A Creature Called CIH: From a Quantum Explanation of Psychological Disorders to a Classical Limit of Behavior

Saeideh Mohseni Nezhad

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Faculty of Psychology & Education, University of Tehran, Iran.
E-mail: saeidehmohseni@ut.ac.ir

Abstract

The objective of this study is to present a Quantum Model for designing and predicting suitable treatment plans for different psychological disorders. The theory has been extracted from Quantum Field Theories and is modeled on a Conceptual Isolated Human (CIH), which is a totally abstract idea. The Quantum limit of the model explains the way disorders are formed, and its classical limit forecasts the observable CIH behavior. Then, a pattern has been presented for treatment plans based on the CIH Quantum Model, which is named ‘*Systematic Balancing*’. Finally, *Systematic Balancing* is presented in this article in order to explain and predict the treatment plan for the category of ‘*Disruptive, Impulse-Control, and Conduct Disorders in DSM-5*’.

Keywords: CIH; Quantum Fields Theory; Topological Model; psychological disorders; Systematic Balancing.

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1. Introduction

Psychological studies of humans have been tied to quantum physics for some decades. Emergence of concepts such as Quantum Cognition (Bruza & et al., 2015), Quantum Decision-Making Model (e.g. Busemeyer & et al., 2006; Yearsley & Busemeyer, 2015), Artificial Intelligence studies and Quantum Computers (e.g. Ying, 2010) are all indicators of these efforts. These studies have tried to take a detailed scientific look at psychological concepts, such as cognition, memory, and decision making via some mathematical approaches in order to explain and specify them.

There is not any system that is completely classical or quantum. In fact, whatever we see to be behaviors are in fact the classical limit of quantum events, and all giant systems have quantum behaviors on the level of atoms and molecules inside their very small dimensions. So, the base of human macroscopic behaviors can be searched for in the classical limit of quantum studies.

So far, invaluable fundamental and theoretical studies have been commonly carried out in the fields of Math, Physics, Computer Science, and Psychology. However, although we always need these kinds of studies, the thinking behind this article is that even after discovering the founding parameters of our surrounding phenomena, we will still need to use them in response to human requirements. So a model is proposed, however abstract it is, which explains some fundamental concepts and strives to find a route into psychotherapy.

Psychotherapeutic systems present a coherent structure within which the effectiveness of treatment will be tangible. But studies show that there isn't a marked difference in the effectiveness of existing therapy systems (Seligman & Peterson, 2003). Regardless of the merits and limitations of each therapeutic approach, the most significant question which may occur to a psychotherapist is this: 'Which treatment approach is appropriate for which disorder and under what circumstances is it more effective'? Procheska, in the 1st edition of "*Theories of Psychotherapy*" (1979), refers to the possibility of integrating treatment approaches; however, this integration is still in its developmental and evolutionary stages. Although we know the mechanisms of change of disorders, we still don't know how to choose the best treatment plan or how to significantly raise the effectiveness of the therapy. This model attempts to study humans as a Quantum Field, present a mathematical model for psychopathology and psychotherapy, and qualitatively predict the effectiveness of treatment. This model, which is based on holistic philosophy, prepares the ground for us to choose the best treatment plan.

Firstly I define the basic concepts so that their use in this article is clear. Then, I explain the theoretical basis of the model, and by recommending a desired topological design of the quantum model, I then utilize it in one of the psychological disorders defined in DSM-5¹ (American psychiatric association, 2013). After that, I design a new treatment plan by making changes in the existing classification and creating a new composition. The model has distanced from medicine, biology, neurology and chemistry; instead it leans towards physics. The language offered for explaining the phenomena in the model is mathematics, and the knowledge on which it is based is Quantum Field Theory (QFT). However in order to simplify the text and make it

¹ Diagnostic and Statistical Manual of mental disorders, 5th edition

more efficient for the use of psychotherapists, quantum calculations have been omitted from this paper and will instead be presented in another paper (Mohseni Nezhad, preparing).

2. Fundamental Concepts

2.1. CIH

This is an abstract microscopic model for humans, which is called ‘Conceptual Isolated Human’ (CIH). This abstract human is a type of energy and, in fact, is a topological Quantum Field in a background space. Although it has potentials like a real human, it is fully isolated and has no connection with the outside world and other Quantum Fields (other CIHs). The only connection of the CIH with its environment is the ability to receive stimulus from the environment and give responses to it. However it can make a connection with its former experiences, which are saved in its energy fields.

This method of abstractly modeling a conceptual human helps us to study human behavior by eliminating many factors and unnecessary complex interactions. Its results can be used by psychologists and psychotherapists, and they can criticize and integrate available treatment plans. Therefore, the CIH Model makes it possible, with the assistance of disorder symptoms as an input of model, to construct a proper treatment plan for its output. In general, the presented model integrates different categories of psychological disorders in an integrated and coherent unit, and presents them in the form of different geometric graphs.

