Human Recognition-Behavioral Adaptation System

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Abstract

I understand that phenomena are compatibly explained via *synthetic reasoning-model* inducted from the premise. This is my fundamental researching strategy. Now, some neuroscientists suggested that mammalian brains work via network of the neuronal modules, and I and my colleagues reported that the modules are followed by individual humoral stress-coping glycolipids. Here, I noticed that the module-network followed by the glycolipids could be symbolically structured as a model qualitative- and quantitative-reasoning mammalian recognition-behavioral stress-coping system. On the other hand, Evolutionary psychologists understand that human recognition-behaviors originate from animal recognition-behaviors, and philologists premise that human operates language and symbols semantically. I symbolized human recognition-behavioral stress-coping system as *the self* by using a mathematical logic Complex-network, developed *the self to the world* by using a mathematical logic Topology, and considered *the self* and *the world* as *synthetic reasoning-model* of human recognition-behavioral adaptation system. Furthermore, I explained human psychological realities: personality, neurotic symptoms, sympathy and empathy, social selection pressure, and nature of psychotherapy via the *synthetic reasoning-model*. I also analyzed psychotherapeutic strategies of the main psychological parties for clarifying the comprehensions for human recognition-behavioral adaptation system, and finally, I concluded that my fundamental researching strategy is valid for totally comprehending human adaptation recognition-behaviors.

Keywords Human recognition-behavioral adaptation system · Psychological realities · Symbolizing · Synthetic reasoning-model

Introduction

I understand that phenomena can be fully explained only via a compatible model inducted by qualitative- and quantitative-reasoning from the premise. This is my fundamental researching

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strategy, and the points are induction of *synthetic reasoning-model* from the premise and deduction of phenomena via the model.

Now, some neuroscientists previously suggested that mammalian brains work via the neuronal module-network (Bullmore and Sporn 2012; Perona et al. 2008; Salnyeri and Kovaces 1994), and I and my colleagues reported that the neuronal modules are followed via individual humoral stress-coping glycolipids (Masuda et al. 2019). I noticed that the former is qualitative-reasoning mammalian recognition-behavioral stress-coping system, and the latter is quantitative-reasoning the system. On the other hand, *Evolutionary psychology* understands that human recognition-behaviors originate from mammalian recognition-behaviors, and philologists premise that human operates language and symbols semantically.

Here, I hypothesized that *human recognition-behavioral stress-coping system* could be symbolically structured as a *synthetic reasoning-model*, and that the model could develop for explaining psychological realities belonging to *human recognition-behavioral adaptation system*.

The Synthetic Reasoning-Model

The Self

It was reported that *human stress-coping recognition-behaviors* are also regulated via network of serotonergic module keeping physical strength by regulating the emotional behaviors, adrenergic module inducing stress-coping behaviors, cholinergic module keeping the stress-coping memories, and dopaminergic module integrating these module-functions with compatibility, and that the modules are followed by individual humoral stress-coping glycolipids (Masuda 2020).

Here, the serotonergic module is defined to *E (Emotion)-node*, the adrenergic module is to *W (Will)-node*, the cholinergic module is to *M (Memory)-node*, and the dopaminergic module is to *I (Integration)-node*. Sizes of the nodes are corresponding to the activities of the nodes. *I-node* places in centroid of (M-E-W) triangle because of the integration role. The functional node-network is enclosed with *Self-membrane*. This is structure of *the self*. When *the self* recognizes a strong stress, activities of *M-*, *E-*, and *W-nodes* change for coping the stress, and the triangle-shape is deformed. The deformation moves *I-node* from the triangle-centroid, and *I-node* controls activities of *M-*, *E-*, and *W-nodes* for putting itself back to the centroid. This is mechanism of *compatible adaptation* followed by a mathematical logic Complex-network. M-W-I circuit induces *conditionings*. W-E-I circuit induces *instinctive behaviors*. E-M-I circuit induces *emotional behaviors*. I-(M-E-W) circuit induces *voluntary learning* to gain the adaptation. These are functions of *the self*. Symbolical scheme of *the self* is showed in (Fig. 1).

