

# LANGUAGE OF SOUL

## Conceptual framework of the Memory Archival Process and Its Dominance in Human Cognition

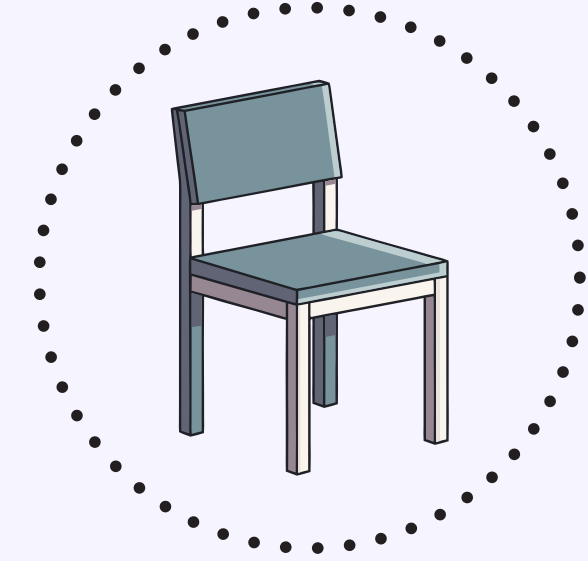
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### 1. Introduction

Human cognition remains a challenging frontier in scientific research, with numerous high-level executive functions demanding more comprehensive modeling and empirical study. While behavioral memory dominance is observed, the underlying neural models for this phenomenon remains underdeveloped. This research investigates the influence of memories over cognitive development.



#### “Units of Memory” & “Memory Units” are NOT the same

- The chair’s chromatic properties, dimension, material it is made of, geometrical architect and so on refer to the characteristics of the chair but the chair as a whole is a unit.
- Similarly, a memory has instances, i.e., a memory comprises of a series of events, including auditory, sensory, visual experiences, etc. Those are termed as “Units of memory” and the memory as a whole is termed as “Memory Unit”.
- “Memory unit” serves as the “Unit of memory” for a more detailed “Memory unit.”  
Ex: The memory unit-Chair is the unit of memory of the memory unit-Room (the place where chair is kept).

Thus, “units of memory” refers to the instances of a memory but “Memory unit” refers to the entire experience (memory) as a whole.

### → Is it possible to selectively erase memories from the human memory module?

### 2. Methodology

This paper adopts an **integrative theoretical approach**, synthesizing existing literature from psychology and neuroscience research to examine the mechanisms of the human memory. Based on reviewed literature, a conceptual model of the memory archival process was developed. The model abstracts the core stages—encoding, storage, retrieval, selective alteration—into a structured framework.

**Mathematical notations have been used as conceptual metaphor** to represent transformation in behavior, influence of memories and to illustrate the potential impact of therapeutic interventions at the neural level. The notations hold no mathematical significance.

The framework is grounded in **memory reconsolidation**, which states that previously registered memory once reactivated becomes temporarily unstable before restabilizing. During this period, the memory can be modified, strengthened or weakened, allowing for dynamic alteration of stored information.

The principles of **neural plasticity** have been taken into account, emphasizing that the synaptic strength and network activation are influenced by emotional salience, other factors.

