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NOVELTY PROCESSING AND MEMORY IMPAIRMENT IN ALZHEIMER'S DISEASE

MAIN QUESTIONS

1)Do patients with AD or MCI still detect novelty?

2)Does novelty detection improve memory as is usually the case in healthy subjects?

3)Is it possible to use novelty to enhance memory in AD?

unfamiliarity
originality
ornament
refreshing
animatingmodernity
modernness
groundbreaking
innovation
trinket
gimcrack
recently
innovative
creativeness
freshly
invigorating
invention
creativity
creation
bracing
bauble
inventive
recent
creatively
unusualness
novelty
toy
gaud
fallal
new
newly
trifle
conception
bangle
freshness
ingenious
fresh
break'with'tradition
difference
creative
gewgaw
newness
imaginativeness
curiosity
ingenuity
unfamiliar
imaginative
knickknack
innovativeness
naturalness
unconventionality
straightforwardness

ABSTRACT

The detection and processing of novelty plays a critical role in memory function. Despite this, relatively little is known about how novelty influences memory in Alzheimer's disease (AD).

The studies reviewed showed that novelty processing is mostly impaired in AD patients, whereas it can be preserved under some conditions in MCI, particularly when cognitive demands are otherwise low.

NOVELTIES:

Term	Definition
Stimulus novelty	An unfamiliar stimulus or stimulus that has never been experienced before
Contextual novelty	A familiar stimulus that is unexpected in a given context
Associative novelty	A novel configuration or combination of familiar stimuli

