JUNGIAN TYPOLOGY

1. Terminologies

- **Subject:** Conscious entity which perceives the **object**.
- **Object:** Content of consciousness which is being perceived by **subject**.
- **Ego:** Center of consciousness which **selects**, **integrates**, **organizes**, and **identifies** experiences for the subject.
- **Suppressed:** Consciously holding back something.
- **Repressed:** Unconsciously blocked from awareness.

2. Jung's Definitions

2.1 Solo Functions:

Function	Jung's Definition	Simplification
Sensation (S)	*"Sensation is that psychological function which transmits the physical stimulus to perception... It is the function which registers the concrete reality of the object."*	Sensing is the psychological function which perceives the reality through 5 senses. It understands object in concrete form.
Intuition (N)	*"Intuition is that psychological function which transmits perceptions in an unconscious way... It is the function which sees around the corners and anticipates the future."*	Intuition is the psychological function which perceives in an unconscious way. It sees indirect patterns and predicts the future.
Thinking (T)	*"Thinking, in so far as it is a conscious activity, is a process of perception and judgement by means of concepts... It is the function which arranges the contents of consciousness in an orderly series and connects them by logical relations."*	Thinking is the psychological function that perceives and judges through concepts. It arranges contents of consciousness in a logical manner.
Feeling (F)	*"Feeling is a process of valuation... It is the function which assigns values to the contents of consciousness... It says 'pleasant' or 'unpleasant', 'good' or 'bad', 'beautiful' or 'ugly'."*	Feeling is the psychological function that perceives and judges through values. It assigns values to contents of consciousness.

2.2 Directed Functions:

Function	Jung's Definition	Simplification
Introverted Sensing (Si)	*"Introverted sensation is oriented by the intensity of the subjective sensation factor… It is a sensation which perceives the object through the medium of the subject… It is impressionistic and reproduces the object in a subjective form."*	Introverted sensation is concerned with subjective sensation, perceiving the object with personal sensation & impression.
Extraverted Sensing (Se)	*"Extraverted sensation is oriented by the intensity of the objective influence… It is a sensation which seeks the strongest possible sensation… It is absorbed in the object and lives in the moment."*	Extraverted sensation is concerned with objective sensation. It seeks the strongest sensation, understands object's sensation without prior impression, and lives in the moment.
Introverted Sensing (Ni)	*"Introverted intuition is directed to the inner object, a subjective image… It perceives the images which arise from the a priori, inherited foundations of the unconscious… It sees behind the scenes and anticipates the future in a symbolic form."*	Introverted intuition focuses on subjective image. It perceives the images that come from indirect patterns or pure unconscious realm. It predicts the future in symbolic form.
Extraverted Sensing (Ne)	*"Extraverted intuition is oriented by the object and by objective happenings… It is a perception of possibilities… It is always on the lookout for new possibilities and seeks to realize them."*	Extraverted intuition is concerned with object and its effects. It looks for new possibilities, and seeks to understand them.
Introverted Sensing (Ti)	*"Introverted thinking is primarily oriented by the subjective factor… It does not adapt to the object, but tries to subordinate the object to its own subjective formula… It is a thinking which is directed inward and seeks to fathom the depths of its own ideas."*	Introverted thinking is concerned with subjective logic. It doesn't adapt to objective logic, but tries to make sense of object through its subjective logic. Also it seeks to make deeper sense of its logic.
Extraverted Sensing (Te)	*"The extraverted thinking type… orients itself by objective data… The judgment always accords with objective conditions… It is a thinking which is directed to the external world and adapts itself to the objective facts."*	Extraverted thinking is concerned with objective facts. It adapts to objective conditions, and focused on external world.
Introverted Sensing (Fi)	*"Introverted feeling is determined principally by the subjective factor… It is a feeling which seems cold to the*	Introverted feeling considers personal values for judgement and seems cold from the

Function	Jung's Definition	Simplification
	outside observer… It is intensely personal and seeks to realize its own inner values."	outside. It is very personal and seeks to understand its subjective values.
Extraverted Sensing (Fe)	*"Extraverted feeling is oriented by objective data… It is a feeling which adapts itself to the object… It is dependent on the general emotional atmosphere and seeks to establish harmony with it."*	Extraverted feeling is concerned with objective values. It adapts its values to match with the object, and it seeks to adjust its values with the external emotional atmosphere.

2.3 Function Positions:

Position	Jung's Definition	Simplification
Superior (Dominant)	*"Experience shows that the superior function is always in the most differentiated form, while the inferior function is in an archaic, primitive, and undifferentiated state."*	Dominant function is the primary mode through which the ego relates to reality and performs its job.
Auxiliary	*"As a rule the second function is of a different nature from the first, and therefore cannot be antagonistic to it. Thus thinking may be assisted by intuition, or intuition by feeling, but never by another thinking function."*	Auxiliary function can't be opposing to dominant function, rather it assists it.
Unnamed (Tertiary)	*"One function is consciously differentiated, another is less so, the third is only slightly differentiated, and the fourth is entirely unconscious."*	Tertiary function is given a very little priority by the ego to relate with reality.
Inferior	*"The inferior function is practically identical with the unconscious, and in so far as it is conscious at all, it is always contaminated by unconscious elements."*	Inferior function is unconsciously repressed and contaminated by the dominant function to protect the ego (identity).

- As any type could have 4 functions in their stack, rest of the 4 could be used but they aren't ego-aligned, linear, or natural preference.