2.2. Energy

Energy is the origin of all changes and evolutions, either intra- or extra- systemic. Each system contains a limited amount of energy and part of it is used for maintenance and vital functions; especially in organisms. The amount of energy that is usable by the system for its functions, is called “*Effective Energy*”.

2.3. System

An orderly and coordinated collection of parts and elements which interact with each other to materialize a goal. A system is bound to its boundaries and limitations, which makes it distinguishable from the environment. A system can be interactive with the world outside itself (environment); therefore, it receives input from the surrounding, then it gives output in return. For a system, an activity cycle is imaginable; that is to say, according to its internal features, it will have its own activity pattern.

2.4. Super System

A combination of system, network communications, extra- and intra- systemic interactions, the learning effects from itself and environment, all the functions necessary to survive, and self-regulation capability creates a collection that retains its dynamism and balance due to interaction and network communications with its own components and with those outside it. According to this definition, any creature whether alive or not with learning and self-regulation capabilities and potential is called a Super System. A human Super System includes 1) *Central System* 2) *Observer Unit* 3) *Network Communications*.

2.5. *Stability of a Super System*

It means the Super System is self-reliant and independent from other systems and Super Systems in terms of structural and functional dependency.

2.6. *Super System's dynamism*

Any stable Super System that is capable of internal evolution and has a possibility of interaction with its environment can be called dynamic. For a Super System's dynamics, stability is necessary, but not sufficient.

2.7. *Super System Balance*

This refers to the health state of a Super System in which a Super System, without intolerable tension, entanglement or dissociation, can achieve its goals. This balance is a unique state, and will vary from one system to another, and from one time to another time period.

2.8. *Disorder in a Super System*

A Super System whose activity increases tension, entanglement or dissociation will end up with imbalance and then disorder.

2.9. *Constraint*

A constraint is a limitation on the system's degrees of freedom. In other words, every constraint in a system is a state of locking which restricts the flow of energy and reduces its fluidity. Constraints are created either in the process of creation, development, evolution, or learning, or are forged in communication networks and leave long term or even permanent effects on the material structure of a Super System.

2.10 *Node*

Every single information unit is called a *node* which is a quantum wave function. It is very similar to a bit of information in computers and a qubit in quantum computers. They may be in different quantum states and different levels of energy.

2.11 *Link*

Each *node* has to be connected to other *nodes* with *links*. A *Link* is at least one quantum channel to transmit quantum information. CIH system tries to create the shortest links to save system energy consumption.

3. **Why use QFT in the CIH Model?**

Gabora & Aerts in their paper, "*Contextualizing Concepts using a Mathematical Generalization of the Quantum Formalism*" (2002), clearly explain why Quantum Formalism is used in cognitive studies. But when using quantum physics to explain the behavior of CIH as a complete organism, not a merely as a feature or behavior of the organism, we have two problems. First, in Schrödinger's picture of quantum physics, the function of a particle wave is dependent on time

(Schrödinger, 1922) and this issue in the use of this formalism for CIH creates a problem: Since all information about particles exists in wave function, an observer should be able to measure everything about the particle at every moment. Furthermore, according to special relativity, if an observer can measure everything at the same time, he has to move faster than light; a fact which is impossible (Lancaster & Blundell, 2014). Therefore, the existence of the time dimension in Schrödinger's equation is problematic. In Heisenberg's picture, the problem is addressed by separating the time dimension from the wave function of the particle. Heisenberg separated time dependency from the particle, and attributed that to operators which affect the particle (Heisenberg, 1925).

But the second problem, which is more important than the first one, still exists: Schrödinger's and Heisenberg's pictures of quantum physics are both defined in Hilbert space, which work with a limited number of particles. However for CIH, a limited number of particles are not definable. For CIH, a variety of structures and components are imaginable. Meanwhile, CIH must work in such a way that its classical limit is its own Super System features; i.e. it can provide itself with expandability, learning and self-correction characteristics, which is not expected from a system with limited numbers of particles. However, the number of particles in Quantum Fields are not clear because they can create and annihilate (Lancaster & Blundell, 2014). Therefore, single-particle quantum mechanics for explaining human-related issues maybe address the researchers' needs in some cases, but it seems to not be enough. To eliminate these problems, the use of the QFT framework has been suggested.

In addition, space-time becomes discrete in QFT framework and we will have a well-defined system in terms of energy which contains structure, functions and information Processing. So we can use Information Theory and QFT framework for CIH model.

Now, instead of a quantum particle, a Quantum Field is intended to be used; which can be Scalar, Vector, Tensor, or Spinor (Lancaster & Blundell, 2014). Given the expected features of CIH, a spinor field is a suitable choice. This selection prepares the ground for saving, eliminating and exchanging information in a CIH Quantum Field; therefore CIH is able to own a memory and learn. According to Calmet & Calmet (2012), when we use a Quantum Field, we will have memory units - QFTbit - in some topological space that are able to save and retrieve. Another advantage is that Quantum Fields are equivalent, relative to other observers (Schwartz, 2014). That is to say, different observers measure it identically. This feature is of great importance in planning interventions for returning balance to the Quantum Field of CIH, and helps the therapists to plan identical correcting programs. The third advantage is related to the wavelike feature of a Quantum Field. A Quantum Field, unlike quantum particles, enjoys an unlimited degrees of freedom; this means that it has an unlimited number of ways to change its states. This flexibility in changing the states of the system creates a vast research range for explaining human behavior, categorizing disorders, and planning corrective protocols.