ASSESSMENT METHODS

1)Stimulus novelty detection

Visual paired comparison task

2)Contextual novelty detection

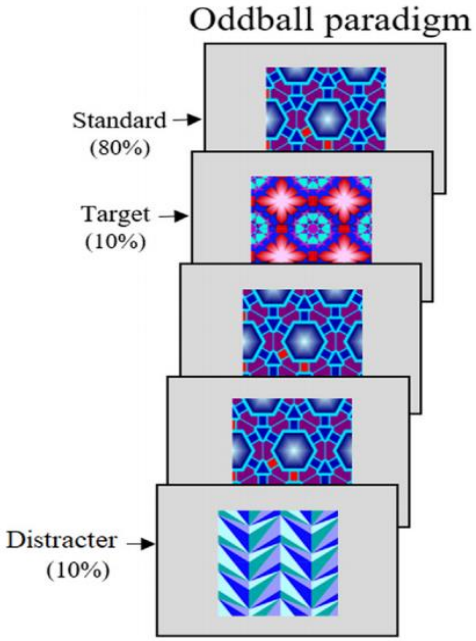
Oddball paradigm

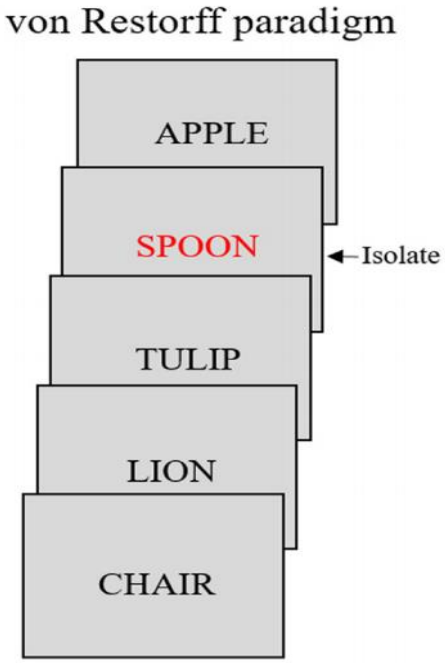
3)Novelty-related memory effects

Von Restorff paradigm

Novelty system activation

Pre-experimental familiarity

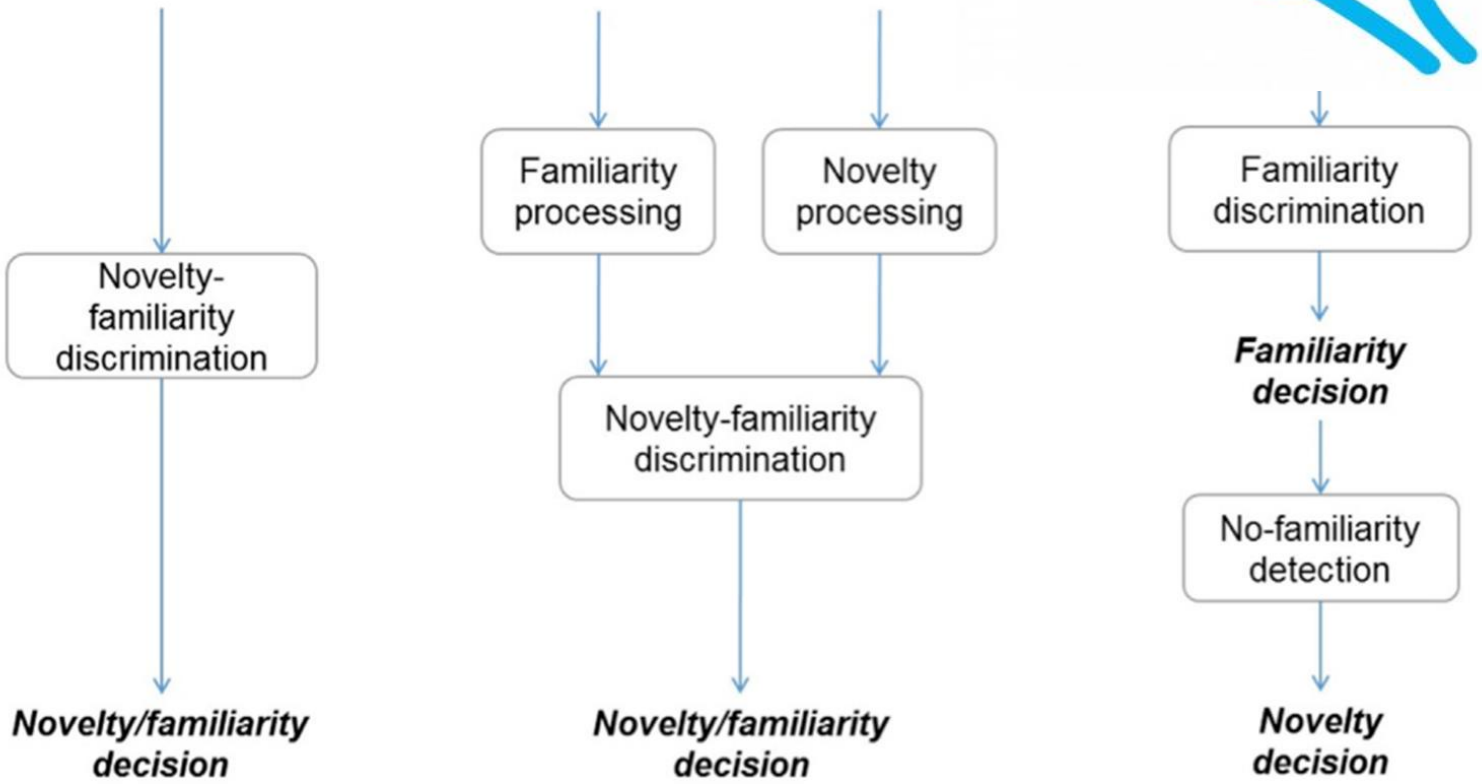




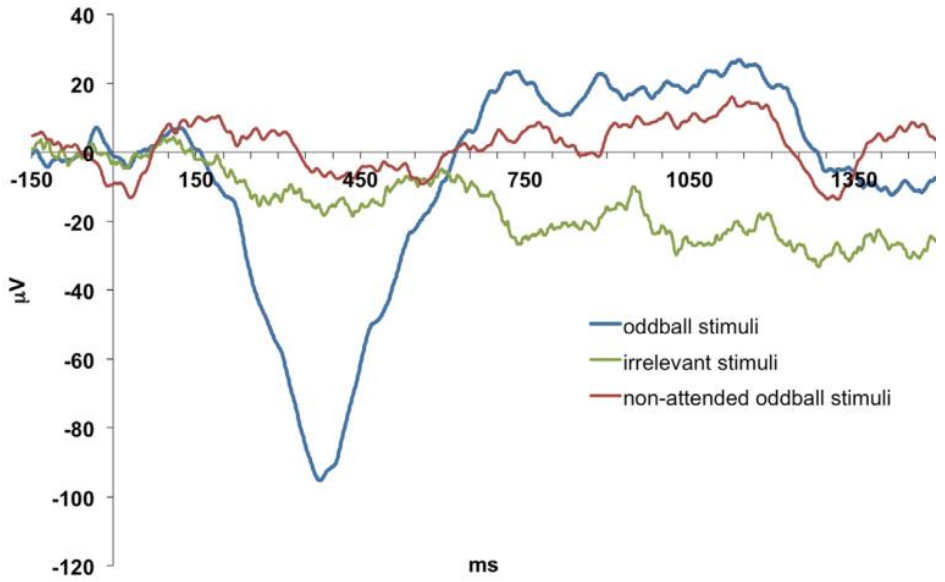
COGNITIVE MODELS OF NOVELTY PROCESSING AND MEMORY