3. Quantitative Evidence

3.1 Research Evidence:

Function	Evidence	Nature	Proof
Si	Strong activation of hippocampus and memory recall networks during detailed past recollection.	Well-supported by memory and autobiographical recall research.	Si-I, Si-II
Se	Heightened activity in sensory cortices and attentional networks during real-time perception tasks.	Strongest empirical grounding among functions.	Se-I, Se-II
Ni	fMRI studies on future simulation and default mode network activity, using media prefrontal and posterior cingulate.	Correlational; shows internal pattern synthesis and prediction, not content accuracy.	Ni-I, Ni-II
Ne	EEG/fMRI links between divergent thinking, idea generation, and widespread associative network activation.	Measurable via creativity and novelty-generation tasks.	Ne-I, Ne-II
Ti	fMRI showing internal logical reasoning activates left prefrontal cortex with minimal social/emotional regions.	Indirect; maps to analytical reasoning, not subjective logical frameworks.	Ti-I, Ti-II
Te	Executive function studies planning, task execution linked to dorsolateral prefrontal cortex.	Strong behavioral and neural correlation.	Te-I, Te-II
Fi	Neural studies of internal value judgments activating ventromedial prefrontal cortex.	Weakly observable externally; internally consistent valuation detectable.	Fi-I, Fi-II
Fe	Social cognition and empathy studies mirror neuron systems, anterior insula activity.	Observable through emotional synchronization and social regulation.	Fe-I, Fe-II

3.2 Link To Proofs:

- Si - I : Hippocampal activation over lifespan
- Si - II : Meta-analysis on AM retrieval
- Se - I : Multisensory perception in sensory regions
- Se - II : Visual/auditory speech perception
- Ni - I : DMN role in mental time travel
- Ni - II : Future-oriented thought
- Ne - I : EEG dynamics in divergent thinking
- Ne - II : Creativity neuroscience
- Ti - I : Dissociation in left PFC for reasoning types
- Ti - II : Lateral PFC in logic

- $\boxed{\text{Te - I}}$: DLPFC in executive control
- $\boxed{\text{Te - II}}$: PFC in reasoning
- $\boxed{\text{Fi - I}}$: vmPFC in value-based decisions
- $\boxed{\text{Fi - II}}$: Moral judgement integration
- $\boxed{\text{Fe - I}}$: Mirror systems and empathy
- $\boxed{\text{Fe - II}}$: Insula in emotional empathy

4. Neurochemical Table

4.1 Neurochemical Levels:

MBTI Type	Dopamine (novelty, reward, exploration)	Serotonin (stability, conformity, calm)	Testosterone/Androgenicity (assertiveness, logic, competitiveness)	Estrogen/Oxytocin (empathy, holistic thinking, bonding)
ISTJ	2	5	3	2
ISFJ	2	5	2	3
INFJ	3	3	2	5
INTJ	3	2	4	3
ISTP	4	2	4	2
ISFP	3	3	2	4
INFP	3	2	1	5
INTP	4	2	4	2
ESTP	5	1	5	1
ESFP	5	2	3	3
ENFP	5	2	2	4
ENTP	5	1	4	2
ESTJ	3	4	5	1
ESFJ	2	5	2	4
ENFJ	4	3	2	5
ENTJ	4	2	5	2

4.2 Sources & References:

4.2.1 Fisher's Model:

- Neural Correlates of Four Broad Temperament Dimensions
- Four Broad Temperament Dimensions: Description, Convergent Validation, and Comparison with the Big Five

4.2.2 Dopamine Traits:

- Association between dopamine D4 receptor and novelty seeking
- Midbrain dopamine receptor availability inversely associated with novelty-seeking

4.2.3 Serotonin Traits:

- Serotonin selectively influences moral judgment through harm aversion
- Harm avoidance and serotonin

4.2.4 Testosterone Traits:

- Testosterone dynamics and competitive behavior
- Effects of testosterone on personality states in competitive contexts

4.2.5 Estrogen/Oxytocin Traits:

- Oxytocin receptor genetic variation relates to empathy
- Associations between oxytocin and empathy

5. Nearest Centroid Classification Method (v8.0.0)

5.1 Centroid Formula:

Apply centroid formula to training points belonging to class c, the centroid $\vec{\mu}_c$ is the arithmetic mean of the feature vectors.

$$\vec{\mu}_c = \frac{1}{|S_c|} \sum_{\vec{x}_i \in S_c} \vec{x}_i$$

- S_c: Set of all training examples belonging to class c.
- |S_c| $umeoexmpeicc$.
- $\vec{x}_i$: Feature vector of the iii-th example (in our case, a 4-dimensional vector [dopamine, serotonin, testosterone, estrogen/oxytocin]).

5.2 Procedure:

1. Compute Distance to Each Centroid Use **Euclidean distance**:

$$d(\vec{x}, \vec{\mu}_c) = \sqrt{\sum_{j=1}^{4} (x_j - \mu_{c,j})^2}$$

Equivalently (faster, order-preserving):

$$d^2(\vec{x}, \vec{\mu}_c) = \sum_{j=1}^{4} (x_j - \mu_{c,j})^2$$

2. Identify Closest Centroid Find the class (c^*) that minimizes the distance:

$$c^* = \arg\min_c \ d(\vec{x}, \vec{\mu}_c)$$

3. Predict MBTI Type Assign the input ($\vec{x}$) to type (c^*).
4. Compute distances to all 16 centroids, sort in ascending order, and return the full ranked list for richer feedback.

5.3 Strengths:

- Extremely simple and computationally efficient.
- Highly interpretable (distances directly reflect similarity to prototypes).
- Works well with low-dimensional data (4 features) and naturally clustered types.
- No training phase required when centroids are predefined.
