

Digital and Traditional Methods for Addressing Everyday Cognitive Failures: A Focus on Name and Face Recall

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What are everyday cognitive failures?



Nice to meet you..



What are everyday cognitive failures?



What are everyday cognitive failures?



Overview

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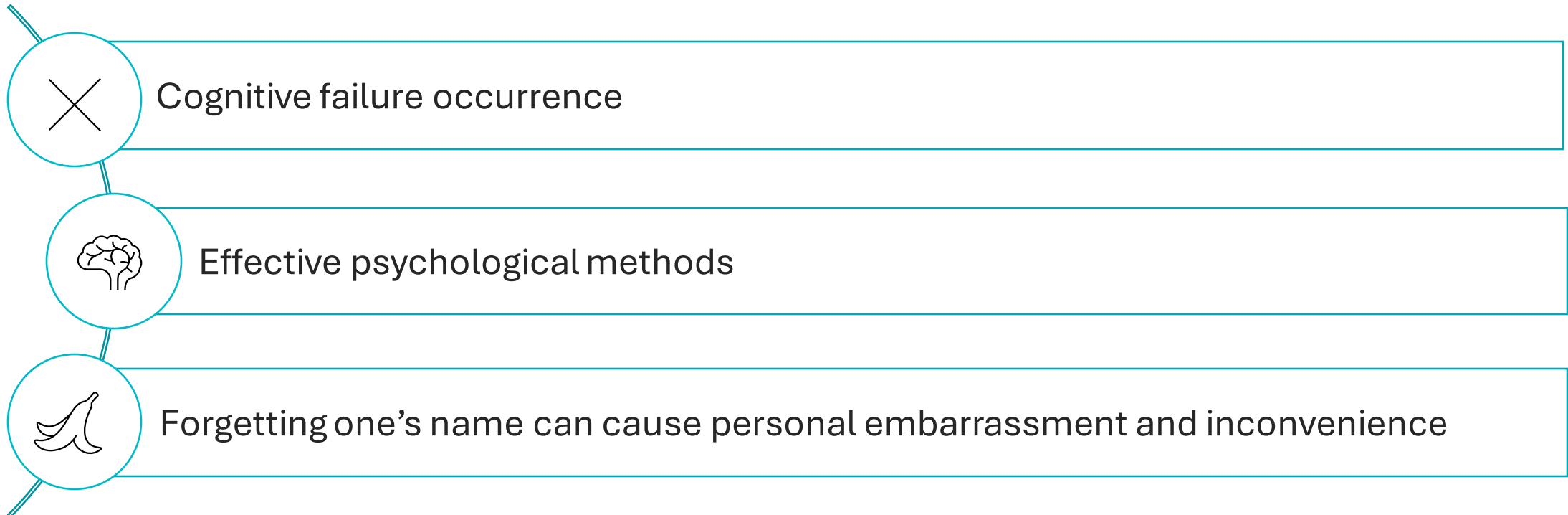
Proposed
prototype
design

06

Future work

Motivation

"His name is on the tip of my tongue!"



Background

Broadbent, Donald E., et al.

"The cognitive failures questionnaire (CFQ) and its correlates."
British journal of clinical psychology 21.1 (1982): 1-16.

Clinch, Sarah, and Cecilia Mascolo.

"Learning from our mistakes: Identifying opportunities for technology intervention against everyday cognitive failure."
IEEE Pervasive Computing 17.2 (2018): 22-33.

Chan, Wei Ting Samantha.

Augmenting Human Prospective Memory through Cognition-Aware Technologies.
Diss. ResearchSpace@ Auckland, 2022.

Lorayne, Harry.

How to develop a superpower memory: Your absolute, quintessential, all you wanted to know complete guide.
Frederick Fell Publishers, 2000.

...

