

Experiment -2

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Design a UI where users recall visual elements (e.g., icons or text chunks). Evaluate the effect of chunking on user memory.

FRAME 1: INSTRUCTION PAGE

Chunking Analysis of the Instruction Page

Chunking is a cognitive strategy that involves organizing information into smaller, meaningful units to reduce cognitive load and improve comprehension. The instruction page of the Visual Memory Experiment effectively applies this principle in the following ways:

1. Clear and Sequential Task Flow

The process is divided into three clearly labeled steps: Memorize, Recall, and Results. Each step communicates a single goal, helping users mentally prepare for the task without feeling overwhelmed.

2. Logical Grouping of Information

Step 1 (Memorize): Explains the visual exposure phase.

Step 2 (Recall): Describes the memory retrieval activity.

Step 3 (Results): Informs users about performance evaluation.

A separate highlighted note explains the use of two presentation styles (chunked and unchunked), reinforcing experimental intent.

3. Visual Hierarchy and Layout

A large, bold title ("Visual Memory Experiment") immediately communicates the purpose.

Icons next to each step act as visual anchors, improving scanability.

Adequate spacing between sections prevents visual clutter.

The "Begin Experiment" button is visually prominent, guiding users toward the next action.

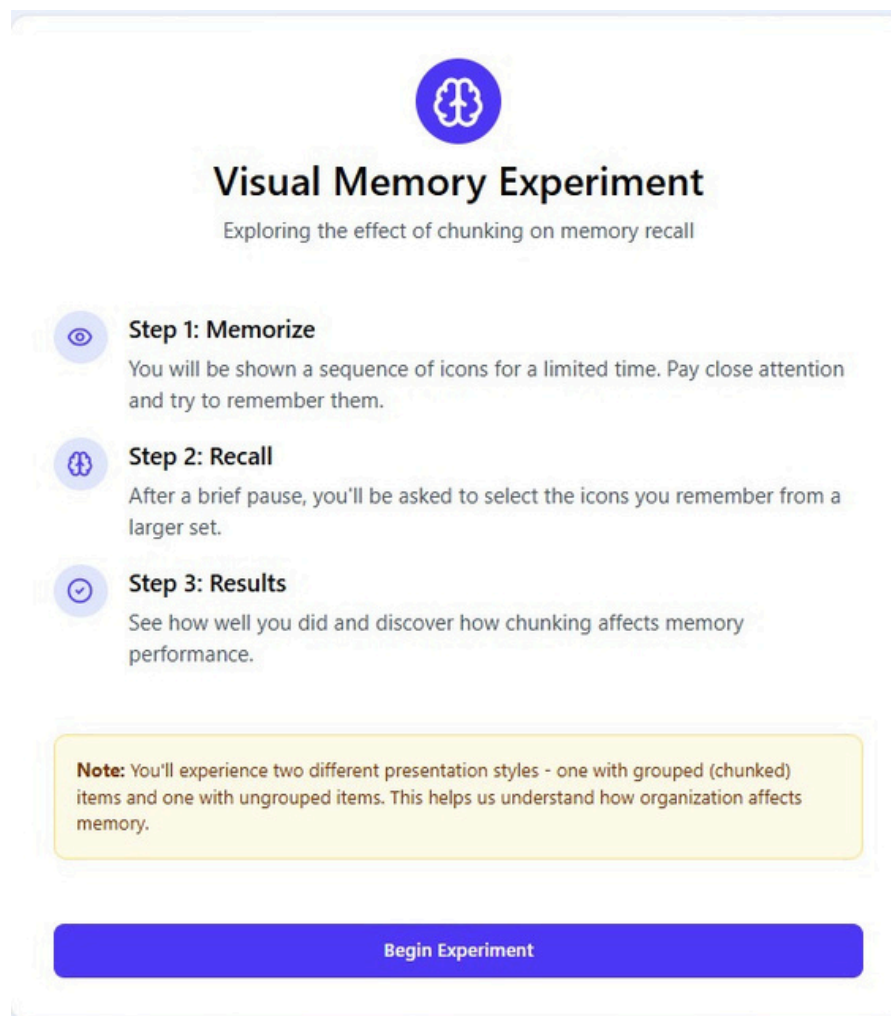
4. Reduction of Cognitive Load

Instructions are concise and written in simple language.

