



ENVIRONMENTAL DETERMINANTS OF DREAM CONTENT



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Dreamers maintain awareness of both body and environment during sleep

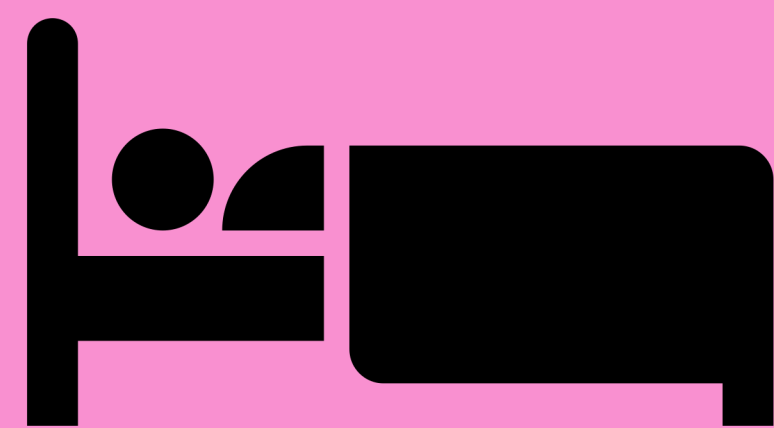
Sensory Incorporation

- Dreamers incorporate external stimuli into their dream content
- Direct vs Indirect incorporation
- Success rate between 9% and 87% (Solomonova & Carr, 2019)
- Lucid Dreaming



Dream Report

'I was walking behind the leading lady, when she suddenly collapsed and water was dripping on her. I ran over to her and felt water dripping on my back and head. The roof was leaking, I was very puzzled why. She fell down and I decided some plaster must have fallen on her. I looked up and there was a hole in the roof. I dragged her over to the side of the stage and began pulling the curtains. Just then I woke up' (Cited in (Dement & Wolpert, 1958), pp. 550).



Somatosensory Incorporation



- Most widely studied form of sensory incorporation (Solomonova & Carr, 2019)
- Water sprays (Dement & Wolpert, 1958)
- Electrical impulses (Koulack, 1969)
- Dream emotions in relation to room temperature (Ziegler, 1973)
- Pressure cuffs (Nielsen, 1993)
- Vibration stimulus on finger to induce lucid dreaming (Paul et al., 2014)

REM Sleep

- Desynchronized EEG resembling that of wakefulness
- Muscle atonia
- Episodic bursts of rapid eye movements
- In most studies, stimulation is administered during REM sleep (Salvesen et al., 2024)
- More recall after an REM awakening
- LIDs (lab incorporated dreams) are more common during REM sleep (Picard-Deland et al., 2021)

Arousal



- Higher arousal, more external information enters dreaming consciousness
- Sensory stimulation may induce arousal
- EEG markers: beta and alpha activity
- Micro-arousals: slightly awaken sleepers

Memory

- 'Memory source' approach: dreamers use memories when constructing dream narratives (Picard-Deland et al., 2021)
- Day-residue & dream-lag effect
- Environmental cues (TMR)
- Memory consolidation



Conclusions



- External stimuli are incorporated into dream content
- Changes in sleep environment and body affect dream content
- Changes in brain arousal affect the incorporation of sensory stimuli
- Memories contribute to dream narratives