Memory augmentation systems

Overview of Chan's taxonomy

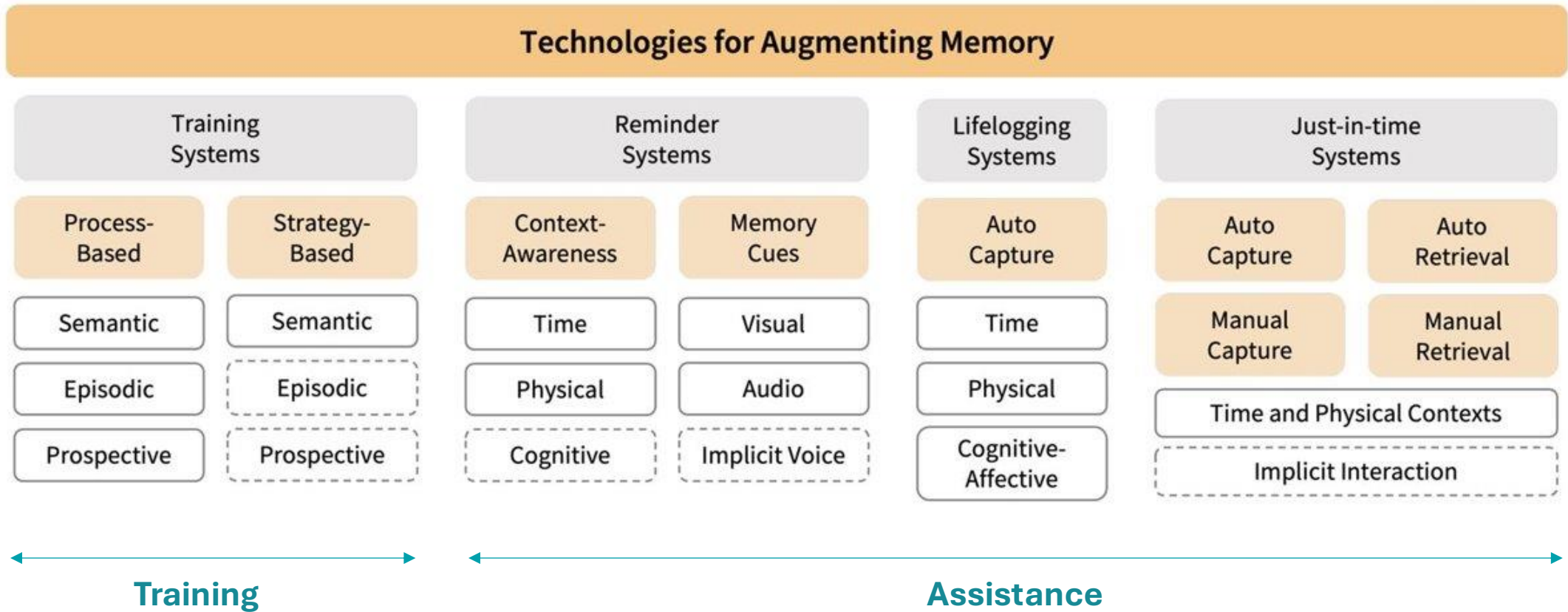
Case study:

