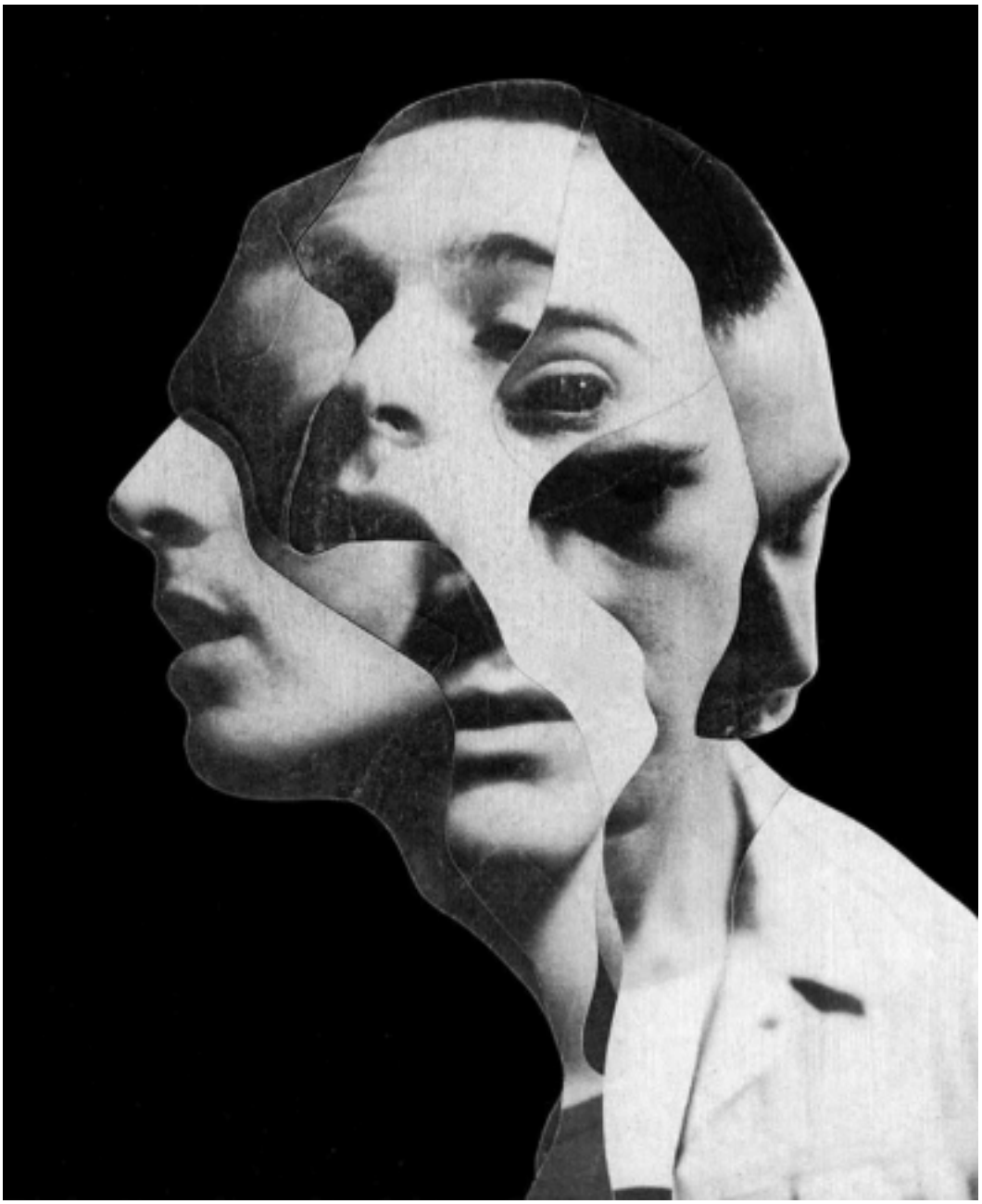
False but Familiar: Schema and the Fuzzy Trace Theory



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Honors Psychology II

Table of Contents

I. Lit Review

Most people forget nearly 80% of new information within days. Even more surprising – humans can often confidently recall things that never happened. These false memories feel real, especially when they align with what we expect. Memory isn't a perfect record; instead, it's a process shaped by various external factors. Schema Theory suggests we interpret new information by fitting it into mental frameworks created by our past experience, which helps us process information quickly but can lead to filling in missing details inaccurately. Fuzzy Trace Theory explains that we store both precise details (verbatim) and general meaning (gist), but often rely on gist, making memory vulnerable to distortion. This paper will explore the question: Do schematically-categorized word lists increase the likelihood of false recall?

