

Mentation report analysis across distinct states of consciousness: a linguistic approach

ABSTRACT:

Background

The study of dreams represents a crucial intersection between psychological, neuroscientific, and clinical interests. Given the high cost of dream research in terms of human effort and funding, open science and the building of large-scale repositories will be key to significant advances in the field.

Aims

Here, we created Somnieve, a large open-source database collecting dream reports along with demographic information and psychometric, cognitive, and EEG measures obtained from healthy adults.

Method

Participants wore an actigraph and recorded a report of their last dream experience every morning for two weeks. Moreover, they completed a battery of questionnaires and cognitive tests. A subgroup of volunteers also wore a portable EEG system during sleep. Several analyses were conducted to illustrate the potential applications of the Somnieve dataset for exploring the individual determinants of dream content and recall.

Results

Two-hundred-twenty volunteers completed the study (94M, 18-70y). Of these, 50 used the EEG device. Using multiple regression analyses, we found that attitude toward dreaming, vulnerability to interference, verbal memory, proneness to mind-wandering, and advanced sleep phase represent independent predictors of dream recall. Moreover, we trained an LSTM classifier to quantitatively analyze dream content with respect to 16 semantic features and found a medium to high agreement between automatic and human scoring.

Conclusions

The Somnieve database will be openly released, allowing other researchers to pursue new questions regarding the determinants of dream content and recall in physiological conditions. Moreover, Somnieve will represent a reference for further studies investigating dream changes in pathological conditions.

Keywords

Sleep, Dream, Sleep mentation, Natural language processing.

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Published Work:

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