4. CIH Model Components

Generally, I assume that each CIH is composed of three main structures which evolve *background energy*. This *background energy* provides a CIH with potential capabilities, such as physical features. As well as this, the *Observer Unit* is connected to CIH's *Central System* (see the section 5 about *background energy*). Later on, these structures have been defined. However, some terminologies are familiar but the definitions might be different. These differences are of

great important because they approximate the discourse between the author and the readers. Be noted that definitions are prepared in such a way as to make their mathematical components independent and orthogonal. I do not want to explain how these components are produced, but just to mention that they are evolutionarily created during a very long time.

4.1. *Central System*

This consists of three components called *Motion (M-component)*, *Emotion (E-component)*, and *Cognition (C-component)*. These three concepts differ from their common meaning in contemporary psychology:

4.1.1. *Motion*

The *independent* capability of CIH to move. Please note the adjective, ‘*independent*’.

4.1.2. *Emotion*

The manifestation of physical and sensory stimuli.

4.1.3. *Cognition*

The *independent* capability of CIH for memorizing and remembering and categorizing information. In this model, *Cognition* does not point to the understanding and consciousness of the Super System, but merely the mechanical processing capability of CIH. Please note the adjective, ‘*independent*’.

4.2. *Observer Unit*

The *Observer Unit* is always a dynamic unit that manages the *Central System* and *Network Communications*, whether this guideline becomes receivable for the *Central System* or not. The *Observer Unit* can direct, adjust and do amendments on the *Central System* or even push it out of the energy cycle; However its most important feature is that it is connected to *background energy* (section 5), and will relay the necessary information from the *Global Network* to the Super System of the CIH.

4.3. *Network Communications*

Network Communications are made by interaction between Super Systems components with their other components and the environment. *Network Communications* include three levels: 1) *Micro-Network* 2) *Super Systemic Network* 3) *Global Network*.

Connected *Nodes* and *Links* at the same level of energy result in a collection of communications which is called a *Micro-Network* (See figure 1 in section 5). Intercommunications among all available *Micro-Networks* of a CIH forge the CIH *Super Systemic Network*. On the third level, communications between the *Central System* and the *Observer Unit* are also taken into consideration, which are called *Global Networks*. The classical limit of actions and reactions of the whole collection determines observable CIH behavior. *Super Systemic Networks* communicate to the *Global Network* via *links* (quantum channels) and *Observer Unit*. This level of communications establishes CIH interactions with one another, with its environment, and with its evolutionary history.

5. The Basics of CIH Model Theory

According to QFT, a vacuum is not empty, but it has a zero current of energy which is named ‘zero-point energy’. Space in terms of energy is in a zero state that contains quantum vibrations, and thousands of quantum particles are created and annihilated every moment. This vacuum is called ‘background-field’ (Lancaster & Blundell, 2014).

So, when we consider CIH as a Quantum Field which allocates a location to itself in the space, the space around it is a quantum vacuum. Now, any stimuli as at least a quanta, which lands in the Quantum Field, will create an unstable quantum *node*. The more stimulating energy exists, the more probability of the *node*’s stability. If similar stimuli are repeated and have similar impacts, the energy of the *nodes* will increase and the potential energy of the *nodes* for stability will be enhanced. Every *node* acts as a memory unit, which is named QFTbit.

Nakahara, in his book “*Geometry, Topology and Physics*” (2003), presents many practical concepts about different types of topology and their use in physics. Here, I assume that if a *node* is supposed to survive (to stay stable in the space) it has to make at least one *link* with another *node*. Another assumption is that the maximum number of *links* that each *node* makes with another *node* is 3, which are called m^2 , e^3 , and c^4 . The collection of *links* and *nodes* makes a ‘*Mesh Topology*’. A ‘*Full Mesh Topology*’ is a field in which each *node* along with another one has all three possible *links*, but such a space would not be created, given that the maintenance and storage of all *nodes* and *links* is not cost-efficient in terms of energy and that CIH, out of necessity, saves information which has more *links* with others and is also more useful. In other words, the existence of a ‘*Mesh Topology*’ is potentially feasible, but, practically, not all of the *links* and *nodes* would be able to survive. Each *node* with linked *nodes* makes a connection and creates a *Micro-Network* of *links* and *nodes* (figure 1). These *Micro-Networks* are localized in Quantum Fields and may be *linked* to other *Micro-Networks*. Each CIH can have a lot of *Micro-Networks*. The more *Micro-Network links* and *links* among *Micro-Networks*, the greater system knowledge it has about itself and the accessibility of information is on the whole simpler and more feasible.

