Twinkle Twinkle Little Chair?

Investigating the Influence of Musical Structures on False Memory

by Kat Pleviak and Lily Barham

Welcome

I'm **Kat Pleviak**, Artistic Director of Sea Beast Puppet Company

I'm presenting **The influence of musical structure on false memory.** Completed with **Lily Barham**

This study was done for our **PSYCH-2285 Behavioral Research Methods** class, Spring 2025

Foundational Research

DRM (Deese-Roediger-McDermott) paradigm:

-Deese (1959) / Roediger and McDermott's (1995) false memory studies.

-Together this studies discovered how our minds can invent false memories, when presented with a series of related content.

Our Replication

-Roediger and McDermott's (1995) foundational false memory study, experiment 1

-Participants receive a series of word lists each inspired by a central word, called the critical lure.

-They are then given an opportunity to recall what they have heard.

-Many participants recalled the critical lure and other words presented, called intrusions demonstrating peoples ability to create false memories.

-Our replication results were in line with with the original study.

Finding Our Research Question

What could we do to take this study further?

What helps us remember things?

How could we decrease false memory?

What kinds of stuff sticks in our brains?

Pros, Poems, Lyrics,..... Music???

Could **pairing the words** with a **familiar tune** **reduce recall** of the critical lure?

Additional Research

Visual sequence encoding:

Yiren Ren, Grace Leslie, and Thackery Brown

1) Does listening to music help you remember new visual information? Can it effect how well you learn, remember, and recall new information?

The organization of musical semantic memory:

Susan M. Sherman and Jo Kennerley

2) Does converting the DRM paradigm from word lists to song titles from the same artist produce the same results as the original experiment. Does playing clips of the actual music increase the effect of false recall.

Memory for musical tones:

Dominique T. Vuvan, Olivia M. Podolak, and Mark A. Schmuckler

3) Does our expectation of musical flow and structure, specifically in regards to tonality (major, minor, atonal), influence memory for single tones—including both accurate recall and false memories?

Our Hypothesis

Singing a list of related words to a familiar tune will result in less false recall of the critical lure then speaking them?

The Method

1) We create 2 surveys Singing vs. Talking

2) We fit the words from the list with the critical lure, "Chair" to the song, Twinkle Twinkle, Little Star.

3) 2 recordings were made of the list, one sung and one spoken.

4) Participants were randomly assigned to a group, played the list, and given 90 seconds to recall as many words as they could remember.

The Method

Song adaptation

Twinkle Twinkle, little star
table cushion sit legs couch

How I wonder what you are
seat bench rocking desk wood stool

Up above the world so high
sofa swivel recliner

like a diamond in the sky
sofa swivel recliner

Twinkle Twinkle, little star
table cushion sit legs couch

How I wonder what you are
seat bench rocking desk wood stool

Critical Luer: Chair

Studied Words

(original DRM list plus 2 added from extended list)

table	sit
legs	seat
couch	desk
recliner	sofa
wood	cushion
swivel	stool
rocking	bench

Results

1) False recall of the critical lure was lower for sung words (18.5%) then spoken (32.7%).
2) The recall of studied words was lower for sung words (6.4) than spoken words (7.7).
3) Intrusions were higher for sung words with .6 intrusions than spoken words .3 intrusions.

Singing vr. Talking Results			
	False recall of critical lure	Recall of studied words per participant	Intrusions per participant
Singing	18.5%	6.4	0.6
Talking	32.7%	7.7	0.3
	Chi Square = 4.99, $p < .01$	[$t(188) = 3.43$, $p < .001$]	Mann-Whitney U = 3902, $p < .05$

Recap/Discussion

Our hypothesis: Singing a list of related words to a familiar tune will result in less false recall of the critical lure then speaking them? **This is supported!!! Woo Hoo!!!**

The support:

- The Roediger, McDermott (1995) study had **40% recall** of the critical lure.
- We had **33%** recall in our replication of spoken word lists.
- When the word list was sung, the recall on the critical lure was **18%**.

The contradictory support:

- We also saw less false recall of studied words, and more intrusions from the singing group vs. the talking group.
- This was contrary to my expectations but supported by our additional research.

Whats next?

Things I would like to explore more?

1) The effect over the study of multiple lists sung to the same tune.
2) Word placement in terms of sound, syllable, rhyme, repetition.
3) Word placement in terms of repetition.
4) Speed of song/word delivery.
5) Turning the words into phrases/lyrics

Sources

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2) Roediger, H. L., III, & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 21(4), 803–814. https://doi.org/10.1037/0278-7393.21.4.803

3) Sherman, S. M., & Kennerley, J. (2014). The organisation of musical semantic memory: Evidence from false memories for familiar songs. *Memory*, 22(7), 852–860. https://doi.org/10.1080/09658211.2013.839709

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Thank you