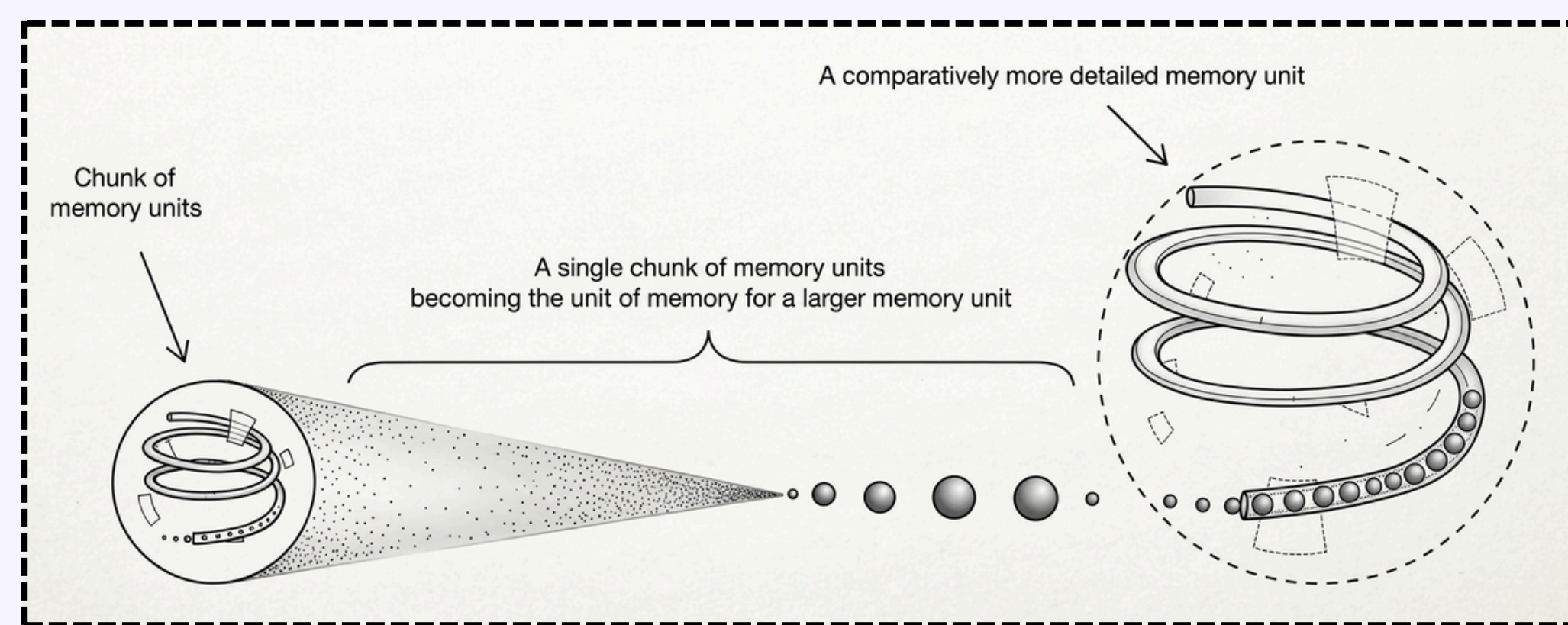
The model proposes the co-existence of multiple memory traces, however, **behavior at a given moment is driven by the memory unit that is strongly activated within the momentary context** (stimulus

or environmental factor). **Therapeutic interventions do not erase maladaptive memories** (negative memory), **rather they introduce or strengthen competing memory unit** (positive memory) **that can possibly suppress the maladaptive behavioral responses**. Despite cognitive behavioral interventions and clinical guidance, traumatic re-exposure is possible due to introduction of newer negative memory unit or the previously registered memory unit (negative memory) regaining dominance.