As mentioned earlier, the connection of each *node* with another *node* doesn’t necessarily include all three kinds of *links*. The types of *links* and *nodes* determine the *Information Density*⁵ of the *Micro-Network*. For example, seeing a beautiful and fresh flower would excite an *E-component* more than the *M* and *C -components*. So, landing a stimulus with emotional information registration is more probable (*e-node*). If this stimulus was repeated before, a newly created *e-node* would make an *e-link* with the last similar *node*. It is possible that the experience of seeing a beautiful flower is linked to picking the flower in another environment (*m-node*). So, an *e-link* with the content of inclination to picking a beautiful flower is possibly linked to that previous *m-node*. Consequently, rather than producing a new *node* as a source of new experience, each stimulus may make contact with previous old *nodes* and so make different kinds of *links*. The more *links* that are established, the more probable the durability of the stimulus effect in the CIH Quantum Field is (see in figure 1).

² motion

³ emotion

⁴ cognition

⁵ It means the accumulation of data in a part of topology space

Figure 1⁶. Mesh Topology: *nodes* and *links* in one *Micro-Network*

The formation of any kind of information *node* or *link* will switch on a similar information circuit. For example, if a system is encouraged to save information with the content of *Emotion* and to make more *e-links*, it is highly likely to save emotional content in relation to future stimuli because the Quantum Field, upon receiving the stimuli, would turn on a lot of *e-nodes* and *e-links* that are similar to the emotional arousal of the *Network*. The ‘*principle of least action*’ forces the *nodes* to create the possible shortest *links* so that turning on the circuits and retrieving memory with high speed would use the least amount of energy. In the end, it would determine link-related density, the classical limit of *Micro-Networks*, the *Super Systemic Network*, and the behavior of the whole system. Figure 2 shows a schematic and ideal view of *Micro-Networks* in which it is assumed that the density of stored information would affect the formation of the ‘*Mesh Topology*’ of the CIH.

Figure 2⁷. Schematic diagram (not in scale) of ‘*Mesh Topology*’ for CIH *Micro-Network* by assumption of information density

6. The Quantum Field Model of CIH and its pathology

The created *node*, in the process of making *links* to other *nodes*, will activate the previous information that probably includes all 3 kinds of information: *Motion*, *Emotion*, and *Cognition*. This combination of activated information will create a collection that will run the response to the stimuli. I am going to examine this process in a specific example.

The CIH is exposed to a stimulus which is ‘smelling the perfume’. This stimulus lands in the CIH Quantum Field and produces an unstable *node*. This *node* is called a_0 . If a_0 , when stimulating another *node*, for example ‘pleasantness’, called a_1 can create a *link*, in its short life, an *e-link* will be formed called e_{01} . The *node* a_0 will activate another *node*, with the content of ‘going to *Keukenhof Garden*’ - called B_2 - with which will create the *link* m_{02} . The *node* a_2 is connected to *node* a_3 with the content of ‘blue color’, creating the *link* c_{23} . The *node* a_3 , while making a *link* with a *node* already owning the content of ‘Daddy’s Blue eau de cologne’ - f_1 - also stimulates all information (*nodes* and *links*) related to f_1 .

⁶ Color should be used for Figure 1

⁷ Color should be used for Figure 2

So, stimulation, making *nodes* and creating *links* will progress and if the amount of the ‘effective energy’ reaches the required level, it will shape the CIH behavior (such as smile). Then this output (smile) will create and save a *m-node*. This output can be a stimulus to switch on another circuit and the process will continue until the stimuli becomes weaker and cannot provide the behavior with sufficient energy.

As it is seen, in the beginning of creating and evolution of the CIH, the types of Stimuli and the first *nodes* and *links* are of great importance because they will probably have a role in the creation of a lot of *links*. In the developmental CIH stages, not only stimuli but also types of *nodes* and *links*, will affect the output.

The component that can establish the most *nodes* and *links* with other components has more information density, and is called the *Constraint Component*. A component with the least number of *nodes* and *links* with other components is called the *Dissociative Component* and the other component is called the *Subordinate Component*. Later, the reason for these names will be clarified. When a stimulus enters a field, the *Constraint Component* would have the most power to arouse CIH behavior because it possesses the greatest amount of energy. Thus, the *Dissociative Component* has the least role in shaping the response because it activates the least amount of energy.

The response would be issued from either a *Constraint Component* or a *Subordinate one*, or a combination of both. Depending on the activity of the *Dissociative Component*, its role would be more prominent in the response. In this model, as is seen, the less energy intake by *Dissociative Component*, the less evolution that occurs. A balanced CIH has approximately the same density for all three components.

