

# A Grand Theory of STIFIn Personality: Basic Functions Theory Revisited

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October 18, 2019

# A Grand Theory of STIFIn Personality: Basic Functions Theory Revisited

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#### Abstract

The aim of this paper is to propose a new theory of personality which can lead to a holistic description of the mechanism of thinking and decision making of an individual. The central discussion of this proposal is to provide descriptive answers to various basic questions. The concept of this theory does not use the traits or behavioral approach, but it uses a perspective from genetics, neuroscience, biopsychology, and basic function theory. The recent studies on personality are still focused on the determination of personality traits and the application of the roles played by each personality, whereas the most important role of these recent studies is that they should be able to provide a grand theory. In this paper, the main discussion will be focused on providing concepts and changing several definitions which can directly explain phenomena that are in accordance with natural conditions.

Keywords: Personality, genetics, neuroscience, biopsychology, grand theory

#### **INTRODUCTION**

The basic problems of personality psychology are about the many interesting questions in the latest personality studies, but in fact, there are no researchers who have tried to develop a grand theory of personality<sup>4</sup>. Personality psychology theories do not have a generally accepted framework, and some theories only apply to certain domains<sup>4</sup>. Today, explanation in understanding humans with a genetic approach is far better for personality psychology<sup>1</sup>, and this is in line with the development of neuroscience and biopsychology. And, this also answers Eysenck's question<sup>3</sup>, because at that time the development of neuroscience findings was still not perfect for explaining the biological and psychological linkages of humans.

Biopsychology is the scientific study of biological behavior<sup>2,8</sup>. This study studies how the brain and nervous system produce behavior and vice versa how behavior modulates brain and body functions<sup>8</sup>. Some people refer to this discipline as psychobiology, behavioral biology, or neuroscientific behavior, but researchers prefer to use the term biopsychology because it shows a biological approach to the study of psychology rather than vice versa<sup>13</sup>. The study of biological behavior has a long history and began to develop rapidly when the discipline of neuroscience developed in the 20th century<sup>13</sup>. The birth of biopsychology does not have a definite date, but the publication of organizational behavior in 1949 by D.O. Hebb plays a key role in this biopsychological theory<sup>1,11</sup>. In his book, Hebb developed the first comprehensive theory of how complex psychological phenomena, such as perceptions, thoughts, emotions and memories, might be produced by brain activity<sup>13</sup>.

This prologue begins by briefly introducing a brief description of neuroscience and biopsychological approaches to understanding human personality naturally. Then proceed with the proposal of a basic theory that can lead to a holistic description of the phenomenon of the mechanism of thinking and decision making of an individual. This theory is sourced from three theories, namely the basic function theory<sup>7</sup>, the whole brain theory<sup>6</sup>, and the triune brain theory<sup>9</sup>. This theory is referred to as STIFIn personality.

# The Nature of Personality

Personality is more likely to have a genetic origin, which is why it tends to be eternal<sup>14</sup>. The immortality of personality is revealed through longitudinal studies that have traced the lives of individuals who have had similarities for several years and measured the changes that occur<sup>14</sup>. Only basic tendencies are stable, while adaptation and character and self-concept can change. This basic function is stable, eternal, genetic, and identical to one's intelligence. So to get to know others is enough to know the basic functions, or basic tendencies, so that it does not need to require complicated psychometrics, but targeting something that has a high certainty because it has a stable and eternal platform<sup>14</sup>.

## The Role of Neuroscience and Biopsychology in Personality Studies

A technology called electroencephalography (EEG) can infer regional activity in the neocortex, which is the outermost layer of the brain<sup>12</sup>. Neocortex handles many human activities that people usually do such as reasoning, language, perception, and decision making<sup>12</sup>. Every region of the brain handles the same thing for each individual<sup>12</sup>. However, each individual is different depending on how much they use it<sup>12</sup>. How focused is one using the region of the brain while ignoring others<sup>12</sup>. Working patterns of one's brain help to define someone as a unique individual<sup>12</sup>. We can use the neuroscience of personality to understand ourselves and others to enjoy more meaning and efficiency in our lives<sup>12</sup>.