In a foundational study, Elizabeth Loftus (1974) demonstrated this effect by showing participants videos of car crashes.[1] Those who were asked if the cars had "smashed" into each other were more likely to recall broken glass that wasn't there, compared to those who heard the word "hit," showing how just one word changed people's memories. While this study focused on language cues, similar distortions happen internally, particularly through schemas. Schemas are mental frameworks that help us organize new information. But when new details align with an existing schema, we may remember them, even if they were never actually there.

Early memory theories treated false memories as byproducts of a single system. For example, Bransford and Franks (1971), in *Cognitive Psychology*, found that participants exposed

[1] Loftus, E.F. (1974). *Journal of Verbal Learning and Verbal Behavior*, 13(5), 585–589.

to related simple sentences often recalled a more complex version that was never shown.[2] Johnson, Hashtroudi, and Lindsay (1993), writing in *Psychological Bulletin*, proposed the Source Monitoring Framework, which suggested that true and false memories share the same origin, with errors resulting from confusion over where or how the memory was formed.[3]

However, this "one-process" view was challenged by Fuzzy Trace Theory (FTT), introduced by Reyna and Lloyd (1997) in *Learning and Individual Differences.*[4] FTT argues that our memory uses two systems: verbatim traces, which store exact details, and gist traces, which capture more general "gists" or ideas. False memory arises when people rely more on gist than on exact recall. FTT offers a mechanism for schema-driven errors, where memory fills in what "makes sense."

This idea aligns with schema research. In *Memory & Cognition*, Brewer and Treyens (1981) had participants wait in an office, then recall its contents.[5] Many listed schema-consistent items (like books) that weren't there, suggesting that memory reconstructs meaning rather than details.

FTT also posits how false memory appears across different age groups. Reyna and Lloyd (1997) in *Learning and Individual Differences* found that older children and adolescents, tested using the DRM paradigm, were more likely to falsely recall theme-related words than younger children. However, not all studies agree with this, as this contradicts the generalized assumption that memory gets more accurate with age. Howe et al. (2009), in *Developmental Review*, argued that younger children are actually more susceptible to false memories due to underdeveloped brains, contradicting FTT's age-related claims.[6]

More recent work suggests that gist use depends a lot on context. In *Developmental Cognitive Neuroscience*, Fandakova et al. (2018) used fMRI to demonstrate that adolescents displayed more verbatim-based brain activity than adults in some tasks.[7] Similarly, Ghetti (2020), writing in *Developmental Review*, found that adolescents rely on gist mainly when material is well-organized.[8] Webb and Dennis (2019), in *Cognitive Neuropsychology*, concluded that schema-consistent memory biases in older adults were reduced when participants focused on less obvious, non-schematic details – suggesting gist reliance can shift depending on the type of associations.[9]

There is broad agreement that memory is shaped by schemas and meaning, and that gist-based processing helps recall but can also lead to false memories, especially when

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[2] John D. Bransford and Jeffrey J. Franks, "The Abstraction of Linguistic Ideas," *Cognitive Psychology* 2, no. 4 (1971): 331–350.

[3] Marcia K. Johnson, Shahin Hashtroudi, and D. Stephen Lindsay, "Source Monitoring," *Psychological Bulletin* 114, no. 1 (1993): 3–28.

[4] Valerie F. Reyna and Farrell Lloyd, "Theories of False Memory in Children and Adults," *Learning and Individual Dif erences* 9, no. 2 (1997): 95–123.

[5] William F. Brewer and James C. Treyens, "Role of Schemata in Memory for Places," *Memory & Cognition* 9, no. 2 (1981): 187–195.

[6] Mark L. Howe et al., "False Memories in Children: Evidence for a Shift from Shallow to Deep Encoding," Developmental Review 29, no. 3 (2009): 210–222.

[7] Yana Fandakova et al., "Changes in Verbatim and Gist Memory Processing during Adolescence: An fMRI Study," *Developmental Cognitive Neuroscience* 34 (2018): 42–52.

[8] Simona Ghetti, "Cognitive and Neural Development of Memory for Gist," *Developmental Review* 57 (2020): 100923.

[9] Christina E. Webb and Nancy A. Dennis, "The Role of Schematic Support and Cognitive Control in Age-Related False Memory," *Cognitive Neuropsychology* 36, no. 1–2 (2019): 1–23.

information fits a pattern expected by our existing schemas. FTT remains a leading explanation, but researchers disagree on how adolescents use gist and which ages experience more false memory effects. In addition, much of the literature focuses on children or older adults, with adolescents less frequently studied.