It is seen that the amount of activity of each component is effective in responding to a CIH. This effect becomes more visible when thousands of *Micro-Networks*, similar to what is seen in figure 3, work together. In the classical limit of CIH behavior, it is seen that the *Constraint Component* is stimulated, and if there are enough *links*, the energy current would be guided towards the *Subordinate Component* and the response would accompany that. Let me say that, in fact, the *Subordinate Component* serves the *Constraint Component*. The more this process is repeated, the less the presence of the *Dissociative Component* because it has fewer *links* and so it plays a minor role in the Quantum Field. This disorder and lack of balance can be so severe that the classical limit of CIH behavior in the presence of the *Dissociative Component* is not visible, as if the *Central System* possesses two components!

Now, let’s return to ‘smelling the perfume’. If the balance exists before the forging of the three components of the CIH Quantum Field, it is likely that the behavior of the system will be like this: understanding and attention (*Cognition*) of towards a pleasant feeling (*Emotion*) due to ‘smelling the perfume’ and expressing a mild smile (*Motion*). Now, suppose there is energy accumulation in the *C-component*. The CIH may forget the stimulus forever within a few seconds because the primary unstable *node* was probably not able to find other *e-nodes* and *e-links*, and had died within a short time after formation; or if the CIH comes across energy accumulation in the *M-component*, its response will probably be exaggerated acting out (*Motion*) in order to discover the source.

Generally, when a classical constraint is located on one of the *Central System*'s components, the action and reaction of the organism constrains that component. For example, the *cognition* constraint will enact cognitive responses (*C-response*) against any stimulus even if a stimulus, in a balanced way, retrieves a reaction of *Motion* (*M-response*) or *Emotion* (*E-response*). In other words, every organism sees the classical world via its own constraint's window. So, eliminating constraints will release the system's energy and push it into a balanced current.

The *Central System Components* satisfy right-handed coordinate system of m-e-c by evolutionary timeline. Therefore as can be seen, there are 8 statuses and 3 couples of statuses of which one shows a balanced state and the 10 others illustrate different behavioral disorders.

- 1 status for balancing condition of CIH
- 1 status for condition in retrieval and calling information from CIH Quantum Field
- 3 statuses for one-component system of constraint
- 3 couples of statuses for two-component system of constraint
- 3 statuses for the Constraint-Subordinate Component system

Table 1. Different cases of balancing and disorders in the presence of needs (such as satisfying hunger) with probable response in receiving object (like food) for satisfying the need

Row	Subordinate Component	Constraint Component	Dissociative Component	Symbol
1	-	-	-	Normal
2	-	M*	-	-M-
3	-	E**	-	-E-
4	-	C***	-	-C-
5	c	M	(e)	c-M-
6	m	E	(c)	m-E-
7	e	C	(m)	e-C-
8	M	E	(c)	M-E-
9	E	C	(m)	E-C-
10	C	M	(e)	C-M-
14:11	-	-	(m), (e), (c)	(m)-(e)-(c)

In the present model, especially for pathology and treatment planning, the *Observer Unit* and *Global Network* activities has been ignored, and the supposition is that the CIH has not had any interaction or exchange with the *background-fields*, so the activity of the *Observer Unit* is zero.

But to clarify the overall topology of the model, I should mention a point about the *Observer Unit*. The *Observer Unit* is always dynamic and active for as long as the *Super System* survives.

The most important function of the *Observer Unit* is to keep the balance of the *Central System* and to receive the required balance level from its evolutionary path through *Global Network* interactions.

Although the *Observer Unit* does not own the *Central System*'s facilities, but it uses them. For example, the *Observer Unit* does not have the capability of storing information and processing,

but it can take advantage of the *Central System's* output due to the *Super System Network's* interactions.

Therefore, if the relationship between the *Observer Unit* and *Central System* is weak, not only will depriving the *Central System* of the *Observer Unit's* capabilities lead to more tightly constraint, but the orders of *Observer Unit* will also be deprived of the cognitive functions of the *Central System*, which can be dangerous for the system.

The extent to which the damage penetrates the *Network Communications* would affect the treatment plan. Since in this article, the existence of the *Observer Unit* and *Global Network* has been ignored, I have not touched upon it in the treatment plan. In the next part, for the categories related to Impulse Control disorders in DSM-5, I will examine CIH pathology with the classical limit of the model (American Psychology Association, 2013) and it will be explored on the level of disorder in the *Micro-Network* and the *Super System Network*.

7. Practicality: The explanation of Impulse Control Disorders based on CIH Quantum Model

In this part, with respect to Impulse Control Disorders, the classical limit of this model has been used to try to explain the symptoms of disorders. In the next section, an effective treatment plan will be presented based on the model.

The category of Disruptive, Impulse-Control, and Conduct Disorders in DSM-5 (2013) are listed in table 2.

Table 2: Disruptive, Impulse-Control, and Conduct Disorders in DSM-5

Disorder	code	code
Oppositional Defiance Disorder (ODD)	313.81	F91.3
Intermittent Explosive Disorder (IED)	312.34	F63.81
Conduct Disorder: childhood-onset type	312.81	F91.1
Conduct Disorder: adolescence-onset type	312.32	F91.2
Antisocial Personality Disorder (ASPD)	301.7	F60.2
Pyromania	312.33	F63.1
Kleptomania	312.32	F63.3

There are also some other disorders which are shown along with symptoms of acting out. See the disorders in table 3.