Meanwhile, in the development of biopsychological science it is stated that to understand how the brain can influence behavior, it is necessary to have a clear picture of anatomy, including the location of its main region and the way body structures are connected<sup>17</sup>. Both the endocrine system and nervous system provide important means for communication in the body<sup>17</sup>. The nervous system allows very fast responses that require immediate action, while the endocrine system responds more slowly and may take several minutes or even hours to reach a target, and usually has a longer duration of action<sup>17</sup>. Nevertheless, both systems work towards integrated functions in many types of individual behavior<sup>17</sup>. Based on the explanation above, it means the nervous system produces behavior and vice versa.

#### **STIFIN PERSONALITY**

The STIFIn theory of personality relies scientifically on an analytical psychological approach<sup>7</sup>, compiled with the Whole Brain theory<sup>6</sup>, and the Triune Brain theory<sup>9</sup>. The basic functions of the human personality are divided into four types, namely the mind function (abbreviated T), the feeling function (abbreviated F), intuition function (abbreviated I), and the sensing function (abbreviated S)<sup>7</sup>. This basic function is called the four types of intelligence in the brain quadrant theory<sup>6</sup>. The four basic functions if related to the theory of the brain quadrant, the four basic functions are eternally originating from the hemisphere of the brain that is most often used. The left brain quadrant (left neocortex) is both an intelligence and a personality character of thinking  $(T)^{14}$ . The right brain quadrant (right neocortex) is both intelligence and intuiting personality character (S)<sup>14</sup>. Right lower limb (right limbic) quadrant is both intelligence and a sensing personality feeling (F)<sup>14</sup>. This means that the basic functions<sup>7</sup> have in common with the intelligence quadrant<sup>6</sup>. The strengths of each intelligence are following their names; S has sharp senses, T is strong in thinking, I is very creative, F is good at protecting the feelings of others<sup>14</sup>.

There is one type of individual who does not fall into the category of the four basic functions or quadrants of intelligence, and this type is dominant using other brain hemispheres, namely instincts that are in the middle or bottom (midbrain) which connect directly to the spine<sup>14</sup>. The other four intelligence as centers of cognition requires a more systematic thought process and are processed first in the brain with a longer process, whereas insting (In) intelligence responds more spontaneously referring to the accumulation of long life experiences<sup>14</sup>.

Based on the Triune Brain theory<sup>9</sup>, the tasks of the midbrain (reptilian brain) are as follows; cerebellum, its main task is to maintain balance and coordination of body movements, initiate initial body movements such as walking, dancing, but is unable to handle complex movements well, and it is involved in learning the skills of movement. Medulla helps control bodily functions such as breathing, digestion, and heartbeat. Midbrain helps most sensory-motor functions. Pons, deliver and receive information about movements. Brain Stem connects the nervous system with the body, so the two can communicate quickly<sup>14</sup>.

That has been described above shows as a physiological function of the reptilian brain. Thus it can be said to be significant to be a type of intelligence itself, as the fifth type of intelligence, which is located in the middle of the lower part of the head<sup>14</sup>. Thus the personality character is ultimately determined by one hemisphere of the brain or one type of intelligence that dominates among the five other brain hemispheres. That one is referred to as a type of intelligence or also called a personality character. The intelligence type is defined as the type of intelligence as well as a person's personality based on the function of the brain's most dominant hemisphere. Sensing is a type of intelligence that relies on the senses. Thinking is a type of intelligence that relies on logical thinking. Intuiting is a type of intelligence that relies on its sixth sense in making decisions which means it is always projected forward. Feeling is a type of intelligence that always refers to feelings. And, instinct is a type of intelligence that always refers to the seventh sense in making decisions, which means spontaneous and willing to sacrifice. Table 1 below shows the conclusions from studies of previous theories, namely the theory of basic functions<sup>7</sup>, the theory of the quadrant of the brain (The Whole-Brain)<sup>6</sup>, and the theory of brain strata (triune brain)<sup>9</sup>, which then gave birth to a new theory of personality character or intelligence, namely the STIFIn theory of personality.

