

## Introduction

- Humans are able to infer complex associative networks even when specific associations were not directly presented together during learning (Rmus et al., 2023)
- This structure inference declines with aging (Noh et al., 2023) and work is needed to remediate age-related deficits
- Older adults have shown memory improvements when they can rely on prior knowledge and experience (Castel, 2005)
- Semantic knowledge has been found to impact the performance of older adult memory more so than that of younger adults (Mohanty et al., 2016)
- By comparing memory across real and fictional cities in visual and text forms, we can examine the degree to which older adults rely on prior knowledge for memory recall of semantic and visual information

## Research Question

Do older adults rely more on semantic support when making rating judgements?

## Data

### Participants:

- 88 adults including 45 older adults (65+)
- Split into two groups: Text Validation (23 YA, 20 OA) and Image Validation (20 YA, 25 OA)
- Counter-balanced and across different days
- Recruited through Prolific and compensated at 14\$ an hour (30 minute task)

### Images:

- 200 images were created using OpenAI Image Generation on ChatGPT 4o
- US City Images were generated from preexisting images, fictional were new images
- 50 cities were created using ChatGPT 4o prompted to be as realistic as possible

### Task:

- Learn Phase: participants were asked to make familiar, unique, and memorable judgements on a 5 point scale for 30 images/names
- Recognition Phase: made realistic, unique, and memorable judgements, then a 4 point old/new scale for 60 images/names (50% new)

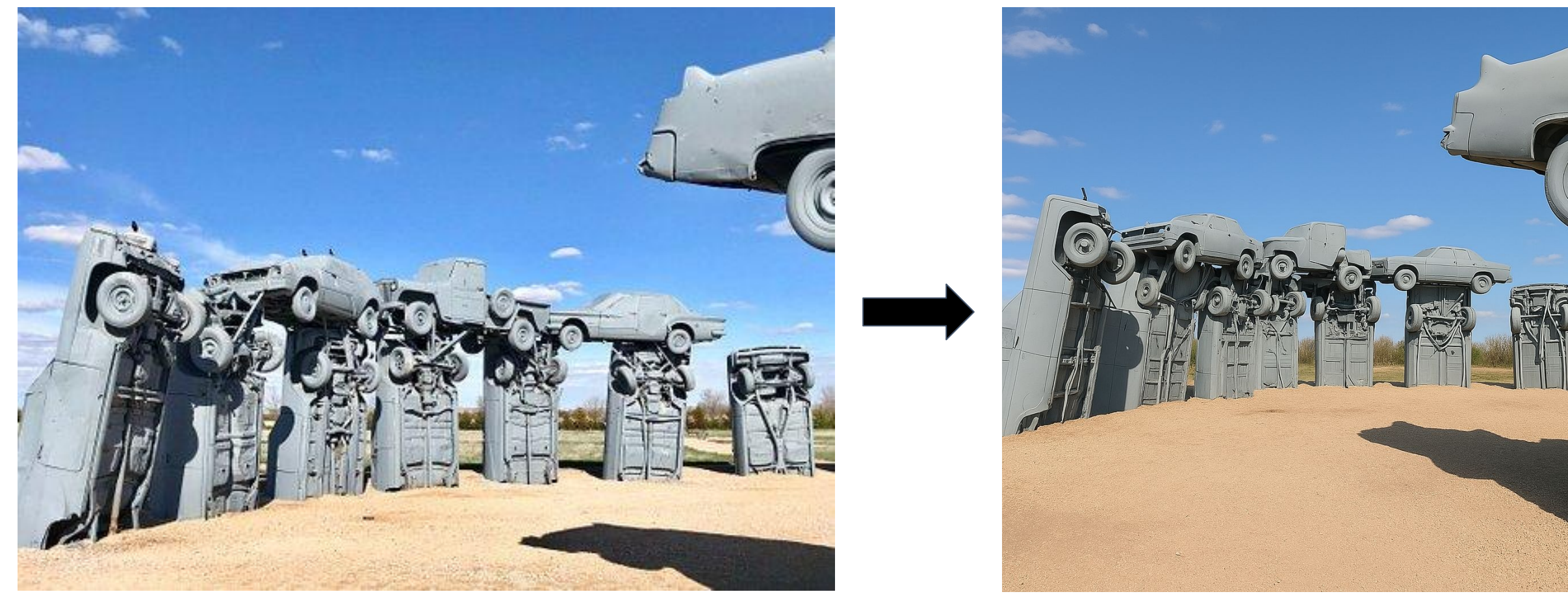
### Analysis:

- Conducted independent-sample t-tests using SciPy in Python 3.11.7
- Calculated hit rate-false alarm rate for accuracy
- \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$

## Key Figures

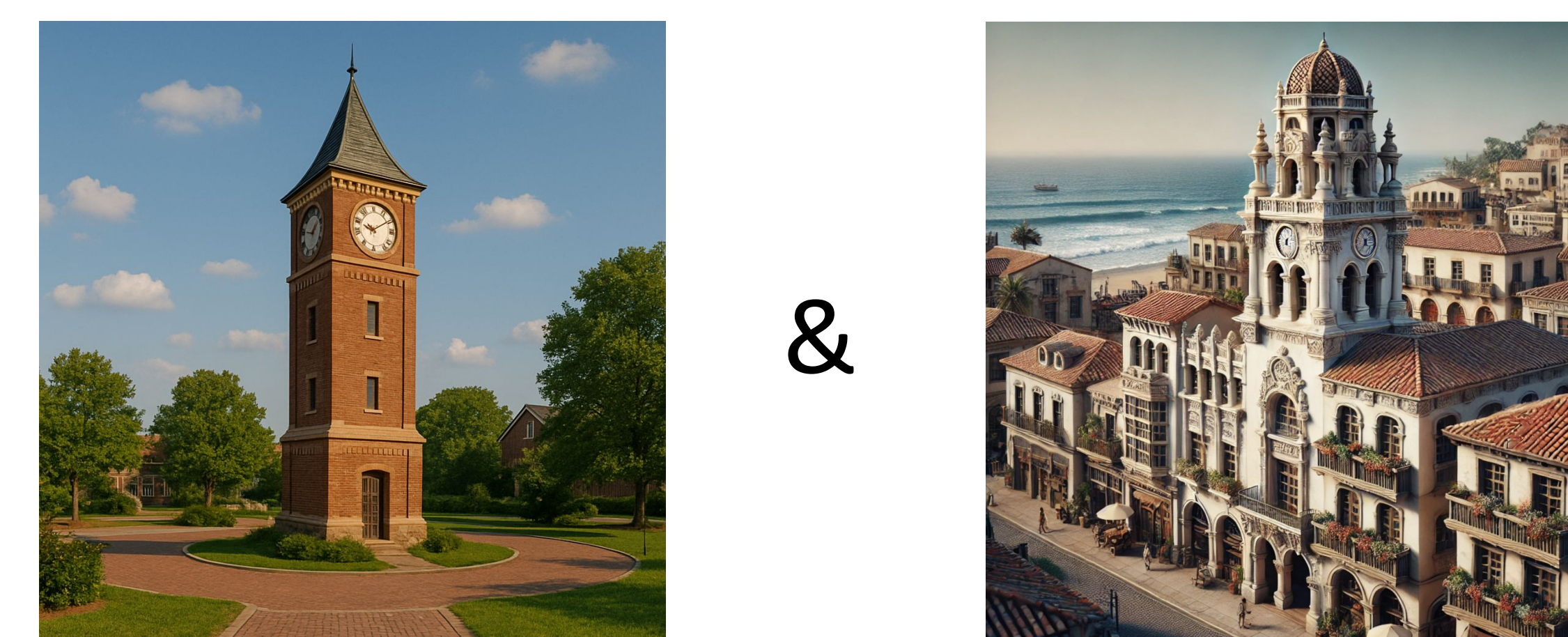
### US City Image Generation

“Recreate this image as accurately as possible, making sure there are no text, people, or animals...”

