Dimensionality affects memory for events in immersive virtual reality

Júlia Feminella, Shikang Peng, & Peggy L. St. Jacques

INTRODUCTION

- 3D, real-life objects are more memorable than 2D images.
- Virtual Reality allows us to manipulate properties of the real-world, such as dimensionality.
- 3D experiences are more immersive and linked to an increased sense of presence.
- More immersive experiences lead to better memory performance.

Does dimensionality affect how real-world experiences are remembered?

METHODS

Immersive Stimuli: 360° videos of real-world events

RESULTS: STUDY 1

Encoding Sense of Presence

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Higher sense of presence for 3D compared to 2D experiences

No significant differences in dimensionality for emotional intensity

RESULTS: STUDY 2

Encoding Sense of Presence

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Higher sense of presence and emotional intensity for 3D compared to 2D experiences

EMOTIONALITY OF 360° VIDEOS

Vividness

Scene Score

Mean Valence

Emotional Intensity

Higher vividness, scene-related memory, and emotional intensity for 3D compared to 2D experiences

Effects of Retention Interval

Memory was better when tested immediately than following a 24-hr delay

CONCLUSIONS

- 3D-360° events were more immersive than 2D events.
- Memories for 3D-360° events were associated with higher vividness, emotional intensity, and better scene-based aspects of memory.
- The effect of dimensionality on memory was consistent over time.
- These findings indicate the potential of immersive VR for investigating key properties of real-world memories.
- An fMRI study in progress will examine how dimensionality affects the neural mechanisms of memory encoding.

REFERENCES