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| **Supplemental Table 1**  **A.** Summary of Statistics of CVLT-II Intrusion Subcomponents in the VETSA Cohort | | | |
| **CVLT-II Intrusion Subcomponents** | **N** | **Median** | **Range** |
| Intrusions across Trials 1-5 | 1152 | 0 | 0 - 11 |
| Intrusions from Delayed Recall Trials | 1151 | 2 | 0 - 22 |
| Intrusions from the B List Learning Trial | 1151 | 1 | 0 - 13 |
| Intrusions from Free Recall Trials | 1151 | 2 | 0 - 22 |
| Intrusions from Cued Recall Trials | 1151 | 1 | 0 - 16 |

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| **B.**  Association of PSQI Sleep Quality with CVLT-II Intrusion Subcomponents | | | | | |
| **CVLT-II Intrusion Subcomponents** | **N** | **βa** | **Standard Errora** | **Z Valuea** | **P-Value**  **Pr(>|z|)a** |
| Intrusions across Trials 1-5 | 1152 | 0.016 | 0.011 | 1.45 | 0.148 |
| Intrusions from Delayed Recall Trials | 1151 | 0.015 | 0.007 | 2.03 | **0.043** |
| Intrusions from the B List Learning Trial | 1151 | 0.008 | 0.013 | 0.60 | 0.551 |
| Intrusions from Free Recall Trials | 1151 | 0.015 | 0.008 | 1.84 | 0.065 |
| Intrusions from Cued Recall Trials | 1151 | 0.019 | 0.009 | 2.16 | **0.030** |
| aValues are from Type III Sum of Squares in the Generalized Linear Mixed Model adjusted for non-independence of twins within pairs. All models included the following covariates: age, general cognitive ability, current sleep apnea, a modified SF36 mental health rating, and a summary index of physical conditions. | | | | | |

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| **Supplemental Table 2.** Association of PSQI dichotomized for sleep quality (good sleep quality, PSQI<6; poor sleep quality PSQI >5) with significantly associated (Table 3) executive function and memory variables. This analysis only includes data from subjects analyzed in Table 3. | | | | | | | |
| **Cognitive Measures** | | **N** | **βa** | **Standard Errora** | **Z Valuea** | **P-Value**  **Pr(>|z|)a** | **Mean (SD) by Sleep Quality**  **Good Poor**  **[Cohen's d Effect Size]** |
| **EPISODIC MEMORY** | | | | | | | |
| 3 | Visual Reproductions Immediate and Delayed Recall Composite Score | 1161 | -2.51 | .797 | -3.15 | **.002** | 66.9 (14.2) 64.9 (14.8)  [0.14] |
| **EXECUTIVE FUNCTIONS** | | | | | | | |
| **Resistance to Interference in Episodic Memory** | | | | | | | |
| 4 | CVLT-II Intrusions across All Trials | 1151 | .026 | .043 | 0.61 | .75 | 4.2 (4.4) 4.8 (4.8)  [0.13] |
| **Updating in Working Memory** | | | | | | | |
| 8 | CPT-*AX* Errors | 1069 | .14 | .042 | 3.56 | .0004 | 5.9 (6.7) 7.5 (8.5)  [0.21] |
| **Set Shifting in Working Memory** | | | | | | | |
| 9 | Verbal Fluency Category Switching Accuracy | 1160 | -.236 | .171 | -1.37 | .17 | 6.4 (2.8) 6.1 (2.0)  [0.12] |
| aValues are from Type III Sum of Squares in the Generalized Linear Mixed Model with covariates:  cognitive measure = PSQI + SF36MCS/M + GCA + Age + Current SleepApnea(Y/N)+ Physical Conditions + Random Effect (Family)  PSQI = Pittsburgh Sleep Quality Index; SF36MCS-M = Modified SF-36 Mental Component Summary. | | | | | | | |

**Supplemental Data: R Script Used to Analyze Data in Table 3**

require(glmmADMB)

data <- read.csv("file\_name.csv", head = T, na.strings="NA")

attach(data)

data$case <- as.factor(data$case)

#For measures 1...n and covariates 1...n

data\_measure\_x <- na.omit(data[,c("variable","psqi","covariate1", "covariate2",...,"covariaten", "case")])

fit\_measure\_x = glmmadmb(variable1~ psqi + covariate1 + covariate2 + ... + covariaten +(1|case),

data=data\_measure\_x, zeroInflation=FALSE, family="gaussian")

# depending on the distribution of the variable: zeroinflation=TRUE, family="poisson"

fit\_measure\_x; summary(fit\_measure\_x)

# Confidence Intervals

confint(fit\_variable\_x)