Basic Functions	Type of	Triune Brain (Paul	Intelligence
(Carl G. Jung)	Intelligence	Maclean)	/Character of
	(Ned Hermann)		Personality (STIFIn)
Sensing	Left Limbic	Mammal Brain	Sensing
Thinking	Left Neocortex	Human Brain	Thinking
Intuiting	Right Neocortex	Human Brain	Intuiting
Feeling	Right Limbic	Mammal Brain	Feeling
		Reptile Brain	Insting

Table 1: Conclusion of Personality Character

The characteristics of the brain have an impact on ways of thinking and ways of learning<sup>6</sup>. A part of the dominant brain determines preferences for ways of thinking and learning. What is the cause of one of the dominant functions, has not yet been conveyed by Jung in his theory. But in line with the theory of neuroscience<sup>6</sup> that among the ABCD brain quadrants, there is one dominant intelligence, which is associated with one of the dominant brain hemispheres. Based on that, STIFIn theory lays the foundation of understanding that there are five hemispheres of the brain with a package of brain functions, each of which will affect human behavior according to the brain functions that most influence it and all are equal, none are superior.

The following basic trends were inherent in each intelligence type. The daily profile of the Sensing intelligence type is as follows; grounded in the real and actual, process information based on the five senses, more interested in practical applications, factual and pay attention to details, describe events in sequence, orientation to the present, absorb ideas gradually, like opportunities for practice, relying on experience, speech patterns that clear and orderly, arranged thoughts, thinking linearly, using clear facts and examples, using language as a communication tool, better understanding his body, interested in jobs that require practicality, like non-fiction, inserting details and facts, remembering the past accurately, tend to hear to the full, go straight to the target.

The daily profile of people who think Thinking intelligence type are as follows; use the mind more, solve the problem logically, though minded, use a causal relationship, do the analysis without considering personal matters, appreciate something that makes sense, be fair, the decision is based on objective criteria, cold, keep a distance from others, looks like insensitive, argue and argue as a critical call, rarely ask when time is not possible, show data, give formal compliments, have assertiveness in asserting rights, use non-personal language, be confident in your name, be more critical in fixing work, more like attitude men.

The daily profile of the Intuiting intelligence type is as follows; attention to the general picture, process information based on intuition, more interested in imaginative understanding, abstract and theoretical, see patterns and meanings, orientation in the future, starting from anywhere, like the possibility to be creative, rely on inspiration, vary speech patterns, use many sentences comparison, having a mind that is spinning but patterned, figurative, using analogies and metaphors, using

language to express oneself, giving space, alternatives, and not quick to conclude, interested in work that involves creativity, likes fictional stories, talks only big things and strategic, have a forward vision, tend to finish the sentence of others, look intellect or classy.

The daily profile of the Feeling intelligence type is as follows; use feelings more, want to please others, look for harmony, want to always lead, considerations based on compassion, respect the feelings of others, make decisions by considering the consequences for others, warm and friendly to others, good at empathy, cooperation in social communities that good, avoiding arguments, conflict and confrontation, their feelings easily hurt and revenge, start with small talk, ask if possible, be able to show admiration and emotion, lack assertiveness demanding rights, use many valuable words, often use the names of others, more like a woman's attitude.

The daily profile of the owner of the Instinct intelligence type is as follows; react spontaneously, process information using instincts, be more interested in contributing, pragmatic but have insight, remember things that are memorable, orientation to seek happiness, absorb information in a generalist manner, like opportunities to participate, rely on holistic considerations, short speech patterns , simple mind, innocent, and not strange, spontaneous thinking and ad-hock, using impersonal interaction, versatile skills, love social work, help people, do not like conflict, traumatic with painful events, adaptable, become a connecting hub to reconcile, very to the point.

The concept of introvert and extrovert is orientation and not a basic function in itself<sup>7</sup>. It is in this section that the MBTI concept is trapped, because the 16 indexes made by MBTI, it places introverts and extroverts parallel to other basic functions<sup>14</sup>. Likewise with the basic concept of the Big Five, it has placed equality of traits or the nature of Openness (meaning introverted or extroverted) with all four traits (other traits)<sup>14</sup>. Introverts and extroverts are not separate types of intelligence but are likened to steering, while the type of vehicle is an intelligence type<sup>14</sup>. When the wheel brings the intelligence type inside, it becomes an introvert<sup>14</sup>. When the wheel takes the intelligence type outside, it becomes an extrovert<sup>14</sup>. When viewed genetically, the introvert-extrovert orientation is derived from the workings of the white layer and gray layer in the brain<sup>15</sup>. If the white layer is more active, then the introvert, if the gray layer is more active, then the extrovert<sup>15</sup>. Both of these layers are found in the limbic brain and neocortex<sup>15</sup>.

