 104543. https://doi.org/10.1016/j.beproc.2021.104543

3. ^Birch, J., Schnell, A. K., & Clayton, N. S. (2020). Dimensions of animal consciousness. Trends in cognitive sciences, 24(10), 789-801. https://doi.org/10.1016/j.tics.2020.07.007

4. ^Wales, L. (2023). Conceptual framework of the recovery of consciousness following a severe traumatic brain injury in childhood. Brain Injury, 37(7), 655-661. https://doi.org/10.1080/02699052.2022.2158233

5. ^Thaler, A. (2023). Disturbances of primary integration, subjective awareness, and objective self-awareness. Psychoanalytic Psychology, 40(1), 14. https://doi.org/10.1037/pap0000429

6. ^Bird, C. M. (2020). How do we remember events?. Current Opinion in Behavioral Sciences, 32, 120-125. https://doi.org/10.1016/j.cobeha.2020.01.020

7. ^Zheng, J., Schjetnan, A. G., Yebra, M., Gomes, B. A., Mosher, C. P., Kalia, S. K.,.. & Rutishauser, U. (2022). Neurons detect cognitive boundaries to structure episodic memories in humans. Nature neuroscience, 25(3), 358-368. https://doi.org/10.1038/s41593-022-01020-w

8. ^Clare, L. (2003). Managing threats to self: awareness in early stage Alzheimer's disease. Social science & medicine, 57(6), 1017-1029. https://doi.org/10.1016/S0277-9536(02)00476-8

9. ^Zamboni, G., Drazich, E., McCulloch, E., Filippini, N., Mackay, C. E., Jenkinson, M.,.. & Wilcock, G. K. (2013). Neuroanatomy of impaired self-awareness in Alzheimer's disease and mild cognitive impairment. Cortex, 49(3), 668-678. https://doi.org/10.1016/j.cortex.2012.04.011

10. ^Mimmack, K. J., Gagliardi, G. P., Marshall, G. A., Vannini, P., Weiner, M. W., Toga, A. W.,.. & Alzheimer's Disease Neuroimaging Initiative. (2023). Measurement of Dimensions of self-awareness of Memory Function and Their Association With Clinical Progression in Cognitively Normal Older Adults. JAMA Network Open, 6(4), e239964-e239964. https://doi:10.1001/jamanetworkopen.2023.9964

11. ^Zheng, J., Schjetnan, A. G., Yebra, M., Gomes, B. A., Mosher, C. P., Kalia, S. K.,.. & Rutishauser, U. (2022). Neurons

detect cognitive boundaries to structure episodic memories in humans. *Nature neuroscience, 25(3), 358-368. https://doi.org/10.1038/s41593-022-01020-w*

12. ^Hahamy, A., Dubossarsky, H., & Behrens, T. E. (2023). The human brain reactivates context-specific past information at event boundaries of naturalistic experiences. Nature neuroscience, 1-10. https://doi.org/10.1038/s41593-023-01331-6

13. ^Marian, V., & Kaushanskaya, M. (2007). Language context guides memory content. Psychonomic Bulletin & Review, 14, 925-933. https://doi.org/10.3758/BF03194123

14. ^Martinez-Lincoln, A., Fotidzis, T. S., Cutting, L. E., Price, G. R., & Barquero, L. A. (2023). Examination of common and unique brain regions for atypical reading and math: a meta-analysis. Cerebral Cortex, 33(11), 6959-6989. https://doi.org/10.1093/cercor/bhad013

15. ^Aboud, K. S., Nguyen, T. Q., Del Tufo, S. N., Chang, C., Zald, D. H., Key, A. P.,.. & Cutting, L. E. (2023). Rapid interactions of widespread brain networks characterize semantic cognition. Journal of Neuroscience, 43(1), 142-154. https://doi.org/10.1523/JNEUROSCI.0529-21.2022

16. ^Toker, D., & Sommer, F. T. (2019). Information integration in large brain networks. PLoS computational biology, 15(2), e1006807. https://doi.org/10.1371/journal.pcbi.1006807

17. ^Caucheteux, C., Gramfort, A., & King, J. R. (2023). Evidence of a predictive coding hierarchy in the human brain listening to speech. Nature human behaviour, 7(3), 430-441. https://doi.org/10.1038/s41562-022-01516-2

18. ^Wang, C., Xu, C., Sun, J., & Deng, Q. (2023). A memristor-based associative memory neural network circuit with emotion effect. Neural Computing and Applications, 1-16. https://doi.org/10.1007/s00521-023-08275-9

19. ^Wang, Y., Sun, J., Wang, Y., & Liu, P. (2023). Multimodal Mood Consistency and Mood Dependency Neural Network Circuit Based on Memristors. Electronics, 12(3), 521. https://doi.org/10.3390/electronics12030521

20. ^Mousavi, S. K. The balance In the six dimensions of space-time description of quantum mechanics phenomena and nature of time. Journal of Physics: Theories and Applications, 7(1). https://doi.org/10.20961/jphystheor-appl.v7i1.63874

21. ^Mousavi, S.K. The General Balance in the Six Dimensional of Space-Time. Preprints 2023, 2023081112. https://doi.org/10.20944/preprints202308.1112.v1

22. a, b Mousavi, S.K. Information Transfer Based on Brains Entanglement. Preprints 2023, 2023081731. https://doi.org/10.20944/preprints202308.1731.v1

23. ^Frieden, K. (2012). Freud's dream of interpretation. State University of New York Press.

24. ^Mousavi, S.K. Compression And Decoding Of Data In The Spike Current. Researchgate 2023,9. https://doi.org/10.13140/RG.2.2.14164.88969/2

25. ^von Albrecht, M. (1995). Some types of Mirroring in Literature and Music. International Journal of Musicology, 45-69. https://www.jstor.org/stable/24617751

26. ^Ocklenburg, S., & Mundorf, A. (2022). Symmetry and asymmetry in biological structures. Proceedings of the National Academy of Sciences, 119(28), e2204881119. https://doi.org/10.1017/S1062798705000700