### 3. Discussion

#### 3.1. Iterative memory archival

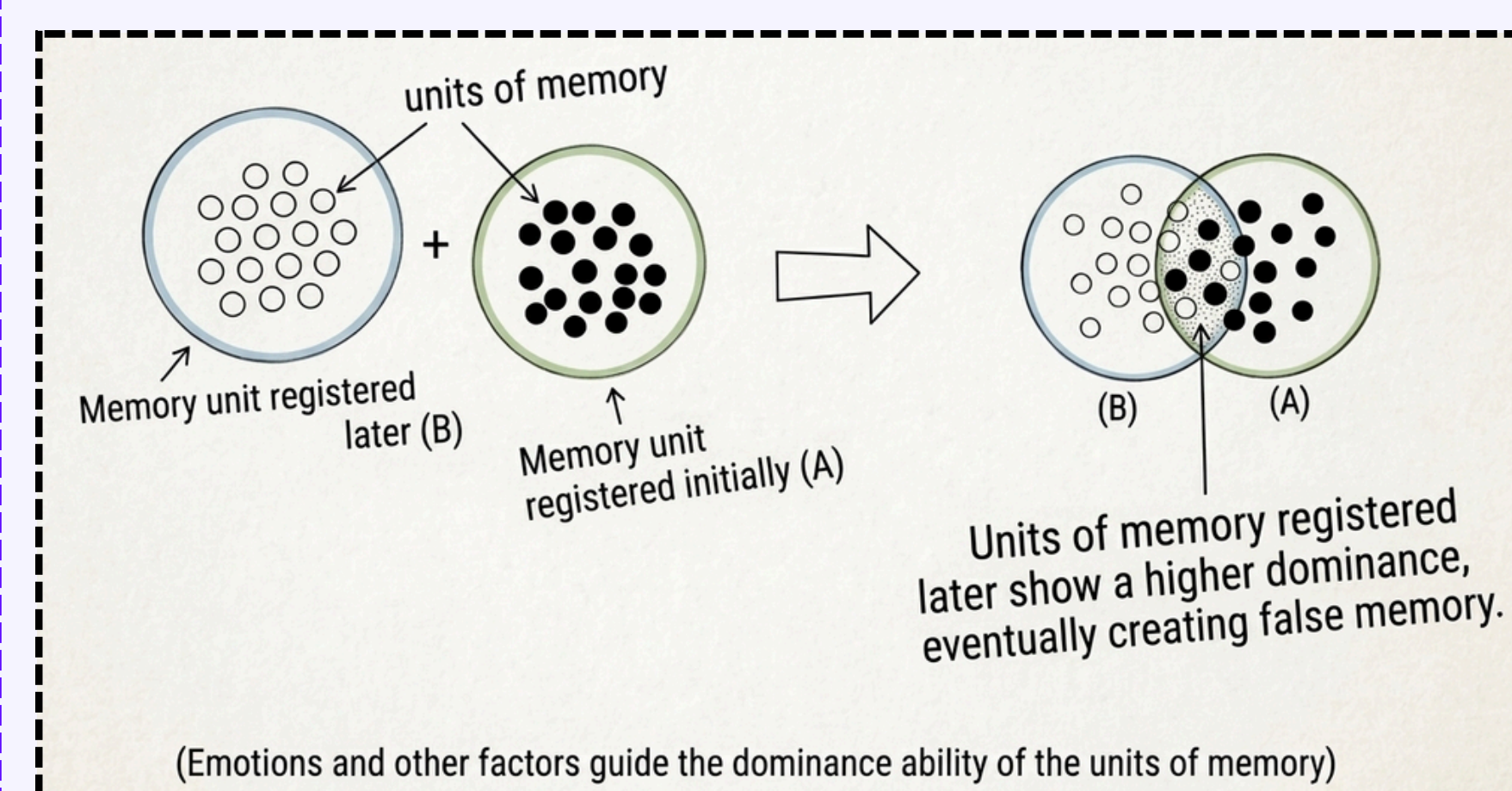
Iterative memory archival is the process of memory archival in the memory module of an individual. Each memory unit serves as the unit of memory for a more detailed memory unit.



Fig\* 3.1.1. Memory unit becoming unit of memory for a comparatively larger/more detailed memory unit

#### 3.2. Ability to re-shape memories

Based on existing literature and empirical findings, the conclusion drawn is that units of memory can be altered within a memory unit with the help of emotional manipulation and other factors.



Fig\* 3.2.1. Units of memory getting altered within a memory unit

#### 3.3. Dominant memory units drive Human Cognition

Behavior is dominated by a single memory unit at a time, however, the memory units linked can get activated at the same time, triggering the response/behavior’s intensity. Therefore,

$$B(t) = M_{\text{dominant}} \times E_t$$

Here,  $E_t$  is the stimulus.

Anxiety disorders, for instance, phobia can be due to one or multiple reasons. Each contributing to the intensity of the avoidance behavior. Therapy registers a positive memory unit in the memory module which dominates over the negative memory unit causing the behavior.

$$\text{Before therapy} \rightarrow B(t) = M_{\text{phobia}} \times E_t$$

$$\text{After therapy} \rightarrow B(t) = M_{\text{safe}} \times E_t$$

However, re-traumatic exposure is possible, that is, another negative memory unit takes the dominance (can occur).

\*The digital illustrations are generated using Gemini.

### 4. Results

→ Referring to existing literature and recorded empirical observations, the **Memory Archival Model** has been illustrated—a conceptual framework demonstrating the process in which memories are stored in the human mind.

→ Based on existing findings, the conclusion can be drawn that **memories can get reshaped**, resulting into *High-Confidence False Memory*. The illustrated framework discusses the potential reasoning behind this phenomenon.

→ The impact of Cognitive Behavioral Intervention at the neural level and the **ability of specific memories to dominate over other memories** has been demonstrated using the theoretical framework.

→ **The paper concludes that it is unfeasible to selectively erase memories from the human memory module through non-pharmacological, oral intervention methods. However, it is possible to reshape memories (or dominate certain memory units), selectively.**

### 5. Conclusion

This study offers significant insight and provides a foundational framework, laying the groundwork for further exploration of the memory module in humans and further illustrates the influence of memories in the cognitive and behavioral development of an individual. This work is conceptual and does not involve empirical data collection, however, the it is intended to generate hypotheses and guide future empirical research work.

#### References

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