I-node recognizes the successful maintenance of the compatibility as *pleasure*, and does the failed maintenance of the compatibility as *uneasy*. *The self* suggests *personality*: an individual recognition-behavioral adaptation pattern.

The World

The Basic World

The self of human, who can use language and symbol semantically, develops to *the basic world* followed by a mathematical logic Topology.

Fig. 1 The self. *The self* is inducted from mammalian recognition-behavioral stress-coping system which is network of serotonergic module keeping physical strength by regulating emotional behaviors, adrenergic module inducing stress-coping behaviors, cholinergic module keeping stress-coping memories, and dopaminergic module integrating these node-functions with compatibility. The cholinergic module is defined to *M (Memory)-node*, the adrenergic module is to *W (Will)-node*, the serotonergic module is to *E (Emotion)-node*, and the dopaminergic module is to *I (Integration)-node*. *I-node* places at the centroid of (M-E-W) triangle because of role maintaining the compatibility. *Self-membrane* covers and protects I-(M-E-W). M-W-I circuit induces conditionings. W-E-I circuit induces instinctive behaviors. E-M-I circuit induces emotional behaviors. I-(M-E-W) circuit induces voluntary learning to gain successful stress-copings.

Centroid of the self extends to *Bird-eyes view point*, and the extension-line is distinguished as *Adaptation-axis* built-in learning-elements *conditionings*, *pattern-recognition*, and *model-simulation*. *The basic world* is filled with linguistic and symbolic *association-network*, and differs to *3layers-hierarchy*. *The lower layer* is corresponding to instinctive physical adaptation space. *The middle layer* is corresponding to social mental adaptation space. *The upper layer* is corresponding to symbolical spiritual adaptation space. The hierarchy is covered by *World-membrane* which indicates cognition-limit of human. This is structure of *the basic world*. I-(M-E-W) is rotating along *Adaptation-axis* via *experiences*, and is raising forward *Bird-eyes view point* via *learning*. This is mechanism of *the self-evolution*. *The self-evolution* is significance of existence of *the basic world*. Symbolical scheme of *the basic world* is showed in Fig. 2 (explained in the upper legend).

History of the real adaptation is considered that of *the self-evolution*. *The basic world* is prescribed by *culture*: linguistic and symbolic circumstance which humans collectively create and maintain.

The Thinking-World

The basic world transforms to *the thinking-world* for maintaining semantic propriety of thinking.

Adaptation-axis is changed to *Inference-axis* built-in thinking-elements *algorithm*, *analogy*, and *pattern-recognition*. Hub-keywords of the association-network are on *Inference-axis*. *Premise* is recognized as a *set* at Basic border by using instinctive discretion and comparison

Fig. 2 The world. 1. The basic world. The self is developed to *the basic world* via topological transformation. The centroid in Basic border expands to *Bird-eyes view point*, and the expanding line is named to *Adaptation-axis* built-in learning-elements conditionings, model-simulation and pattern-recognition. The system is differentiated to 3 layers-hierarchy. *Lower-layer* is the instinctive physical space, *Middle-layer* is the social mental space, and *Upper-layer* is the symbolic spiritual space. *Borders 1* and *2* separate the layers. The self-evolution is induced by rotating and raising of I-(M-E-W) along *Adaptation-axis* via successful experiences and learning. *World-membrane* indicates cognition-limit of human. 2. (The thinking-world) The basic world transforms to *the thinking-world* for maintaining semantic property of thinking. *Adaptation-axis* changes to *Inference-axis* built-in the thinking elements algorism, analogy, and pattern-recognition. *Premise* is set around the centroid, and *Corollary* which is separated from the premise, is mapped as *Hypothesis* to Border 1. The hypothesis is mapped as *Conclusion* to Border 2. This upward of I-(M-E-W) along *Inference-axis* is called as induction. Downward of I-(M-E-W) along *Inference-axis* is called as deduction followed by a mathematical logic. 3. [Central-dogma] In the thinking-world, I-node gaining “corollaries-conclusions” develops to *Central-dogma*. *Central-dogma* generalizes them as “premise-conclusion” via the thinking-economy. This generalizing manner is called as humanistic. Humanistic induces the human-specific inference-manner abduction. Synthetic reasoning-model is presented as a scientific aspect of *Central-dogma*.

named to *Gestalt*. *Corollary* is distinguished from the premise via *pattern-recognition*. The corollary is mapped to Border 1, and is described as *Hypothesis* via *analogy* using a natural language. The hypothesis is mapped to Border 2, and is described as *Conclusion* via *algorism*. This upward of I-(M-E-W) along *Inference-axis* is called as *induction*. The downward of I-(M-E-W) along *Inference-axis* is called as *deduction* and deduction must be followed by a mathematical logic. Symbolic scheme of *the thinking-world* is showed in Fig. 2 (explained in the middle legend).