Table 3: Disorders with Acting out Symptoms

Disorder	code	code
Sexual Sadism Disorder	302.84	F65.52
Trichotillomania (Hair-Pulling Disorder)	312.39	F63.2
excoriation (skin-picking Disorder)	698.4	L98.1
Non-Suicidal Self-injury	-	-
Bullying in adolescence	-	-
Impulsive Aggression behavior	-	-
Compulsive Sexual behavior	-	-

The last four items in table 3 are not disorders: '*Non-Suicidal Self-injury*' has been recommended as a '*Condition for Further Study*' in DSM-5 that is associated with violent behavior. '*Bullying*' is considered to be a behavioral problems during adolescence. '*Impulsive Aggression behavior*'

and ‘*Compulsive Sexual behavior*’ have been added as problems in adolescence and adulthood in order to cover some of the behavioral problems that are too slight to warrant a clinical code.

If all cases are categorized according to CIH Model, then we will have:

- A) Feeling of guilt and without intention to damage or destroy (m-E-)
- B) Feeling of guilt and with intention to damage or destroy (M-E-)
- C) No feeling of guilt and with intention to damage or destroy (c-M- & C-M-)

According to the above, the disorders mentioned in table 2 and 3 are classified in table 4:

Table 4: Proposed classification for Disruptive, Impulse-Control, and Conduct Disorders in DSM-5, via CIH Model

Disorder	Code	code
m-E-: with feeling guilty and without intention to damage or destroy		
Bullying in adolescence	-	-
Impulsive Aggression behavior	-	-
Compulsive Sexual behavior	-	-
Oppositional Defiance Disorder (ODD)	313.81	F91.3
Intermittent Explosive Disorder (IED)	312.34	F63.81
M-E-: with feeling guilty and with intention to damage or destroy		
Pyromania	312.33	F63.1
Kleptomania	312.32	F63.3
Sexual Sadism Disorder	302.84	F65.52
Trichotillomania (Hair-Pulling Disorder)	312.39	F63.2
excoriation (skin-picking Disorder)	698.4	L98.1
Non-Suicidal Self-injury	-	-
c-M- & C-M-: without feeling guilty and with intention to damage or destroy		
Conduct Disorder: childhood-onset type	312.81	F91.1
Conduct Disorder: adolescence-onset type	312.32	F91.2
Antisocial Personality Disorder (ASPD)	301.7	F60.2

Any stimulus affecting the CIH activates the components of *Motion*, *Emotion* or *Cognition*, and the CIH itself would provide a response based on the result of stimulated energy. A classical response as a result of this process is a behavior which, on balance, is fed by all three components. But, if there are some constraints in the CIH, this natural process would be disturbed.

7.1. m-E-: Accumulation of Energy in the E-component and the reflection of energy in the M-component

If the CIH possesses a constraint for the *E-component*, the stimulus will produce emotional arousal in the *Micro-Networks*. For this stimulus, a strong response in terms of *emotion* is predicted. As shown in figure 3, if the *nodes* and *links* of the CIH Quantum Field is shaped in a way that leads to the relative activation of the *M-component*, the *M-response* is probable alongside an emotional acting out.

This way, due to strong emotional arousal and the fast transfer of energy towards *M-component*, the response will be accompanied by a trivial *C-component* stimulation, and so the CIH would have not a proper understanding of its own behavior.

If anger is the dominant *emotion*, the aggression response would be shown, releasing excited energy. Then, the CIH would reach a relative balance and the system would regain its control once again. This time, the aggression response acts as a new stimulus; the *C-Component* is activated naturally, and starts assessing the performance of the CIH. The CIH finds out that its reaction has was not a healthy one. The feeling of guilt is made as a new *E-response* to guide the system towards correction.

According to this model, those CIHs which include a lot of emotional *nodes* and *links* in their own information networks would experience guilt and regret after aggressive behavior, and as we know, this feeling is not enough to correct the system; but the CIH must be helped to let go of the imbalance produced *nodes* and *links* in its Super Systemic structure (table 1, row 6).

Figure 3. Accumulation of Energy in the stable *nodes* and *links* of the *E-component* and the reflection of energy in the *M-component*

7.2. *M-E-: The dominance of the E-component and constant reflection of the M-component*

If this condition continues and the *e-nodes* do not open or repetitive *E-component* arousal is not corrected in the long run, the energy exchange between the two components of E and M will lead to the creation of stronger *links* between the two components in question. Therefore the activity of the *C-component* decreases and fewer stable *nodes* and *links* are created over time. If the *background-field* prepares the proper conditions, this status would be reinforced by making a strong and energetic connection routes, and finally the CIH would move towards being two-components. The *C-component* would show no action, and a great deal of system energy would be exchanged between the two *E-* and *C-components*.