No unnecessary decorative elements distract users from understanding the task.

Cognitive & UX Benefit

By chunking instructions into structured steps, users can easily understand the experiment flow, reducing confusion and ensuring fair participation.



FRAME 2: CHUNKING / MEMORIZATION PHASE

Analysis of the Visual Memory Encoding Screen

This screen represents the visual memory encoding phase, where users observe and attempt to store visual elements in short-term memory.

1. Purpose of the Screen

To allow users to encode visual information within a limited time.

To observe how users handle memory load when icons are presented together without explicit grouping (unchunked condition).

2. Key Elements and UI Components

Time Indicator

A visible countdown timer shows the remaining memorization time (e.g., 7 seconds). This creates urgency and simulates real-world memory constraints.

Grid of Icons

Multiple icons (phone, lightning, home, envelope, bell, bicycle, moon, car, star, camera, key, cup, etc.) are displayed together.

Icons are visually distinct but presented simultaneously, increasing cognitive demand.

Minimal Distraction Design

Neutral background and consistent icon styling keep attention focused on the task.
No interaction is allowed during this phase, preventing rehearsal or correction.

3. How the Memorization Phase Works

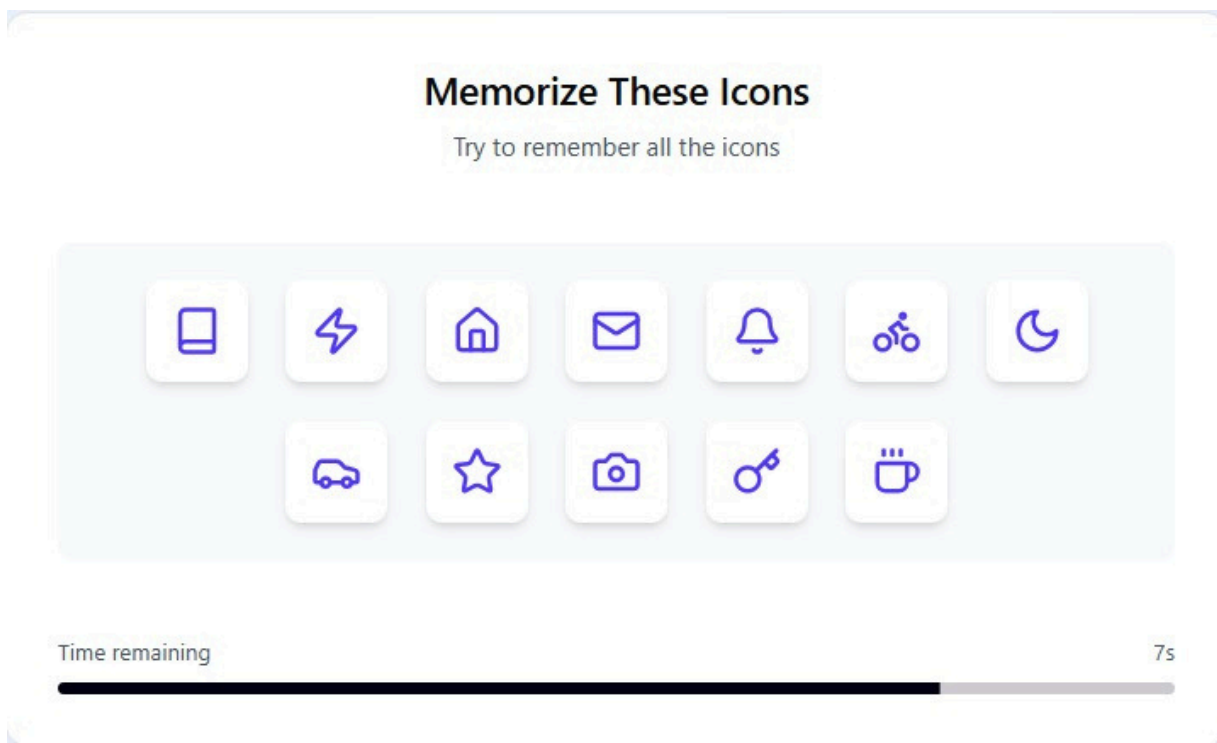
1. Users visually scan the grid of icons.
2. They attempt to form mental associations or chunks under time pressure.
3. Once time expires, the screen transitions automatically to the recall phase.