-In the case of stimulus novelty , Some models assimilate novelty detection with familiarity detection

-In the case of contextual novelty, some models proposed that it relies on a comparator mechanism between prior expectations and experience

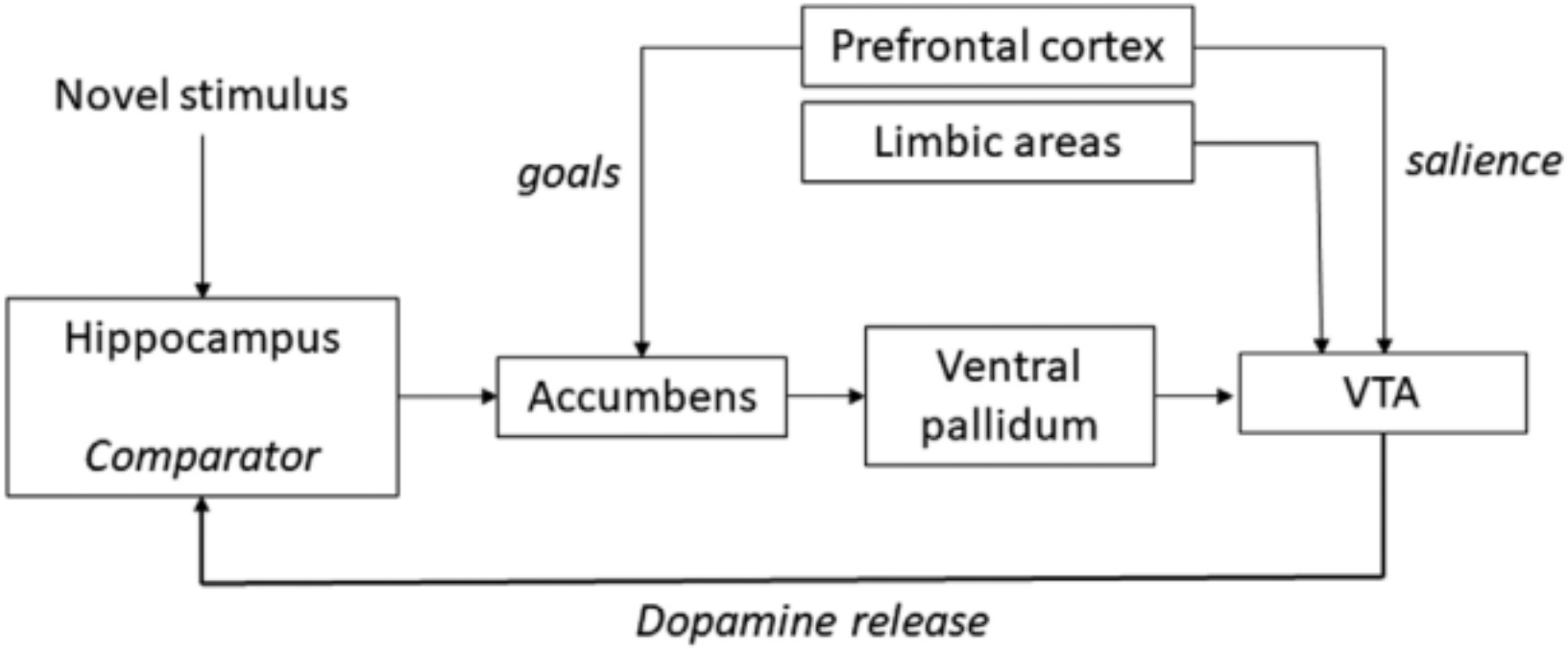


NEURAL BASES OF NOVELTY



The detection of novelty and novelty-related memory effects rely on a large-scale cerebral network, in which the hippocampus and other temporal lobe structures, the prefrontal cortex and the substantia nigra/ventral tegmental area play a crucial role.