A closed two-component system creates a stable status for the CIH and makes its changes difficult (figure 4). However there is the feeling of guilt, the present two-component balance due to the *E-* and *M- response* would increase the system's inclination towards intentional repetition of Subordinate *M-behaviors*.

A two-component system, compared to a three-component system, is really simple. As we can see, acting out of emotions in these kinds of disorders is simple and generally leads to one specific behavior: Magnetized by the repetition of a behavior in order to release *Emotion*, meeting its needs and experiencing joy (table 1, row 8).

Figure 4. Two-component system for the CIH, accumulation of Energy on *E*-component, and constant energy reflection in the *M*-component

7.3. *c-M*:- Accumulation of Energy in the *M*-component and the reflection of energy in the *C*-component

If the *M*-component is dominant over *nodes* and *links*, the CIH remains in the status shown in figure 5, and the entrance of stimuli would cause a strong *M*-response. If the *nodes* and *links* of the CIH Quantum Field lead to the relative activation of the *C*-component, the *C*-response would be prominent alongside related *Motion*, and the *cognitive* processes of the CIH explain and interpret the *Motion*. In this status, the lack of the *E*-component due to the shortage of emotional activity in the quantum *Micro-Networks* is clearly visible.

This status shows that without understanding emotional states, the Super System would embark on giving out *M*-response. Given that the *C*-component serves the *M*-component, the system would assess its own actions logically, even if harms itself or someone/something else. After the energy release of produced responses, and in other cases in which there is no arousal of the *M*-component, the present emotions would be understood.

If the *M*-response are in such a way that the CIH cannot experience its previous *Emotion*, the disorder would be placed in this category (table 1, row 5). Therefore, all responses related to aggression and disability in controlling sexual needs, can be categorized here. The CIH would plan for aroused *M*-behavior and rationalize it without processing the proper *Emotion*. Here, the emotion -such as guilt- is observed in cases in which the system is not aroused.

Figure 5: Accumulation of Energy in stable *nodes* and *links* of the *M*-component and the reflection of energy in the *C*-component

7.4. *C-M*:- The dominance of the *M*-component and constant reflection in the *C*-component

If the arousal of the *M*-component and its cognitive processing continues in the lack of emotional experience, the two-component closed system will this time be created in two *M*- and *C*-components, and the CIH - omitting the *E*-component - will reach the state of balance and joy (figure 6).

Conduct Disorder and Antisocial Personality Disorder are the manifestations of such a state in the CIH Model. In these disorders, the CIH, because of severe energy shortage in the *E-component*, does not experience feelings of guilt as a result of destruction and damage.

OCD and OCPD falls in this spectrum. However the difference is that the route of *link* stimulation goes from the *C-component* towards the *M-component*; that is, *Motion* serves *Cognition* and creates OCD with a weak understanding of *Emotion*. In addition, if the current of energy release is such a powerful one that it drags the system towards being two-component with the omission of the *E-component*, so the feeling of guilt will be removed, and obsessive behaviors will supply joy for the system (table 1, row 10).

Figure 6: Two-component system for the CIH, Accumulation of Energy in the *M-component*, and constant energy reflection in the *C-component*

It seems that suggestions will be posed to change the current categorizations in DSM-5. For instance, CIH categorizes Sexual Sadism Disorder, Trichotillomania, excoriation, and Non-suicidal self-injury (if we call it a disorder) as M-E- status (table 1, row 8), while they are categorized as ‘*Obsessive-Compulsive and Related Disorders*’ and ‘*Paraphilic Disorders*’. For ‘*Obsessive-Compulsive and Related Disorders*’ a strange displacement is suggested.

8. Systemic Balancing: A therapeutic pattern based on the CIH Model

Clinical diagnosis without treatment strategies will not have an acceptable outcome. The CIH Model will be practical if 1) As a mathematical model covers different psychotherapy approaches and explains the ways in which they are effective; 2) For different disorders and even for problems which do not receive a clinical code, it predicts effective intervention plans; 3) It proposes prevention plans; 4) It predicts the lack of probable balances, given the state of stimuli now and in the past.

Most *nodes* would be created based on the *type of stimulation*, and the *biological features of the CIH*, whereas most *links* would be made based on *observation and learning*. Therefore, *links* are more changeable in comparison with *nodes*, and are the focal point of correcting *Super System* related disorders.

For years, we have known that in a mature brain, it is possible to produce new neurons (Altman, 1962). I mean that if the stimulation of *node a* repeatedly turns on *node b*, *link ab* would create a materialized and stable route after a proper time in the same way as the creation of neurons in the human brain.

With increase in the *links*’ variety between different kinds of *nodes*, and decrease in the *link-related density* of *Micro-Networks* and the *Super Systemic Network*, balance would return to the system. The repetition of a correcting behavior in a proper time would also change the route of

turning on the *nodes* and *links* and create new *links*. In fact, *Systemic Balancing* tries to establish a balance between the *nodes*' density and different *links* in the *Micro-Networks* and the *Super Systemic Network* so that the stimulus would lead to a balanced stimulation of all three components, and the response would be a combination of all three. Moreover, in the *Systemic Balancing pattern*, preventing relapse by establishing proper *Network Connections* in all three levels is attempted. The assumption is that if all the *Central System*'s components are appropriately activated with the mediation of the *Observer Unit* and *Global Network links*, the system will move towards a balanced status.