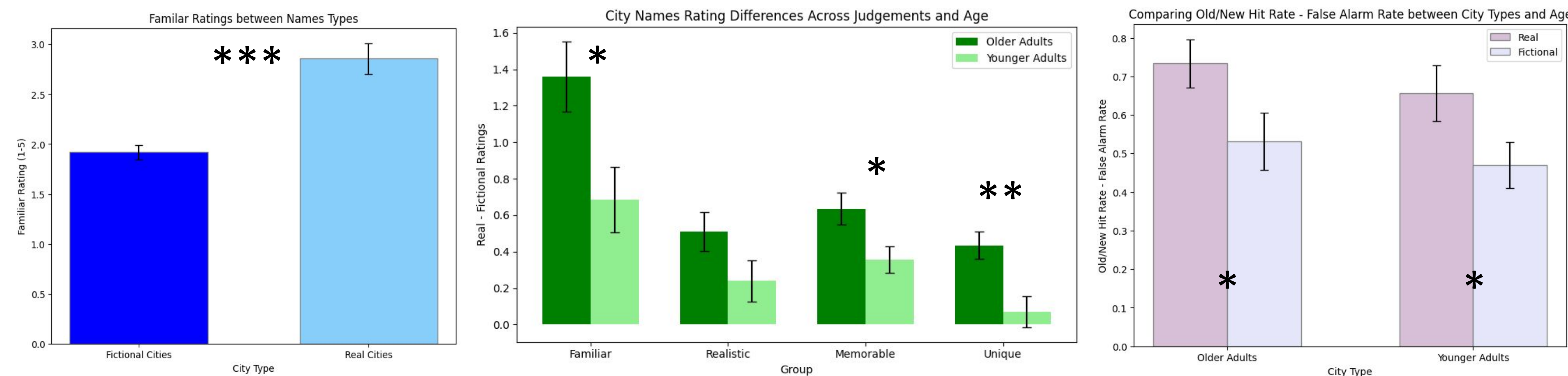


### Fictional City Image Generation

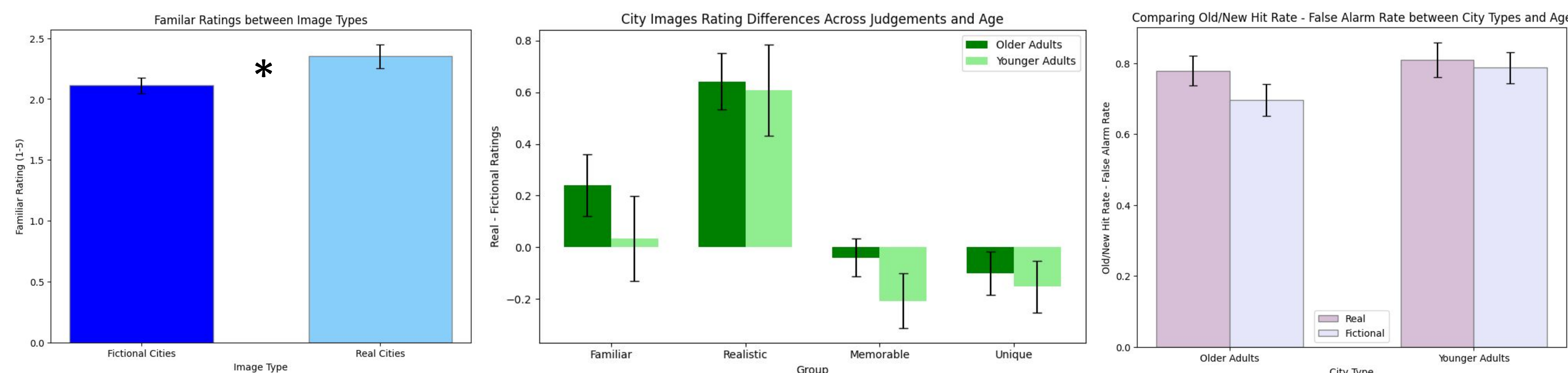
“Generate a realistic manmade landmark that has no text, people, or animals...”



## Text Validation



## Image Validation



## Results

- For both tasks real cities were rated as significantly more familiar than fictional cities, with text validation ( $p < 0.001$ ) being more significant than image validation ( $p < 0.05$ )
- Older adults relied more on the semantic information of city names when making familiar, memorable, and unique judgements compared to younger adults
- Both older and younger adults had a higher hit rate when recalling real city names compared to fictional ones, with older adults showing a slightly larger difference in city type
- For images these trends did not hold, providing evidence that semantic city information is a factor in these age-related differences

## Discussion

### Impact on Group Knowledge Construction

- Older adults relied more on the semantic support of city names when making judgements compared to younger adults
- Both age groups better recalled the US city names compared to the fictional ones, indicating that semantic support bolstering memory is found across the adult lifespan
- Older adults show more awareness and sensitivity to differences between real and fake city names compared to younger adults
- Similar accuracy for older and younger adults in the image condition provide evidence that age-related memory differences are largely based on semantic knowledge and familiarity

### Limitations and future directions

- Older adults may have been more exposed to city names and it may not reflect only semantic support but other unknown processes
- Future analyses should look at confidence judgements and how age groups differ in their assessment of both memorability and accuracy confidence compared to performance
- Additionally evaluating correlations between familiarity and incorrect judgements for older adults may help isolate the impact of semantic support compared to that of younger adults

## Conclusion

Older adults show increased semantic support when making judgements compared to that of younger adults

## References

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