This study addresses that gap by testing whether schematic word lists increase false recall in high school students, a group exposed daily to structured verbal material. By focusing on adolescent memory in an academic context, this research contributes to the ongoing debate over developmental memory and gives implications into how students recall, or misremember, what they learn. This research is extremely important in how curriculums are formed and has larger implications on how students should learn as well as how we can change the way we think about things more broadly.

III. Methodology

A. Research method

This research primarily used a quantitative method, as the goal was to measure numerical patterns and statistical evidence to test an existing theory: whether schematically categorized word lists increase the likelihood of false recall. To investigate this, a laboratory experiment was conducted, where the independent variable (word list type) is manipulated while all other factors are controlled. Participants were tested individually in a quiet room and followed the same set of instructions, in order to maintain consistency and minimize outside interference.

This method has its strengths; first, it provides high internal validity, as the controlled environment allows for isolation of cause-effect relationships; second, it is easily replicable, meaning future researchers can repeat the procedure to confirm the results; and third, the use of standardized materials (eg. word lists, time limits, and instructions) maintains consistency and reduces variability across participants' experiences.

However, the artificial setting could limit ecological validity, as participants could behave differently in more natural environments. Being observed may also impact recall accuracy, as pressure or consciousness on being observed could alter performance. Additionally, subtle cues from the researcher pose a risk of experimenter bias, potentially influencing outcomes unintentionally.

To strengthen the findings and triangulate the data, the research includes a collection of qualitative reflections through a post-experiment Google Form,[10] allowing participants to describe their thought processes in more detail, and adding context to the statistical patterns observed.

B. Sampling method

The initial sampling method utilized was stratified random sampling, where 8 students each from 9th, 10th, 11th, and 12th grade were emailed at random.[11]

[10] Appendix E: Qualitative Reflection Survey
[11] Appendix G: Email to Randomized Participants

This method has several strengths: it ensures representation across grade levels, creating a more balanced sample reflective of the student body, while randomization helps reduce data bias – together increasing the reliability and generalizability of our findings.

However, this approach proved inefficient – it was time-consuming to generate student lists and conduct random draws, and low email response rates required repeated outreach, making it difficult to reach our target sample efficiently.

As a result, the research method transitioned to opportunity sampling, with any student available in the school library asked to participate. While opportunity sampling allowed more efficient data collection with less logistical burden, it also introduced significant limitations: the method risks selection bias, as participants may not represent the larger student population. Additionally, the results are less generalizable due to potential self-selection bias, and the lack of random, participants may not reflect the broader student body if there was only a certain type of student in the library. Despite these limitations, the mixed strategy allowed for a reasonably sized sample within the time constraints.

C. Ethical Considerations

Before participating, students were informed, both verbally and in writing, that their involvement was voluntary and that they could withdraw or rescind their data at any time without consequence.[12] After the experiment, each participant received a debrief slip[13] outlining the study's purpose and addressing potential psychological concerns, reassuring participants that misremembering was normal to minimize potential distress. To protect confidentiality, participants were told their responses would remain anonymous; any identifying information was immediately removed from the data collected.

D. Procedure: Guidance on writing about your procedure

Participants received a slip with instructions and a 10-word list to memorize for one minute, along with writing implements.[14] Fifteen students received List 1, and fifteen received List 2. Afterward, they were given a second list with unlimited time to mark words they believed had appeared earlier.[15] List A (for List 1) included original words, schema-consistent lures, and unrelated distractors; List B (for List 2) included only original and unrelated new words.

Papers were recollected and manually scored for false recalls (new words marked) and forgotten words (original words unmarked), along with which specific words were affected. After the experiment, participants completed a brief reflection survey and received a debrief email explaining the study and thanking them for participating.

E. Hypothesis

This study investigates whether the type of word list presented (IV) – schematically-categorized vs. unrelated – affects the likelihood of false recall (DV) amongst high school students. The hypothesis is that schematic word lists will lead to more false

[12] Appendix A: Consent Language
[13] Appendix F: Debrief Slip
[14] Appendix A and B: List 1 (A list of words semantically related) and List 2 (a list of unrelated words)
[15] Appendix C and D: List A (contains words from List 1) and List B (contains words from List 2)