The white layer has a higher cell density because it contains more brain cells so that stimuli or biorhythmic sources in the brain occur more dynamically<sup>15</sup>. Therefore people whose white layers are more active, have steering from the inside out so that the energy comes from inside<sup>15</sup>. He was stimulated from inside his brain out, or it could be called, he stimulated his surroundings<sup>15</sup>. Meanwhile, the gray layer has a more tenuous cell density because it contains fewer brain cells so that stimuli or biorhythmic sources in the brain occur more static<sup>15</sup>. Therefore people who are more active in the gray layer have a steering wheel from the outside in because their less dynamic biorhythmic sources tend to wait or respond to stimuli from the outside so that the energy comes from outside themselves<sup>15</sup>. He was stimulated from the outside, or it could be called he received stimuli from the surroundings<sup>15</sup>.

In the type of the Insting intelligence (In) it does not have a rudder. Biologically in midbrain and hindbrain have cell homogeneity between the outside and the inside<sup>14</sup>. Inside and outside functions are no different. The lower cerebral and midbrain hemispheres maintain the balance of the body<sup>14</sup>.

Thus there are nine types of personalities that come from the four intelligence type after being attached by the steering wheel plus an insting intelligence type. The nine personality types are Sensing introvert (Si), Sensing extrovert (Se), Thinking introvert (Ti), Thinking extrovert (Te), Intuiting introvert (Ii), Intuiting extrovert (Ie), Feeling introvert (Fi), Feeling extrovert (Fe), and Instinct (In)<sup>14</sup>. After the rudder has a role in each type of intelligence, the intelligence type becomes the best in its field or deserves to be called the productivity brand of each personality. Genetic personality is defined as personality type that is influenced by intelligence drives or stimulated by the layers of the brain.

## Why are the Intelligence Types and the Personality Types Genetic?

Humans are formed by about 20% of genetic factors in themselves, and 80% of environmental factors that influence it<sup>15</sup>. Discussing genetic matters means discussing something that is fixed, unchanging, stable, repeating to the same pattern, and "inviting" humans, consciously or not, to return to their basic patterns or characteristics, throughout their lives from birth to death later<sup>15</sup>. Genetics cannot change because it comes from DNA<sup>15</sup>.

There are four nucleobases in DNA, namely Adenine, Guanine, Thymine, and Cytosine. Whereas in RNA there is Uracil nucleobase<sup>15</sup>. In STIFIn theory, based on the study of human genome<sup>16</sup>, Sensing has predominant DNA Adenine code, Thinking predominant Guanine code, Intuiting predominant Thymine code, Feeling predominant Cytosine code, and Instinct has excess RNA composition in Uracil<sup>15</sup>. In this case, the position of the intelligence type and the genetic personality is the same as the sex which from birth to death will be impossible to change<sup>15</sup>.

There are genetic hereditaries, including brain capacity and blood type<sup>15</sup>. Brain capacity is related to one's IQ, meaning that one's IQ is not much different from the IQ or brain capacity of parents, grandparents, and so on. If the father has blood type A and the mother has blood type O, it could be giving birth to a child with blood type A or O<sup>15</sup>. Including the size of the body posture, if the parents are short, then one's posture will not be much different from the posture of the parents<sup>15</sup>. If there is a tall one, it might come from his grandparents. This follows Mendel's Genetic Law<sup>10</sup>.

While gender, intelligence type, and genetic personality are nonhereditary genetic<sup>15</sup>. No one knows whether our child will be born male or female, what are the intelligence type and the genetic personality<sup>15</sup>. There is no pattern because all three are not revealed<sup>15</sup>. A father's whose intelligence type Sensing with a mother whose intelligence type Feeling can give birth to a child whose intelligence type Insting<sup>15</sup>. There is no formula, and there is no Mendel law<sup>10</sup>.