NEUROBIOLOGICAL MODELS OF NOVELTY PROCESSING

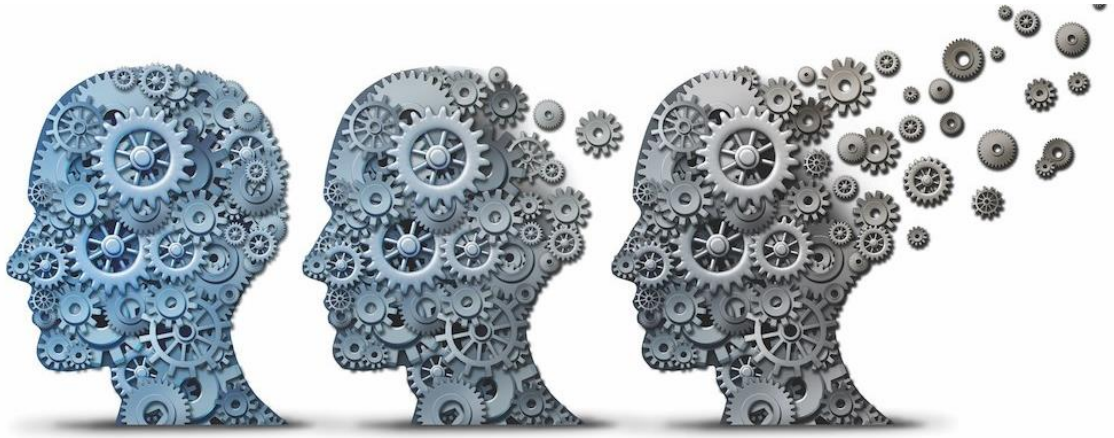


NOVELTY IN ALZHEIMER'S DISEASE: IMPAIRED OR PRESERVED?

-Physiopathology of Alzheimer's disease

-Dopamine in AD

-Novelty detection in early course of Alzheimer's disease



OUTSTANDING QUESTIONS

1. Identifying the patterns of impairments across different types of novelty

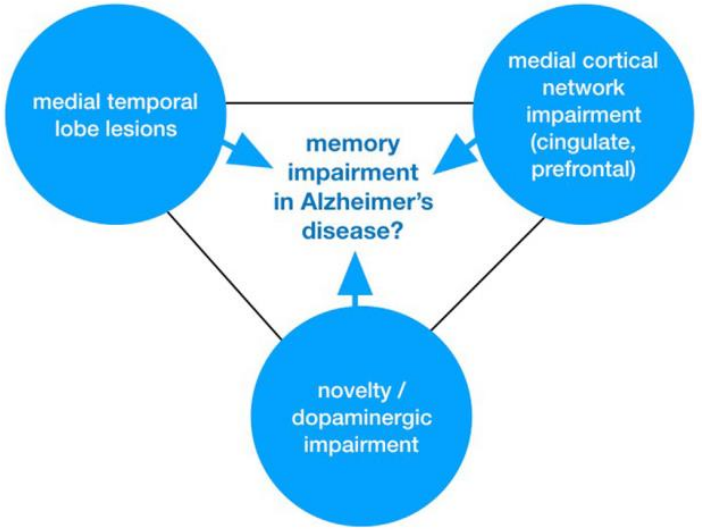
2. Establishing the link between novelty and memory impairment during the time course of AD

3. Determining the clinical correlates of novelty in AD

4. Manipulating novelty to improve memory in AD

A NOVEL MODEL OF MEMORY IMPAIRMENT IN ALZHEIMER'S DISEASE

More broadly, a possibility is that taking into account novelty might be highly beneficial to conceptualize better models of the memory impairment in AD.



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THANKS FOR YOUR ATTENTION