I-node in *the thinking-world* performs pattern-recognition, analogy, and algorithm in this order for one object. This is called as *Scientific method*.

Central-Dogma

I-node in the thinking-world also develops to *Central-dogma*.

Algorithm of artificial intelligence can be completely and not-restrictedly traced via the stronger logical engine; however, algorithm of I-node might be incomplete and restricted. For compensating for the deficit, human invents *abduction* which searches a compatible logic retrospectively. Here, I-node which gains corollaries-conclusions via successful learning and experiences has evolved to *Central-dogma* generalizing the harvests as a simple premise-conclusion via the thinking-economy. Synthetic reasoning-model is presented as scientific aspect of *Central-dogma*. Symbolical structure of *Central-dogma* is showed in Fig. 2 (explained in the lower legend).

Generalizing manner of *Central-dogma* is called as *humanistic*. *Humanistic* often induces Cognitive bias (Wikipedia 2019), and the cognitive bias induces Fallacy (Wikipedia 2019). *Central-dogma* induces Intrusive thought (Wikipedia 2019) for decreasing the uneasiness; however, *Central-dogma* considers learning and experiences increasing pleasure as Flow (Wikipedia 2019). Flow induces transcendent Tacit knowledge (Wikipedia 2019). *Central-dogma* also forms *the self-image* according to *humanistic*.

Human Psychological Realities Explained via the Model

Personality

Performance of functional nodes-network is determined by function of the dominant node, and so, *personality* is also estimated via the function of the dominant node.

Person having a *typical personality* shows a strategical recognition-behavioral adaptation pattern corresponding to the dominant node. I-node size is related to *Paranoid*, *Schizoid*, or *Schizotypal personality*, and the strategy is the cognitive compatibility-maintenance. The size is also related to *Obsessive-compulsive* or *Dependent personality*, and the strategy is decrease of uneasiness via the stereotypic behaviors. W-node size is related to *Borderline personality*, and the strategy is aggression to control the human relationship. The node size is also related to *Avoidant personality*, and the strategy is flight from the struggle. M-node size is related to *Narcissistic personality*, and the strategy is mimicry to the cultural model. The size is also related to *Hysterionic personality*, and the strategy is recognition-behavioral transformation via dissociation and/or conversion. Persons having typical personalities often show a common adaptation strategy, so-called *Co-dependence*.

Quality of node-activity is epigenetically determined, and the quality is indicated as *vectors*. M-node has vectors of memorizing, recollecting, and remembering. I-node has vectors toward M-node, E-node, and W-node, and toward the Bird-eyes view point. As I-node vectors-shapes of humans of *Developmental disability* are different from those of general humans, humans of *Developmental disability* are more and less exposed of the social selection pressure. Humans of *Intellectual Giftedness* who are gifted an extraordinary cognition-ability, are forced to invent *the original learning-manners*. Both of them often show *Over-excitability* for maintaining the I-node vectors-centroid. W-node has vectors toward the self and toward the others. The vector-toward-self is observed as flight, and the vector-toward-others is done as fight. E-node also has vectors toward the self and the others. The vectors might be called as love and/or affection.

Human can phenomenologically describe the self as *the self-image*. *Personality tests* have tried to reason the phenomenological descriptions for understanding the self.

Neurotic Symptoms

Human in stressful situation shows *neurotic symptoms*. The symptoms are explained via functions of circuits of the self.