#### **Genetic Strata**

Genetic strata are levels of genetic factors that exist in humans. If sorted from the highest level, the level is as follows:



Figure 1: Genetic Strata

Genetic strata state that each genetic element has a degree of influence on intelligence and personality. As shown in Figure 1, the highest is the gender, and the second level is occupied by the intelligence type. Third place is intelligence drive. The fourth rank is hardware capacity, and the last strata are blood type. By understanding the level of genetic strata, the self-coaching program will be more optimal if carried out at a higher level.

## Nature, Character, Personality, and Behavior

Many are still not able to distinguish between nature, character, personality, and behavior. When viewed from the lowest strata, the strata are as follows:

- 1. Behavior: human behavior which has not yet become traits.
- 2. Personality: human tendencies that have become traits.
- 3. Character: the traits that occur repeatedly because it has become a habit or has become myelin.
- 4. Nature: that is traits that are inherent in a person and deep to the genetic level, but this character may be the result of massive embellishment that exceeds myelin because there are additional values such as strong alignment fanaticism or synergy of sincerity and habit.

Beyond these four things, there is a genetic personality, which is the personality that comes from genetic factors<sup>15</sup>. Without being shaped by the environment, accustomed to being repeated and trained, this personality has existed since birth<sup>15</sup>. Only indeed to make it truly visible, optimal, and increasingly sharp-looking, there needs to be a focused training exercise.

#### Nature vs Nurture

In general, there are currently two world paradigms, especially in the field of psychology, namely nature and nurture paradigms. This difference in paradigm is never complete in the academic world. The nature paradigm believes that there is a role for God in human beings and in shaping human personality that is represented by genetics that God "gives" whereas the nurture paradigm believes

that human personality, character, trait, behavior, nature, whatever is formed by the environment without the role of God's creation in it. According to the nurture paradigm that is widely adopted and is a reference of the West (even the world in general), humans are shaped by their life experiences. If you want to study humans, learn about their experiences.

Phenotype is a characteristic (both structural, biochemical, physiological, trait, and behavior) that can be observed from a living thing that is governed by genetics and environment or the interaction of both<sup>15</sup>. Based on the formula, phenotype (100%) = genetic (20%) + environment (80%), then nature is genetic (20%) and nurture is environmental (80%)<sup>15</sup>. Even though environmental factors are large (80%) in influencing human phenotypes, it is actually the 20% genetic factor that actively seeks 80% of the environment, so that 100% of the true phenotype of humans is contributed by 20% genetically<sup>15</sup>. It is evident that the conscious human being is unconsciously always looking for the most in accordance with his character, looking for the most optimal environment for him, looking for his identity, and of course, this is a natural mechanism.

## **Individual Roles and Social Roles**

Individual roles are roles that are adapted to the intelligence type or genetic personality<sup>15</sup>. Individual roles can be manifested in the form of personal branding that strongly represents the main power of the intelligence engine or genetic personality. After defining individual roles, make sure you continue to hone them, develop them, and emphasize them so that they emerge at the peak of success and the formation of myelin<sup>15</sup>.

Myelin is a network in the human body, especially in the muscles<sup>15</sup>. Myelin is a memory that is in the muscles in the form of a layer in the human body that functions to increase the flow of information (in the form of impulse) and spread it throughout all muscle system<sup>15</sup>. The thicker the layer, the more efficient information circulates in the body and the faster and more automatically humans make movements<sup>15</sup>. Myelin will be increasingly formed through an exercise or self-training in incentives within a certain period of time<sup>15</sup>. In STIFIn theory, the best formation of myelin is the formation of appropriate intelligence type and genetic personality. In short, the intelligence type and genetic personality are trained continuously. Even the environment and its daily activities are mostly carried out in the way of its intelligence type and genetic personality.

To reach a more meaningful level as an individual, one must determine social roles. Social roles are social calls that are compatible with the intelligence type or in line with their individual roles<sup>15</sup>. Every individual needs to have social roles, aiming at a noble successful life<sup>15</sup>. The best social role is to compile the following 3 things; intelligence type, social calls, and resources<sup>15</sup>. Figure 2 below shows the perspective of individual roles and social roles



Figure 2: Perspective of Individual Roles (IR) and Social Roles (SR)

