CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36384

Project Title

Effects of Sleep Quality on Virtual Reality Language Learning

Abstract

Objectives/Goals

The study is studied the effects of sleep quality on recalling words in an entirely novel language. The impact of demographic details such as gender, race, and age and recall were analyzed to rule out covariates. This research is important scientifically because it contributes to knowledge about virtual reality language learning and how sleep quality can hinder, benefit, or have no effect on recall.

Methods/Materials

Subjects received a short video tutorial on how to use the virtual reality controls, and spent some time familiarizing themselves with moving throughout the virtual reality space. Subjects then went through a learning session, during which they moved through the world and learned names of objects as they #met# them in the world, in Swahili and Chinyanja, in random matched-pairs design. Subjects then underwent two testing sessions, during which they retraced their path through the virtual reality world and attempted to recall the foreign language words as they met the objects that represented them. The next day, the subjects underwent one more testing session and took a sleep quality survey, the Pittsburg Sleep Quality Index.

Results

The dependent variable, participants# recall score, is defined as the proportion of syllables correctly recalled during the first recall on Day 2 (after the overnight delay, before Day 2 learning session). The independent variable, is sleep quality (two levels: good and poor sleepers, as defined by the Pittsburg Sleep Quality Index).

Based on a two-sample mean t-test, the p-value was not smaller than the given value of ᾰ at 0.05, therefore failed to reject the null hypothesis.

Conclusions/Discussion

There was not convincing evidence that sleep quality has an effect on recall of language learned in a virtual reality setting. This may be due to the fact that implicit motor learning may not be impacted by sleep quality/quantity.

Summary Statement

I studied the impact of sleep quality on the learning of a novel language in a virtual reality setting.

Help Received

The Rissman Memory Lab helped with the design and procedure of my experiment.

Preliminary