Forgetting names and faces

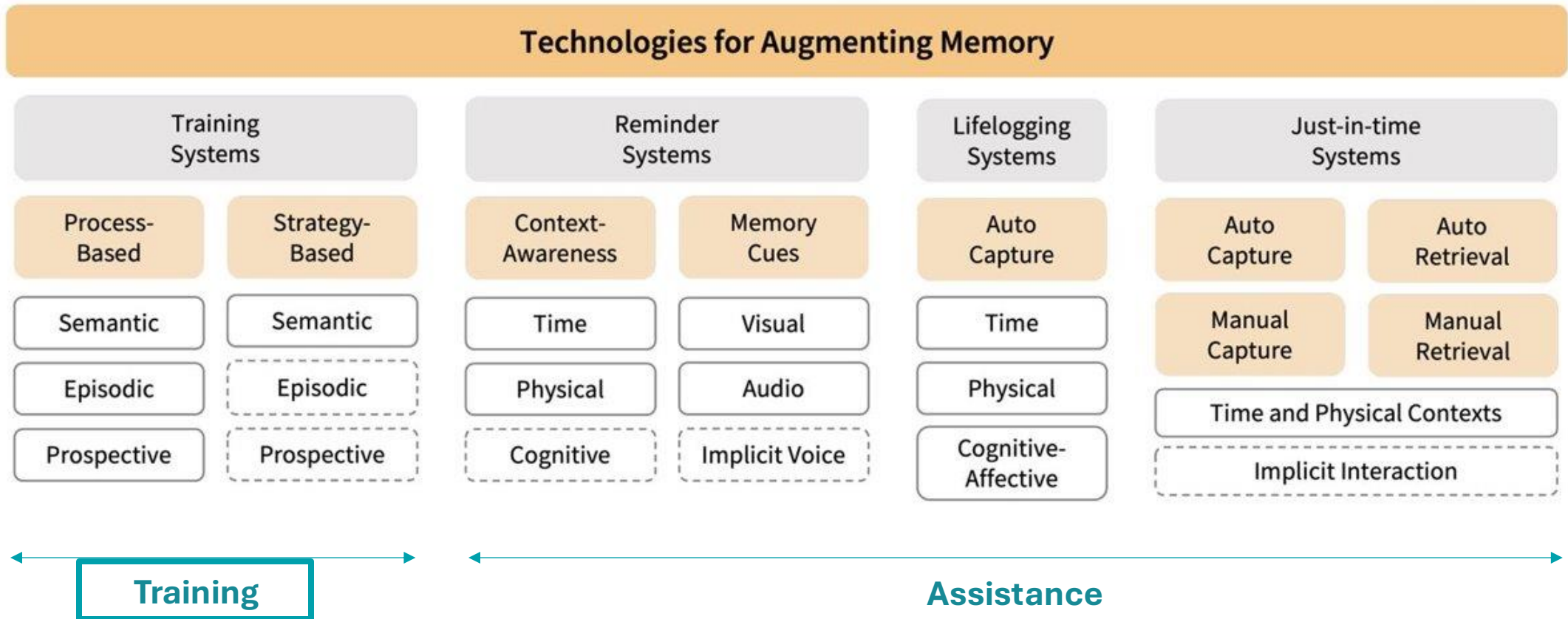
The Link method

MEMORY AUGMENTATION SYSTEMS	Case Study	Psychology Methods	Implementation Methods
Behavior Change	Goal achievement	Intention implementation <ul style="list-style-type: none"> ○ Guided Imagery ○ Mental Simulations ○ Imagery training 	<ul style="list-style-type: none"> ○ Voice ○ Text ○ Image-and-text
Learning	Languages	<ul style="list-style-type: none"> ○ Loci method (palace) ○ Link method 	<ul style="list-style-type: none"> ○ Text ○ Image-and-text ○ 3D visualizations
Failing Memories	Everyday memory lapses	<ul style="list-style-type: none"> ○ Link method ○ Peg method ○ Reminders 	<ul style="list-style-type: none"> ○ Voice ○ Text (to-do lists) ○ Computer Vision
Selective Recall	Recalling unwanted or traumatic memories		
Advertising			
Social Acceptance			