Symptoms corresponding to emotion are induced via E-M-I circuit. In the circuit, E-node dysfunction induces *fatigue*, and I-node dysfunction does *anxiety*. Symptoms corresponding to conditionings are induced via M-W-I circuit. In the circuit, M-node dysfunction induces *obsession* and/or *compulsion*. As I-node requires prompt dopaminergic satisfaction, the human who can easily find objects increasing the prompt dopaminergic satisfaction easily falls into *abuse*. Symptoms corresponding to instincts are induced via W-E-I circuit. In the circuit, W-node setting-on the flight induces *dissociation* and/or *conversion*, and W-node setting-on the fight induces *aggression*. I-node in the anxious state induces *self-injuring* for getting the prompt dopaminergic satisfaction. When Central-dogma considers itself as unbearable stressor, the human might try *committing-suicide* for eliminating itself. I-node dysfunction in I-(M-E-W) circuit induces *Adjustment disorders*, and *somatization* is often induced via the conversion mechanism.

Neurotic patients are generally fatigue and fall into *depressive state* because of many efforts coping the stresses, and so, the situation-controlling is often therapeutic for them.

Sympathy and Empathy

It was previously reported that *mirror neuron* maintains human empathy (Carr et al. 2003; Pfeifer et al. 2008). I premise that mirror neuron is belonging to I-node.

Human in uneasy situation shows emotional behaviors. Another human whose I-node is placing in the instinctive physical layer or in the mental social layer is affected by the emotional behaviors, and shows the same emotional behaviors for dealing with the uneasy situation. This is mechanism of *sympathy*. Sympathy also induces Peer pressure (Wikipedia 2019). On the other hand, human whose I-node is placing in the symbolic spiritual layer can objectively observe emotional behaviors of the others, and so, the human can surmise origin of the emotional behaviors without inducing the emotional behaviors. This is mechanism of *empathy*. Namely, human experiences sympathy, and learns empathy.

Humans of *Psychopath* are considered to lack sympathy toward the others; however, they do not always lose empathy toward themselves.

Demands of the World Layers

Erikson and Maslow, A. (Wikipedia 2019) individually suggested that Central-dogma should respond to demands of the belonging layer. If Central-dogma does not respond to the demands, it would be exposed by the strong selection-pressure of the layer.

Central-dogma in *the physical layer* must respond to the physical demands. Central-dogma in *the social layer* must respond to behavioral standards and roles prepared in *the cultural situation* for surviving through struggle of the existence in the *cultural group*. Nevertheless, Central-dogma in the social layer can gain *positive approval and estimation* by responding to the standards and the roles. The positive approval and estimation induce the cultural adaptation-superiorities honor, finance, and so on, and the superiorities induce pleasure to

Central-dogma. Furthermore, Central-dogma in the social layer can also find out *models* having much more adaptation-ability and *rivals* interrupting to gain positive estimation, by comparing with the self-image. Originally, *the spiritual layer* is specialized for escaping from the social layer severe to live. Central-dogma in the spiritual layer can obtain the absolute positive approval and estimation even by responding to demands of the self-image. *Maslow* suggested that human whose Central-dogma is in the spiritual layer, often looks to say arrogantly and to act outrageously.

Nature of Psychotherapy

Chomsky suggested that human has an inheritance semantically-using language and symbols.

Language and symbols look like to take on attributes of *the selfish gene*. New connotation inspired into an association-node transforms the association-network for keeping the semantical consistency. This is called to *the spirit of words*. The spirit of words which is gained via successful learning and experiences induces *awareness* accelerating the self-evolution, and the self-evolution would dissolve the present psychological dis-adaptation. *Psychotherapy* is a method accelerating self-evolution of the clients by utilizing the spirit of words. Actually, psychotherapists understand history of self-evolution of the clients, identify causes of their dis-adaptation with empathy, and accelerate their self-evolution by giving positive approval and estimation via successful learning and experiences. Successful learning and experiences of the physical layer are followed by *conditionings*, those of the mental layer are followed by *pattern-recognition* and *model-simulation*, and those of the spiritual layer are followed via *transcendent tranquility*.

As psychotherapy is a kind of *persuasion*, psychotherapy is valid only when the client has a motivation for the self-evolution. Furthermore, clients who do not understand nature of psychotherapy might consider psychotherapy as a magical method.