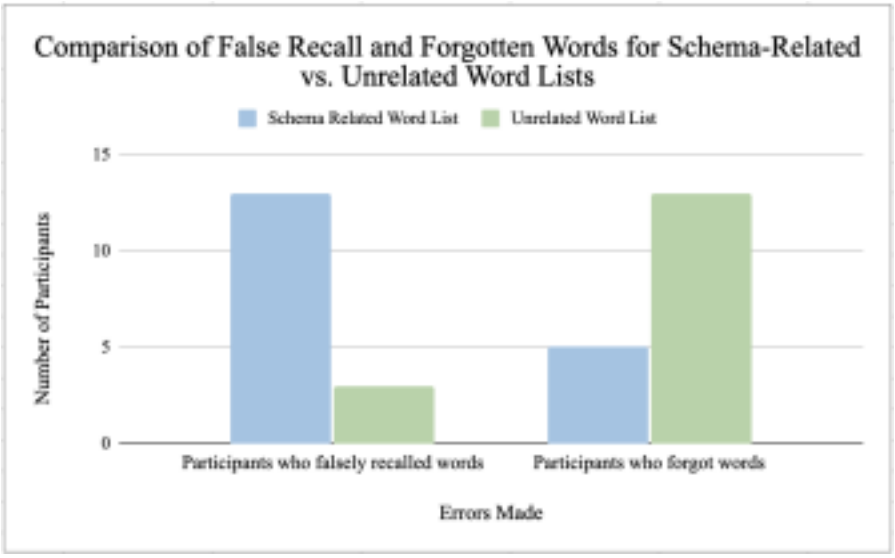
recalls, as related concepts may activate associated but unpresented words. The null hypothesis is that list type will have no effect on false recall.

IV. Results

A. Description of Data

Table 1: Processed Results - Participant Frequency by Schema Condition and Median Errors

Group	# Participants with ≥ 1 False Recall	Median False Recalls	# Participants with ≥ 1 Forgotten Word	Median Forgotten Words
List 1 (Schematically related words)	13	1	5	0
List 2 (Unrelated words)	3	0	13	1



The original research question asked: Do schematically-categorized word lists increase the likelihood of false recall? The hypothesis was that lists organized around a specific theme – such as construction – would lead to a higher rate of false memory compared to lists without a unifying schema. This hypothesis is strongly supported by the results.

Among participants who received the schematically-related word list (List 1), 13 out of 15 (87%) falsely recalled at least one word that was not actually present. In contrast, only 3 out

of 15 (20%) participants in the non-schema group (List 2) did so. Median false recalls also reflect this pattern: List 1 participants had a median of 1 false recall while List 2 participants had a median of 0. A Mann-Whitney U test comparing false recall counts between groups confirmed this difference ($U = 81$, $p = 0.0004$). This means there is a 0.04% probability of observing such extreme results if the null hypothesis (no group difference) were true.

The opposite pattern emerged for forgotten words. Participants in the non-schema group forgot more actual list items, with 13 out of 15 (87%) forgetting at least one word, compared to 5 out of 15 (33%) in the schema group.

These results support our original hypothesis: While schematic organization improves retention of presented words, it also increases reliance on gist memory, leading to false recalls of semantically related but not present words.

B. Analysis

Claim: False memories in our study did not arise from simple errors or confusion, but from the brain's deep-rooted tendency to extract and rely on gist.

Subclaim 1: Schematic word lists trigger false recall by activating gist traces. Participants exhibited high rates of false recall when exposed to schematically-related word lists, a pattern that supports Fuzzy Trace Theory (FTT) (Brainerd & Reyna, 2005), which holds that the brain prioritizes conceptual meaning (gist) over specific details (verbatim).[16] This is because gist traces are faster, simpler, and more durable than remembering specific details, so over time, our brains mostly prioritize general ideas and themes over specific details. However, because gist only focuses on general ideas, our brains tend to fill in the blanks or add memories that weren't originally there.

This explains why List 1 participants frequently recalled schema-consistent words – construction (11 participants), electrical (3), landscaping (1), and surveyor (2) – despite never seeing them. In contrast, List 2 participants, who had no thematic anchor, showed far fewer false memories. Participants also forgot more original words that didn't match the schema, suggesting memory was shaped more by meaning than detail.

Qualitative responses also reinforce this theory. Participants in the schema group often reported choosing words that "fit the theme of the first [list]." One wrote, "It was easier to remember the words once I realized they all fit a theme," and another said, "[I] thought construction was in the same category." These are not simple mistakes but examples of phantom recollection, where strong gist and schema associations override weak or inaccessible verbatim traces.[17]

Others described gist-based encoding strategies like visualization and narrative-building even if they did not have List 1: "I imagined a room with the words," "I grouped the words into a category," or "I associated the words together because a bunch of them were connected through a Kendrick Lamar song." These strategies all include a schema to help visualize, which activates

[16] C. J. Brainerd and V. F. Reyna, *The Science of False Memory* (Oxford University Press, 2005).[17] Ibid., 90–91.
[17] C. J. Brainerd and V. F. Reyna, The Science of False Memory (Oxford University Press, 2005), 90–91.

gist and makes it easier for the brain to remember the words.