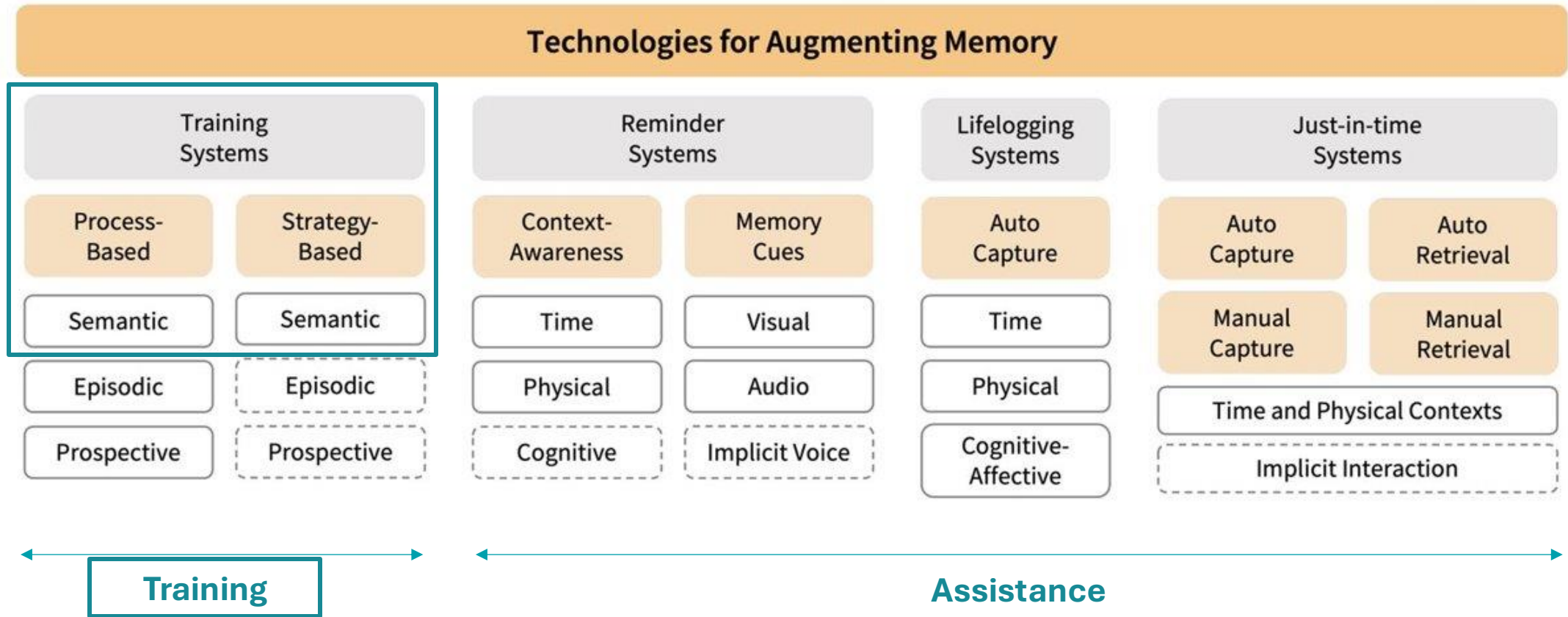
Chan's taxonomy of relevant memory augmentation systems (dotted line = research gaps)



Chan's taxonomy of relevant memory augmentation systems (dotted line = research gaps)



Chan's taxonomy of relevant memory augmentation systems (dotted line = research gaps)



Failing to recall names and faces = semantic memory lapse

EVERYDAY MEMORY LAPSES	Case studies	Training system type	Tools
Prospective memory	Forgetting tasks	<ul style="list-style-type: none"> ○ Process based ○ <i>Strategy based (new)</i> 	Smartphone apps
Retrospective memory (Semantic memory)	Subjective memory complaints – older adults	<ul style="list-style-type: none"> ○ Process based 	Smartphone app ("SMART")
	Forgetting facts	<ul style="list-style-type: none"> ○ Strategy based (mnemonics, spaced repetition) 	AR: VMPEG, NeverMind Smartphone: Anki, Quizbot
	Forgetting names and faces	?	?