Cognitive & UX Benefits

Tests working memory capacity under load.

Encourages spontaneous chunking strategies by users.

Establishes a baseline for comparing chunked vs unchunked performance.



FRAME 3: RECALL PHASE

Analysis of the Memory Recall (Selection) Screen

This screen represents the memory retrieval phase, where users identify icons they remember seeing earlier.

1. Purpose of the Screen

To measure how accurately users can retrieve stored visual information.

To evaluate the effectiveness of prior memorization under unchunked conditions.

2. Key Elements and UI Components

Title and Instructions

The heading clearly states: "Select the Icons You Remember".

A short instruction reinforces the task goal.

Grid of Selectable Icons

- ☐ A larger set of icons is shown, including:
 - o Icons from the memorization phase
 - o New distractor icons not shown earlier
- ☐ Selected icons are visually highlighted, providing immediate feedback.

Selection Counter

Displays how many icons the user has selected.

Helps users self-monitor over-selection or guessing behavior.

Action Buttons

Clear Selection: Allows correction before submission.

Submit Answers: Finalizes the recall attempt.

3. How the Recall Phase Works

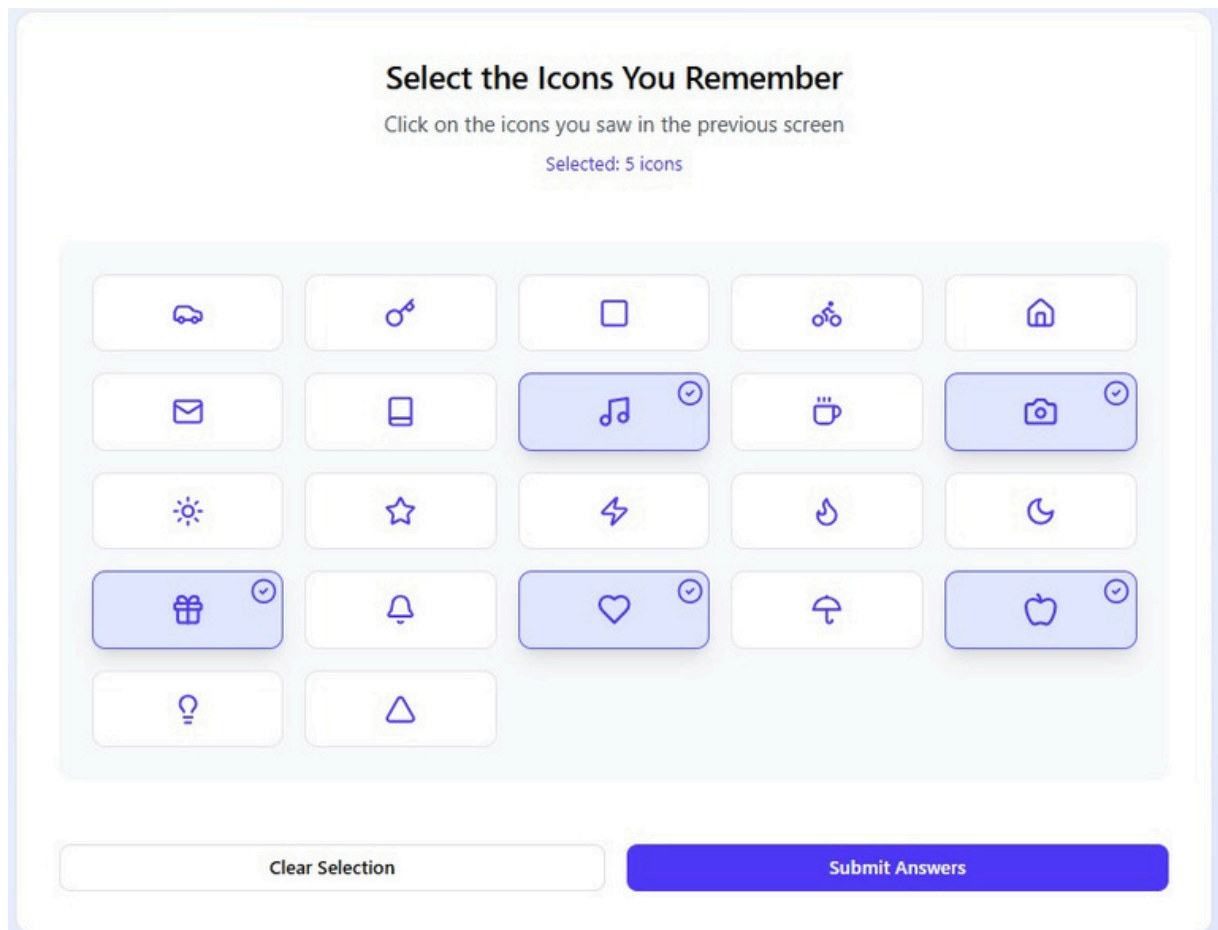
1. Users compare the displayed icons with their memory.
2. They select icons they believe were previously shown.
3. Distractors test false memory and recognition errors.
4. Submission triggers performance evaluation.