By contrast, List 2 participants used more detail or verbatim-oriented strategies, such as "memorizing the first syllables" or "the first letters in sequence." These reflect verbatim encoding, and the results showing more forgotten words yet fewer falsely recalled words align with FTT's prediction that false memory is less likely when no unifying theme is present, but without schema or gist, it is harder to maintain accuracy in recalling. This contrast further proves FTT: false recall emerges when people rely on less specific general ideas/themes over exact details.

These findings challenge one-process theories, which argue that true and false memories arise from the same system. For example, Bransford and Franks (1971) emphasized inference-based reconstruction,[18] and Johnson et al. (1993) proposed the Source Monitoring Framework,[19] which attributes errors to confusion. Both predict that repetition or development should reduce error.

FTT diverges from these theories by predicting that true and false memories are stored and retrieved through distinct systems. As Brainerd and Reyna argue, dissociations between true and false memories occur under specific conditions: In our data, List 1 participants exhibited both high accuracy and high false recall, supporting the idea that the gist and verbatim systems operate independently. This challenges models like Payne et al. (1996), which propose a linear relationship between repetition and memory.[20] FTT instead predicts a nonlinear "inverted-U" curve, where false recall rises as gist strengthens, then falls as verbatim memory improves.

Age also contributes to this dissociation. According to the two-system theory, children are less prone to false recall because their gist extraction is still developing.[21] Adolescents and adults – like those in our sample – are more susceptible due to more advanced semantic processing. While we didn't compare age groups directly, our high school participants showed patterns consistent with this theory.

Subclaim 2: Gist-based recall is supported by both neural and evolutionary mechanisms, making it a biologically efficient yet error-prone process.

From a biological standpoint, our findings support the theory of activation of distributed neural representations in our brain. Rather than relying on a single neuron or region, one hypothesis is that memory is encoded across combinatorial neural networks (McClelland, McNaughton, & O'Reilly, 1995).[22] When enough of a pattern is triggered – such as the concept of architecture related words – the full schema can be reconstructed, even if some details were never encoded, which explains why participants better recalled schema-consistent words yet still falsely recalled others: the gist trace was strong enough to connect to other words. From an

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[18] J. D. Bransford and J. J. Franks, "The Abstraction of Linguistic Ideas," *Cognitive Psychology* 2, no. 4 (1971): 331–350.[19] M. K. Johnson, S. Hashtroudi, and D. S. Lindsay, "Source Monitoring," *Psychological Bulletin* 114, no. 1 (1993): 3–28. [20] Brainerd and Reyna, *The Science of False Memory*, 124–127.

[19] M. K. Johnson, S. Hashtroudi, and D. S. Lindsay, "Source Monitoring," *Psychological Bulletin* 114, no. 1 (1993): 3–28.

[20] D. G. Payne, J. M. Elie, L. D. Blackwell, and L. A. Neuschatz, "Memory Illusions: Recalling, Recognizing, and Recollecting Events That Never Occurred," *Journal of Memory and Language* 35, no. 2 (1996): 261–285.

[21] V. F. Reyna and C. J. Brainerd, "Fuzzy-Trace Theory: An Interim Synthesis," *Learning and Individual Dif erences* 7, no. 1 (1995): 1–75

[22] J. L. McClelland, B. L. McNaughton, and R. C. O'Reilly, "Why There Are Complementary Learning Systems in the Hippocampus and Neocortex," *Psychological Review* 102, no. 3 (1995): 419–457.

evolutionary perspective, gist-based memory offers clear advantages. Early humans who could extract general patterns – like recognizing signs of danger or safety – would have responded faster than those relying on specific details. Verbatim memory is slow and cognitively expensive, while gist allows for efficient decision-making.[23] Our memory system is designed to prioritize efficiency over precision, making it fast and adaptive, but inherently prone to errors, as shown by our data.

C. Critique of Data Collection

Our methodology featured several strengths that improved the clarity and reliability of our findings. First, standardized procedures included identical instructions, timing, and tasks for all participants. This consistency reduced confounding variables and strengthened the internal validity of the IV–DV relationship. Second, we used mostly random sampling, which helped minimize selection bias and supported the reliability and generalizability of our results within the student population. Finally, we included a clear experimental contrast between schema and non-schema lists. This controlled manipulation of thematic structure allowed us to isolate the effect of gist activation on false recall and provided strong evidence for Fuzzy Trace Theory.