The CIH Model suggests the following pattern for psychotherapy intervention as the general form of the treatment pattern called '*Systemic Balancing*':

- 1) Invigoration of the *Dissociative Component*.
- 2) Observing the *Constraint Component* and guiding its energy towards the *Dissociative Component* (with or without concentrating on the *Subordinate Component* and its related responses).
- 3) Observing energy reflection from the *Constraint Component* towards the *Subordinate Component* and their discursal interpretation in order to rectify the general direction of *Super System* energy current.

According to this pattern, the stages that the CIH Model offers for the status m-E-, (table 1, row 6), are as follows:

- 1) Invigoration of the *C-component*
- 2) Observing the *E-component* and guiding its energy towards the *C-component*
- 3) Observing symptoms of *Emotion* in the body and discursal interpretation of them

Cognitive therapy techniques (Lihi, 2003) form the first phase of intervention therapy. Cognitive challenges and the invigoration of verbal skills strengthen the energy in the *C-component*. Along with this stage of treatment, it is possible to enter the second phase, especially if a high emotional arousal is seen. Afterwards, the current of *E-component* energy is corrected towards the *C-component*, *Motion reactions* will be reduced normally. So now, it is time to initiate the *M-component* of the treatment phase. By seeing physical and sensory symptoms of *Emotion* and turning them into speech and words (Mohseni Nezhad, 2016; Fredrickson, 2003), the current of transferring energy will be corrected. As can be seen, at the beginning of treatment, *M-Responses* would not be paid attention to. If there is any attention, the reflection of energy would increase. In case the *C-component* is weak, reference and focus on emotional and motion reactions will strengthen them in the *Super System* because it will not be able to assess that properly. Therefore, intervention should be against the current of energy in order to correct it. *Systemic Balancing* would not tell us which techniques and method to use, but, basically, what to do. That is to say, it is the guidance which will clarify the treatment plan. Since the CIH Model enjoys a mathematical foundation, we can apply a variety of treatments approaches through it; otherwise, the model would be inefficient and would need amendments.

Based on the *Systemic Balancing* pattern, for the status c-M- (table 1, row 5), the following stages is proposed:

- 1) *Emotional activation*: it starts from non-anger emotions that are activated one by one.
- 2) Observing the *M-component* and naming the emotion related to that as an interpretation of *Emotion*.
- 3) *Regulating Cognition* based on the experienced emotion and its relevant needs.

Emotional activation means using techniques and methods which enable a person to feel their emotions properly. These techniques are presented in the book ‘*A Comprehensive Guide for Techniques of Systemic Balancing*’ (Mohseni Nezhad, in preparation). Feeding the *E-component* with new energy would simplify the possibility of correcting the current of energy. Then, by observing running *M-response*, the related emotions will be extracted. Verbal cognition and interpretation of emotions are not needed. After the emotion is felt inside the body without any acting out, we will enter the *C-component* and will turn emotion into speech.

At the M-E- (table 1, row 8) and C-M- (table 1, row 10) statuses that the *Super System* has moved towards being two-component, the patterns are the same as their equivalents that were mentioned for the m-E- (table 1, row 6) and the c-M- (table 1, row 5) statuses, but the point is that in a two-component system, the first and the second statuses of the pattern must not be mixed but first of all, the *Dissociative Component* should be activated and its pleasure and joy be realized. This activation occurs without the slightest reference to the *Subordinate Component*. Even the least attention to and concentration on the *Subordinate Component* will reverse the direction of pleasure reception back towards a two-component structure. These interventions would be effective if the performance of the *Dissociative Component* has not been destroyed due to biological reasons, and its Epigenetics impacts are still reversible. Treatment in these situations is longer, and neurorehabilitation techniques can be useful for an appropriate stimulating of the nervous system.

9. Relapse Prevention

Observation processes prevent relapses. Within the treatment, they consist of three merits: 1) If anxiety exists in comorbid conditions, it will be managed. 2) It connects the conscious connection of the *Central System* with the *Observer Unit*. 3) The information required by the *Super System* is retrievable from the *Global Network* and would show the healthy path to the system.

10. Conclusion

The CIH Model strives to explain how a disorder is formed, based on QFTs, and to predict the classical limit of its behavior. The most practical goal is the design of a framework which can evaluate the effectiveness of different treatment approaches before an intervention starts. This model also helps us to determine where to start from. Which techniques and even which approach is chosen are not important. The mathematical framework based on the CIH Quantum Model determines the treatment plan, not the interventional protocols. *Systemic Balancing* pattern tells us which treatment approach for which category of disorders would be more effective and why. It will also provide researchers and therapists with a plan for combining different treatment techniques.

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