Cognitive & UX Benefits

Differentiates between true recall and false recognition.

Encourages careful decision-making rather than random guessing.

Clean interaction design avoids UI-induced errors.



FRAME 4: RESULT PAGE

Analysis of the Result & Feedback Screen

This screen provides quantitative feedback on the user's memory performance.

1. Purpose of the Screen

To clearly communicate recall performance.

To explain the effect of presentation style on memory accuracy.

2. Key Metrics Displayed

Recall Rate

Shows the percentage of correctly recalled icons (e.g., 8%).

Indicates overall memory retention.

Precision

Displays the accuracy of selected icons (e.g., 20%).
Highlights the ratio of correct selections to total selections.

Errors

Shows the number of incorrect selections.
Reflects false recognition caused by cognitive overload.

3. Result Breakdown

Correctly Recalled Icons: Icons accurately remembered.
Missed Icons: Icons shown earlier but not selected.
Incorrect Selections: Icons selected but never shown.

4. Chunking Effect Explanation

The system explicitly states that unchunked (random) presentation increases cognitive effort.
This condition acts as a control baseline to compare future chunked presentations.

5. Cognitive & UX Benefits

Immediate feedback improves self-awareness of memory performance.
Clear categorization of mistakes helps users understand why they performed poorly or well.
Encourages repeated trials and learning.



Your Results

Presentation Mode: **Unchunked (Random)**

✓ Recall Rate

8%

1 of 12 correct

↗ Precision

20%

Accuracy of selections

✗ Errors

4

Incorrect selections

✓ Correctly Recalled (1)



✗ Missed Icons (11)



✗ Incorrect Selections (4)



 **Chunking Effect**

Unchunked presentation shows items randomly, which requires more effort to encode and recall. This baseline helps us measure the benefit of chunking.

↻ Try Again

PROTOTYPE LINK:

<https://www.figma.com/make/IX6WTnG8bZvUzvdY1HXyS/Memory-Recall-UI-Design?t=qOBGI2AolNTk1i7z-0>