Still, the study had several limitations. Our sample size (15 participants per group) limited statistical power and made it harder to detect subtle things that might affect the data or confidently generalize findings. Ecological validity was also limited, as this type of memorization in an isolated room doesn't fully capture how memory works in real-world settings. Lastly, a design imbalance between list types likely skewed results: the schema group had fewer original words than new ones (5:11), while the control group was more balanced (7:9). This increased the chance of false recall in the schema condition simply by probability, so we might have artificially higher values for false recollections in List 1 than there should be. In future studies, we would increase the sample size, fully randomize participant assignment, and balance the number of present and absent words to strengthen both internal validity and external relevance.

V. Implications

A. Students and Effective Learning Methods

This study has clear implications for students of all ages, whose academic success depends not only on remembering information, but also remembering it accurately. Using schema is a powerful tool for organizing memory; the “imagine a house” strategy illustrates this: when information is tied to a structured image, like rooms in a house, memory improves because the content is grouped into something that is more visual and easier for our brain to process. Research supports this approach: Bransford and Johnson (1972) found that people remember information more effectively when it includes schema because it is more efficient than memorizing every small detail.[24]

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[23] Reyna and Brainerd, “Fuzzy-Trace Theory: An Interim Synthesis,” 33–36.

[24] J. D. Bransford and M. K. Johnson, “Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall,” *Journal of Verbal Learning and Verbal Behavior* 11, no. 6 (1972): 717–726.[26] C. J. Brainerd and V. F. Reyna, *The Science of False Memory* (Oxford University Press, 2005). [27] Erik H. Erikson, *Identity: Youth and Crisis* (W. W. Norton & Company, 1968).

However, our research findings reveal that this efficiency comes with tradeoffs. When participants saw a construction-themed list, many falsely recalled schema-consistent words that had never been shown, an effect predicted by Fuzzy Trace Theory (Brainerd & Reyna, 2005).[25] Relying too much on gist can cause people to confidently misremember information that simply fits the theme. On the other hand, focusing solely on verbatim detail often leads to forgetting altogether. Our results suggest that both systems, while useful, are flawed in isolation; gist helps with remembers but risks false memory, while verbatim increases accuracy but also increases forgetting.

For students, this means effective learning requires a balance between the two systems. Educators can help by prompting students to reflect not just on what they remember, but how they remember it. Techniques like self-questioning, retrieval practice, or comparing remembered content to source material can help identify when memory is based on inference rather than fact. By engaging both gist and verbatim systems, students can improve not only what they recall, but how reliably they recall it.

B. Adolescents and Questioning Internalized Schemas

Beyond academics, these findings have implications for adolescents as they form their sense of identity. During this stage – what Erik Erikson described as the search for "Who am I and where do I fit?" – young people often develop internal schemas like "I'm bad at math" or "I'm not creative," etc. based on limited experiences or social categorizations.[26] However, our study shows how strongly schema-consistent information can feel true even when it isn't, which mirrors how teens build rigid self-concepts from incomplete or even distorted evidence. Just as participants recalled construction-related words that were never shown, adolescents may remember moments that confirm a belief while overlooking those that contradict it.

This is especially relevant for individuals who have experienced trauma. In cognitive therapy, researchers like Beck (1976)[27] and Ehlers & Clark (2000)[28] argue that PTSD is sustained by negative core beliefs; schemas that filter experience and reinforce harmful interpretations.

To counter this, educators and parents can encourage what Dweck (2006) calls a growth mindset – the idea that traits like intelligence or creativity aren't fixed.[29] Helping teens ask, "Where did this belief come from?" can loosen the grip of old narratives. Activities like reflective journaling and meditation could also help increase self-awareness as well as finding peace.

Ultimately, schema helps us make sense of the world, but they also simplify it. Teaching adolescents to question their internal narratives that can often be more negative gives them space to revise who they think they are. In doing so, they can begin to separate who they are from what they've assumed, and make room for who they might become.

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[25] C. J. Brainerd and V. F. Reyna, *The Science of False Memory* (Oxford University Press, 2005).
[26] Erik H. Erikson, *Identity: Youth and Crisis* (W. W. Norton & Company, 1968).
[27] A. T. Beck, *Cognitive Therapy and the Emotional Disorders* (International Universities Press, 1976);
[28] A. Ehlers and D. M. Clark, "A Cognitive Model of Posttraumatic Stress Disorder," *Behaviour Research and Therapy* 38, no. 4 (2000): 319–345.
[29]Carol S. Dweck, *Mindset: The New Psychology of Success* (Random House, 2006).