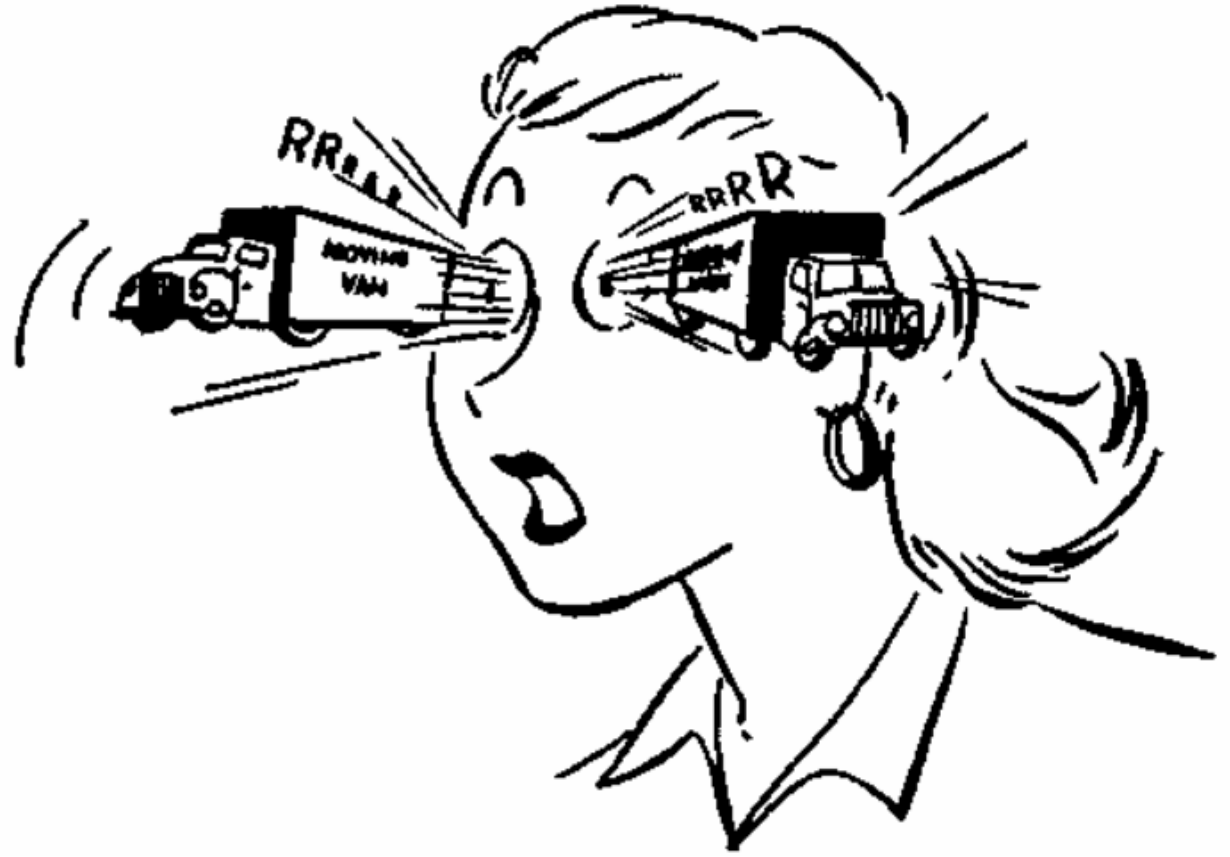
Clinch on
Forgetting
Names and
Faces

Most frequent semantic failure

Problematic memory failure

Develop a technology tool (easy!)

Lorayne:
The Link Method
(face-name mnemonics)



Miss Van Nuys

“Be sure you see the picture!”

Gap in Literature

There are no digital strategy-based training systems that would train users to apply mnemonics strategies to recall names and faces.

Proposed Study Design

Research Questions

1. Does using a digital implementation of the Link method improve users' ability to remember names and faces more effectively than traditional voice-based system?
2. Which system, the digital implementation of the Link method or the traditional voice-based training system, yields higher user satisfaction?