Psychotherapeutic Strategies of Main Psychological Parties

The Significance

I consider that psychotherapeutic strategies of main psychological parties are expressing comprehensions of the parties for human recognition-behavioral adaptation system. Here, I analyze the psychotherapeutic strategies by using the *synthetic reasoning-model*.

Cognitive-Behavioral Science

Cognitive-Behavioral Science has developed based upon investigations of mammalian conditionings.

Behavioral Therapy mainly deals with human conditionings in the physical layer. *Cognitive Therapy* deals with the successful conditionings in the social layer. *Cognitive destruction* tries to delete the rigid conditionings inducing invalid adaptation-behaviors. *Social Skill Training* is a social operant-conditioning method for the clients to increase positive self-approval and self-estimation.

Psychoanalysis

Psychoanalysis is interested in dynamism of human mentality, and mainly analyzes pattern-recognition and model-simulation of Central-dogma in the social layer.

Psychoanalysts premise sufficient I-node ability of the client, so, they have made the importance on language and symbols. The founder Freud, S. (Wikipedia 2019) noticed common structure of the self-image, and tried to clarify the structure by listening to the *clients-narratives*. Adler emphasized social hierarchy, and advocated *sense of inferiority* in *Individual Psychology*. Erikson investigated *Developmental task* in the social world. Jung found *Archetypes* beyond the cultures. And Reich adhered *Orgone*: Flow-effect of sexual intercourse. *Open dialogue* tries to give social positive approval and estimation to schizophrenic patients by listening their narratives closely. *Family therapy* considers family as a cultural system, and points out *double-binging* forcing dis-adaptation to the client. *Schema Therapy* suggests that the self-image of the client is formed by cultural roles in the belonging society.

Humanistic Psychology

Humanistic Psychology positively estimates humanistic of Central-dogma. The party has tried to integrate Cognitive-Behavioral Science and Psychoanalysis.

Psychotherapists belonging to this party recommend for the clients to take the self-images as they are. *Supporting Psychotherapy* premises insufficient I-node ability of the client, and tries to change the stressful collective situation to the stress-less one. *Group therapy* tries to increase co-estimation among the clients by utilizing physical arts and/or sports.

Strategy in the Spiritual Layer

The spiritual layer is filled with the individual successful association-network, and always gives *absolute acceptance and estimation* to Central-dogma. Central-dogma in the layer can perform an original discovery and a magical invention under the *transcendent tranquility*; nevertheless, the discovery and the invention are corresponding to quality and quantity of the association-network.

I think that Psychoanalysis and Humanistic psychology did not prepare psychotherapeutic strategies in the spiritual layer. However, pioneers of Cognitive-Behavioral Science accepting ideas of Humanistic psychology discovered *Meditation* which induces a transcendent tranquility the same as *Flow* does. I think that Meditation is handled as a main method of *Mindfulness* and Japanese *Naikan therapy* in the present time.

When Central-dogma reaches to Bird-eyes view point via the transcendent tranquility, the soul (self-image) unites to the body (physical-adaptation-standard) entirely. This is mechanism of *identification*. *Kubler-Ross* suggested that the identification would enable to transcend even the death.

General Discussion

I am very interested in *human recognition-behavioral adaptation system*, and so, I have investigated the system basically and clinically.

Frankly speaking, I was not satisfied with comprehensions of the main psychological parties for the system. Psychoanalysis founder *Freud* schemed human mental structure symbolically, but I think that he only tried to qualitative-reason *the self* without any quantitative-reasoning procedures. *Maslow*, who presented idea of Humanistic psychology,

also schemed human mental hierarchy symbolically, but I think that he only qualitative-reasoned *the basic world*. Cognitive-Behavioral Science has successfully explained human adaptation recognition-behaviors; however, I am afraid that the psychological party might not enough qualitative-reason *the world*. Therefore, for integrating these unbalanced comprehensions, I inducted *the synthetic reasoning-model* from the premise of human recognition-behavioral adaptation system, and explained human psychological realities via the model.

Finally, I conclude that my fundamental researching strategy is also valid for totally comprehending human recognition-behavioral adaptation system.

Acknowledgments I utilize PubMed for getting basic and clinical medical literatures. I cited the presented **Specific psychological term** or **Key-person of clinical psychology** from Wikipedia, because I could get them via PubMed.

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