VI. Appendix

Appendix A: List of schematically related words (construction theme)

List 1: Try and memorize as many of these words as you can.

Blueprint
Foundation
Architecture
Engineer
Contractor
Materials
Design
Structure
Plumbing
Renovation

Appendix B: List of unrelated words

List 2: Try and memorize as many of these words as you can.

Pineapple
Guitar
Snowflake
Computer
Library
Butterfly
Harmonica
Perfume
Submarine
Caramel

Appendix C: 2nd list of words containing words from List 1

List A: Which of the following words appeared on the first list you saw? Please check them off.

Pineapple
Foundation
Guitar
Engineer
Snowflake

Materials
Computer
Structure
Renovation
Butterfly
Construction
Electrical
Harmonica
Landscaping
Perfume
Surveyor

Appendix D: 2nd List of Words Containing Words from List 2

List B: Which of the following words appeared on the first list you saw? Please check them off.

Telescope
Pineapple
Guitar
Meadow
Volcano
Harmonica
Perfume
Submarine
Rainbow
Notebook
Elephant
Butterfly
Popcorn
Computer
Jellyfish
Treasure

Appendix E: Qualitative form + Responses

Appendix F: Debrief Slip

Thank you very much for participating in our experiment!

Our experiment aims to study the false memory effect—the phenomenon in which a person recalls an event that did not happen or distorts memories of events. In this experiment, we wanted to observe specifically how the presence of a schematic relationship (ex. an "overarching theme") affects the likelihood of false recall (ex. recalling a word that was not on the original list) occurring.

You may have experienced the false memory effect during the experiment; that is completely normal! As humans, our memories are not flawless; the false memory effect can happen to anyone, and its occurrence is not a negative reflection on your overall cognitive well-being.

The data collected will be completely anonymous; your data will not be associated with your identity, and all of your data will be deleted after we have finished our analysis. Additionally, we will only consider your data with your consent, which you may rescind at any time without consequences and your data will not be used.

If you have any additional questions, you may contact us via email:
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amanda.kim@menloschool.org
kira.pande@menloschool.org

Appendix G: Email to Randomized Participants

Hi,

You have been randomly selected for our psychology experiment exploring memory. The experiment would take only five minutes, and we would be very grateful if you could participate! If you are available Wednesday or Thursday during tutorial, please respond to this email and try to meet us in the Library MMR (Library classroom near the stairs) during Wednesday or Thursday tutorial at 10:00am, 10:10am, or 10:20 am. If you're not available, no worries, just let us know.

Again, the experiment will take only five minutes, and we are very grateful for your participation!

Thank you,
Kira Pande, Lavu Badjate, Amanda Kim

Appendix H: Raw Data from Experimental and Control Groups

List 1:

1.) 1 added (surveyor), 2 forgotten (renovation and structure)
2.) 2 added (construction and electrical), 0 forgotten
3.) 2 added (construction and landscaping), 1 forgotten (materials)
4.) 0 added, 0 forgotten
5.) 1 added (construction), 0 forgotten
6.) 1 added (construction), 0 forgotten
7.) 1 added (construction), 0 forgotten
8.) 1 added (construction), 1 forgotten (materials)
9.) 0 added, 0 forgotten
10.) 1 added (electrical), 1 forgotten (renovation)
11.) 2 added (construction and surveyor), 1 forgotten (structure)
12.) 1 added (construction), 0 forgotten
13.) 2 added (construction and electrical)
14.) 1 added (construction), 0 forgotten
15.) 1 added (construction), 0 forgotten

List 2:

1.) 0 added, 1 forgotten (pineapple)
2.) 0 added, 1 forgotten (perfume)
3.) 0 added, 0 forgotten
4.) 0 added, 1 forgotten (computer)
5.) 0 added, 1 forgotten (computer)
6.) 1 added (jellyfish), 1 forgotten (submarine)
7.) 3 added (rainbow, popcorn, elephant), 1 forgotten (pineapple)
8.) 0 added, 0 forgotten
9.) 0 added, 2 forgotten (computer and guitar)
10.) 1 added (elephant), 1 forgotten (Guitar)
11.) 0 added, 1 forgotten (submarine)
12.) 0 added, 2 forgotten (Submarine and Perfume)

13.) 0 added, 1 forgotten (submarine)
14.) 0 added, 1 forgotten (computer)
15.) 0 added, 1 forgotten (Guitar)

Bibliography

Beck, Aaron T. *Cognitive Therapy and the Emotional Disorders*. New York: International Universities Press, 1976.

