

DEMENT & KLEITMAN

PSYCHOLOGY BEING INVESTIGATED

SLEEP

NREM sleep: 1&2: light, 3&4: deeper [slower BW, high amplitude, low frequency] 5: REM sleep [faster BW, high frequency, low amplitude]. Sleep gets deeper through the night.

ULTRADIAN RHYTHMS

Biological rhythms that repeat more than once a day, eg sleep cycle [90 mins].

DREAMS

Memories of what is experienced when asleep. D&K wanted to determine dreaming physiologically, based on a biological basis. They observed REM during sleep correlated with a specific pattern of brain activity, as measured by EEG, which was cyclic throughout the night.

AIMS

1. To see if dreams occur during REM or non-REM periods.
2. To see if there is a correlation between how long dreams last & how long REM lasts.
3. To see if vertical or horizontal EMovs are related to different dream contents.
4. To see if there is a positive correlation between how long REM periods last & how many words are used to describe the dream.

HYPOTHESES

1. There will be a significant association between REM sleep & dreaming.
2. There will be a positive correlation between estimated dream duration & REM period length.
3. There will be a significant association between EMov patterns & dream content.

RESEARCH METHODOLOGY

Lab experiments, correlation & interviews [for qualitative data]. The first 3 aims had IVs & DVs because two different conditions were being researched; the 4th aim was investigating the correlation between co-variables.

EEG [electroencephalogram]: tracked brain activity with electrodes on skull.

EOG [electrooculogram]: tracked EMovs with electrodes near eyes.

DESIGN & VARIABLES [REPEATED MEASURES]

Aim	IV	DV
1	Whether they woke up during REM or Non-REM	Whether dream content was recalled in enough detail.
2	Whether they woke up 5 or 15 minutes after REM	Whether they thought they dreamt for 5 or 15 mins
3	EMov before waking up	Description of dream

AIM 4:

Co-variable 1: minutes spent in REM

Co-variable 2: number of words used to describe the dream.

SAMPLE

7M, 2F; opportunity. 5 studied in detail & the other 4 used for comparison & confirmation of results. The study took place in a sleep lab at the University of Chicago.

PROCEDURE

All Ps showed up to the lab before their usual bedtime; Ps were asked to avoid alcohol & caffeine before the experiment & electrodes were placed near their eyes & scalp to record EMovs & BW during sleep.

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They slept in a dark, quiet room. In the next room, an EEG was run the entire night. The Ps were woken up during REM & non-REM sleep throughout the night by a loud doorbell. If they were dreaming, they were asked to describe their dream into a recorder near their bed, & then go back to sleep.

An experimenter would sometimes further question people about their dreams; they would have only been "dreaming" if they could remember the dream in detail.

21% of awakenings happened in the first 2 hours of sleep, 29% in hours 2-4, 28% in hours 4-6 & 22% in hours 6-8.

RESULTS

The EEG tracked normal sleep for everyone, categorised as deep sleep [high voltage slow EEG activity] & REM [low voltage, fast EEG activity]. Discovered that REM happened regularly throughout the night, not immediately after falling asleep. REM frequency was constant for most Ps; length varied from 70-104 mins, avg 92 minutes. The duration of REM was from 3-50 mins, avg 20 mins & longer later at night.

AIM 1: Dreaming in rem or non-rem

Most dream recalls happened after REM sleep [80%] & fewer recalls after non-REM [7%].

AIM 2: Dream content being recalled

Ps were accurately able to recall the duration of their dream [83% accuracy from 111 awakenings]. One P was correct only 65% of the time because he underestimated how long he was dreaming for.

AIM 3: EMov

- Vertical: climbing ladders, throwing a basketball, watching climbers on a cliff.
- Horizontal: only one dream; watching people throw tomatoes at each other.
- Minimal: driving a car
- Mixed: talking to people, searching for something & fighting someone.

AIM 4: Duration of REM & no. of words used in recall

Slight positive correlation between REM duration & number of words used to describe the dream; ranging from 0.4 to 0.71, averaging at 0.58.

CONCLUSION

Dreams occur during REM; can be measured by recording REM cycles during sleep.

ETHICAL ISSUES

Confidentiality was maintained; P initials were used when results were discussed. No personal details were mentioned which prevented embarrassment.

METHODOLOGICAL ISSUES

RELIABILITY

The procedure was highly standardised; the same equipment & setting were used for everyone so replicability is possible.

VALIDITY

No one was present when dreams were recalled, so investigators couldn't influence dream narrative. Experimenters entered the room sometimes but only after the Ps finished recording.

Out of the 152 recordings, 6 which might have been detailed but were illegible due to non-REM sleep or the Ps mumbling because they were too tired were discarded.

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The number of words used to describe dreams may depend on how verbal each P is. If one has a wide vocabulary, they may have used fewer words to describe their dream. This reduces validity.

OBJECTIVITY & SUBJECTIVITY

Quantitative data

The study utilized quantitative data to objectively analyse a dream narrative, reducing subjectivity & ensuring validity by calculating word count & comparing it to REM sleep time.

Scientific Equipment

The study utilized an EEG to accurately measure sleep stages, reducing subjective interpretation & increasing data validity by quantifying brain wave frequency & amplitude for both REM & non-REM sleep stages.

GENERALISATION & ECOLOGICAL VALIDITY

The study's weakness lies in the variation in sleep cycle duration among the five main Ps, highlighting individual differences in sleep patterns & not being able to generalise findings.

Lacks ecological validity; for Ps to avoid substances, uncomfortable electrodes, & being awoken multiple times affected sleep patterns & ability to relax. However, results are considered generalizable due to similarity to other studies & the physiological process of REM sleep cycles.

ISSUES, DEBATES

NATURE VS NURTURE

Ps reported significantly more dreams during REM sleep than non-REM sleep, indicating an innate biological mechanism [nature]. This universal rhythm, influenced by life experiences, was observed in all Ps, highlighting the role of nurture in sleep & dreams.

APPLICATIONS TO EVERYDAY LIFE

Training sleep issues

EEG is crucial for diagnosing sleep disorders, determining REM & non-REM sleep stages, & comparing brain wave patterns with a typical sleeper to determine the appropriate treatment course.

Monitoring external influences

EEG technology can be utilized to monitor sleep patterns, assessing the impact of external factors such as stress on individuals' sleep patterns.

ASSUMPTIONS

Dreaming occurs during REM sleep, so similarities between people can be understood in terms of biological factors.

SIMILARITIES	DIFFERENCES
D&K & Holzel gained informed consent	D&K used humans & Hassett used animals
D&K & Hassett collected quantitative data.	D&K studied asleep Ps, Holzel studied awake Ps.
STRENGTHS	WEAKNESSES
High reliability and validity	Sample size too small
Avoided DC	Deception used
Quantitative [EEG, EOG, BW, EMov, REM duration]	Lacks ecological validity and mundane realism
Qualitative [interviews/recordings]	Discarding some findings