Proposed Study Design

Between-subject

Traditional voice-based
training



Training with a
digital tool

Dependent variables: Human performance, System usability

Memory strategy: Link Method

RQ	METRICES	MEASURMENT INSTRUMENT
1	Number of names recalled	Implemented counter
	Time in seconds	Implemented timer
	Confidence in memory	Cognitive Failures Questionnaire (CFQ)
	Imagery ability	Ease of imagination scale by Ellen and Bone (1991)
2	Mental effort	NASA-TLX Questionnaire
	System Usability	System Usability Scale (SUS)
	User Experience	User Experience Questionnaire (UEQ)


Proposed Prototype Design

Desktop applications



Condition 1 **Training**

Link method
Voice instructions
Visualizations

 This is Ayberk.
Ayberk's name sounds like
iceberg, the lettuce.



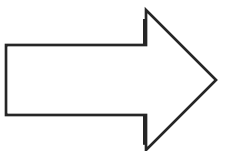
Condition 1 **Training**

Link method
Voice instructions
Visualizations

• This is Ayberk.
Ayberk's name sounds like
iceberg, the lettuce.

• Find an outstanding
feature on Ayberk's face
and try to associate it with
iceberg.


• The funnier the
association, the better!



Next person

Condition 2 **Training**

Link method
Voice instructions
Visualizations

 This is Ayberk.
Ayberk's name sounds like
iceberg, the lettuce.

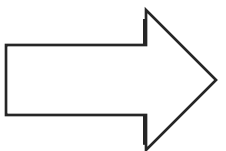


Condition 2 Training

• This is Ayberk.
Ayberk's name sounds like
iceberg, the lettuce.

• Ayberk's moustaches
seem pretty outstanding.
You can spot them right
away when you see him.

• Can you see those iceberg
moustaches?



Next person

Post-test

••••• This is Smolenski.
Can you create an association with his
name? **Imagine it!**



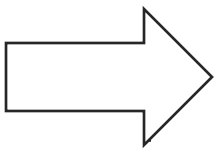
Condition
1 & 2

Post-test (1 week)

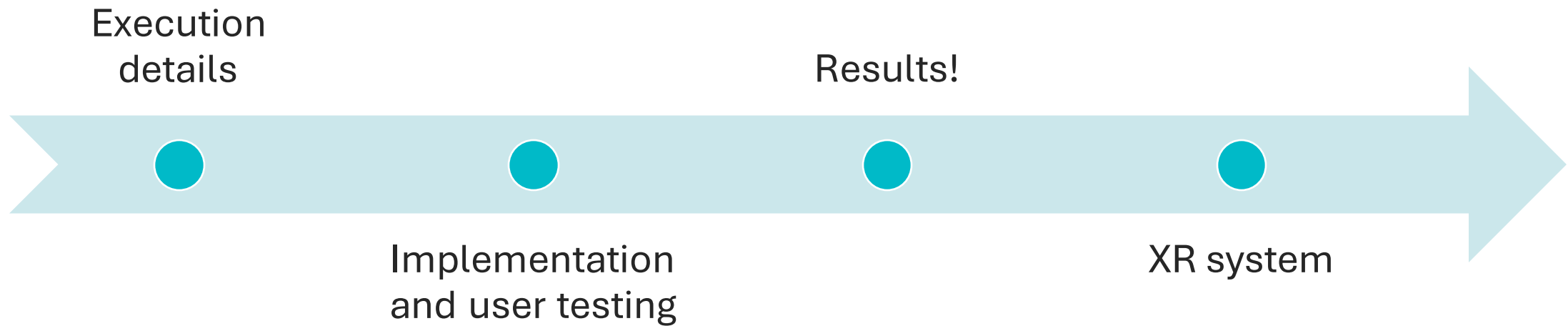
Can you **recall** this
person's name? •••••



Next person



Future Work



Thank you!

**YOU KNOW
WHO AM I**