Brainerd, C. J., and V. F. Reyna. *The Science of False Memory*. New York: Oxford University Press, 2005.

Brainerd, C. J., and V. F. Reyna. "Fuzzy-Trace Theory: An Interim Synthesis." *Learning and Individual Differences* 7, no. 1 (1995): 1–75.

Brewer, William F., and James C. Treyens. "Role of Schemata in Memory for Places." *Memory & Cognition* 9, no. 2 (1981): 187–195. https://doi.org/10.3758/BF03196929.

Bransford, John D., and Jeffrey J. Franks. "The Abstraction of Linguistic Ideas." *Cognitive Psychology* 2, no. 4 (1971): 331–350. https://doi.org/10.1016/0010-0285(71)90019-3.

Bransford, John D., and Marcia K. Johnson. "Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall." *Journal of Verbal Learning and Verbal Behavior* 11, no. 6 (1972): 717–726.

Carpenter, Catherine M., and Nancy A. Dennis. "Investigating the Neural Basis of Schematic False Memories by Examining Schematic and Lure Pattern Similarity." *Memory* (2024). https://www.tandfonline.com/doi/full/10.1080/09658211.2024.2316169.

Dweck, Carol S. *Mindset: The New Psychology of Success*. New York: Random House, 2006.

Ehlers, Anke, and David M. Clark. "A Cognitive Model of Posttraumatic Stress Disorder." *Behaviour Research and Therapy* 38, no. 4 (2000): 319–345.

Fandakova, Yana, et al. "Changes in Verbatim and Gist Memory Processing during Adolescence: An fMRI Study." *Developmental Cognitive Neuroscience* 34 (2018): 42–52.

Ghetti, Simona. "Cognitive and Neural Development of Memory for Gist." *Developmental Review* 57 (2020): 100923.

Howe, Mark L., et al. "False Memories in Children: Evidence for a Shift from Shallow to Deep

Encoding." *Developmental Review* 29, no. 3 (2009): 210–222.

Johnson, Marcia K., Shahin Hashtroudi, and D. Stephen Lindsay. "Source Monitoring." *Psychological Bulletin* 114, no. 1 (1993): 3–28.

Loftus, Elizabeth F. "Creating False Memories." *Scientific American* 277, no. 3 (September 1997): 70–75. http://www.jstor.org/stable/24995913.

Loftus, Elizabeth F. "Eyewitness Testimony: Psychological Research and Legal Thought." *Crime and Justice* 3 (1981): 105–151. https://www.jstor.org/stable/1147378.

Loftus, Elizabeth F. "Reconstructing Memory: The Incredible Eyewitness." *Journal of Verbal Learning and Verbal Behavior* 13, no. 5 (1974): 585–589.

McClelland, James L., Bruce L. McNaughton, and Randall C. O'Reilly. "Why There Are Complementary Learning Systems in the Hippocampus and Neocortex." *Psychological Review* 102, no. 3 (1995): 419–457.

McVee, Mary B., Kailonnie Dunsmore, and James R. Gavelek. "Schema Theory Revisited." *Review of Educational Research* 75, no. 4 (2005): 531–566. https://www.jstor.org/stable/3516106.

Payne, D. G., J. M. Elie, L. D. Blackwell, and L. A. Neuschatz. "Memory Illusions: Recalling, Recognizing, and Recollecting Events That Never Occurred." *Journal of Memory and Language* 35, no. 2 (1996): 261–285.

Reyna, Valerie F., and Farrell Lloyd. "Theories of False Memory in Children and Adults." *Learning and Individual Differences* 9, no. 2 (1997): 95–123. https://doi.org/10.1016/S1041-6080(99)80103-0.

Smith, Tricia. "Schema Theory." *Research Starters: Psychology* (2021). https://www.ebsco.com/research-starters/psychology/schema-theory.

Vijayarajah, Sagana, and Margaret L. Schlichting. "Anterior Hippocampal Engagement during Memory Formation Predicts Subsequent False Recognition of Similar Experiences." *Journal of Cognitive Neuroscience* (November 2023). https://doi.org/10.1080/09658211.2024.2418768.

Webb, Christina E., and Nancy A. Dennis. "The Role of Schematic Support and Cognitive Control in Age-Related False Memory." *Cognitive Neuropsychology* 36, no. 1–2 (2019): 1–23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMCL8919503/.