## The Relationship of the Five Intelligence Types (STIFIn)

The STIFIn personality theory is able to explain the pattern of relationships and chemistry, and this is at the same time an argument for breaking the theory of multiple intelligences<sup>5</sup> and understanding them with a single intelligence theory<sup>7</sup>. It is clear that one person only has one innate chemistry which is in line with the type of intelligence. Figure 3 below explains the schematic pattern of the relationship between the womb that provides the balance of the universe with the interaction of the chemistry



Figure 3: Relationship Pattern of Personality Chemistry

Explanation of the relationship pattern scheme above can be described as follows, a thin arrow line on the outside means "needed", whereas a thick arrow line that forms a pentagon on the inside means "to conquer". Each intelligence type is linked to the element of the universe and the element of ownership. S (land/wealth) is required by T (iron/throne). T (iron/throne) is required by In (water/happy). In (water/happy) is required by I (wood/words). I (wood/words) is required by F (fire/love). F (fire/love) is required by S (land/wealth). Then this cycle revolves in relationships that need each other.

Furthermore, S (land/wealth) conquers In (water/happy), T (iron/throne) conquers I (wood/words). I (wood/words) conquers S (land/wealth). F (fire/love) conquers T (iron/throne), In (water/happy) conquers F (fire/love). Even this relationship is extraordinary. There are times when he wins there are times when he "meets the stone".

# CONCLUSION

Personality researchers, however, find it difficult to predict personality precisely when still using the trait and behavior approach. This is evidenced by the results of empirical studies which still do not show the influence of human personality in any way. In sum, this paper offers a grand theory of personality while at the same time revising the theory of basic functions<sup>7</sup> that has lasted for quite some time. The development of neuroscience and biopsychology studies can help answer a person's reasons for thinking, acting, and preferences. For this reason, this theory needs to be carried out in a continuous scientific study, and can further develop mid-range theory and applied theory in the future.

Source of Funding: Self Source Conflict of Interest: NIL Ethical clearance: Done research committee

# REFERENCES

- 1. Brown, R. E., & Milner, P. M. (2003). The Legacy of Donald Hebb: More than The Hebb Synapse. Nature Reviews Neuroscience, 4, 1013-1019.
- 2. Dewsburry, D. A. (1991). Psychobiology. American Psychologist, 46, 198-205.
- 3. Eysenck, H. J. (1992) Four Ways Five Factor are Not Basic. Personality and Individual Differences, 13(6), 667-673.
- 4. Friedman, H. S., & Schustack, M. W. (2016). Personality Classic Theories and Modern Research 6th ed. Boston: Pearson Higher Education
- 5. Gardner, H. (1983). Frames of Mind. 1st ed. New York: Basic Books
- 6. Hermann, N. (1991). The Creative Brain. The Journal of Creative Behavior, 25(4), 275-295.
- 7. Jung, C. G. (1946). Psychological Types or The Psychology of Individuation. London: Kegan Paul, Trench, Trubner & CO. Ltd.
- 8. Lin, W., & Singer, G. (1997). Research on The Interaction of Behavior with The Brain and Other Biological Properties of Living Organisms. Psychological Science. 20, 16-18.
- 9. Maclean, P. D., & Kral, V. A. (1973). A Triune Concept of The Brain and Behavior. Conference Proceedings, presented at Queen's University. Published for the Ontario Mental Health Foundation by Univ. Of Toronto Press.
- 10. Mendel, Gregor (1866). "Versuche Über Pflanzen-Hybriden". Verhandlungen des naturforschenden Vereines zu Brünn 4 (1865): 3–47.
- 11. Milner, P. M. (1993). The mind and Donald O. Hebb. Scientific American, 268, 124-129.
- 12. Nardi, D. (2011). Neuroscience of Personality: Brain Savvy Insights for All Types of People. Calfornia: Radiance House.
- 13. Pinel, J. P. J., & Barnes, S. J. (2018). Biopsychology. 10th ed. New York: Pearson Higher Education.
- 14. Poniman, F. (2009). STIFIn Personality. Bekasi: Yayasan STIFIn.
- 15. Poniman, F., & Ariezta, M. (2019). Panca Rona. Bekasi: Yayasan STIFIn.

- 16. Richards, J. E., & Hawley, R. S. (2005). The Human Genome. 2nd ed. Burlington: Elsevier Academic Press.
- 17. Wickens, A. (2005). Foundations of Biopsychology. 2nd ed. Harlow: Pearson Education Limited.