FRG Closing Report

Project: Age-Related Differences in the Effect of Sleep Fluctuations on Cognition (22-563-60)

Investigator: Matthew C. Costello, Ph.D., Assistant Professor of Psychology

Project Description: We investigated whether the day-to-day fluctuations that we typically find in older adult cognitive ability could be explained by fluctuations in nightly sleep performance. To do so, we measured the night sleep of older adults across five nights, and tested their cognitive ability for each morning. This project was run in collaboration with Memorial Hospital BrainWorks and the Sleep Disorders Clinic of Memorial Hospital.

Grant-Supported Activity: The IUSB FRG funding was applied to two areas of the project. First, it paid for four Actigraph sleep monitors (~$400 each), the function of which was to record nightly sleep performance, as well as daily physical activity levels. Second, it was applied to subject payment, with each subject receiving $160 total for the five night-day commitment.

Project Completion: We tested a total of 23 subjects across two testing waves, the first in the summer of 2010, the second in the summer of 2011. Data was analyzed over the spring of 2012 with the assistance of Dr. Frank Fujita (IUSB Psychology). At that time we made the difficult decision to halt testing and ultimately close the project. The analyses presented a muddled picture – some interesting possible trends, but very little that was strongly significant. Furthermore, when we varied our normalization techniques, we found previous trends disappear, and new trends appear. In short, there was nothing reliable. This may have been due to the small sample size, or it may have been due to noise in the testing measures. However, given the uncertainty and the demanding commitment from both the IUSB and Memorial teams, I decided to close down the testing, and return the remaining FRG money to IUSB.

Project Production: Given that the Sleep Study was a pilot project, with only 23 subjects and inconsistent results, I did not pursue public academic presentations. The project was very helpful in establishing a strong working relationship with my research team and Memorial Hospital. I have continued this relationship through public speaking events at Memorial BrainWorks, and they have reciprocated by supporting my other research projects and serving as guest speakers in my classes. Furthermore, Andrea Jones and Mitch Kajzer, my two research assistants in the Sleep Study, both were accepted into experimental psychology graduate programs from quality institutions (Tulane University and Notre Dame University, respectively).