those who reported a sleep disorder in both waves ("sustained sleep disorder") or one wave but not the other ("new sleep disorder" or "remitted sleep disorder." Memory change was assessed using a survey item asking if the respondent's memory was "worse", "better", or "the same" as compared to two years prior. Multinomial logistic regression was used to assess the relationship between these variables, and results were adjusted for sex, age, race, ethnicity, and depression.

Results: In adjusted results, those who reported that their memory improved were 124% (OR=2.24; 95%CI[1.51, 3.31]; p<0.001) more likely to have a sleep disorder that was remitted in the past 2 years. Those who reported that their memory worsened were 103% more likely to have a new sleep disorder (OR=2.03; 95%CI[1.65,2.50]; p<0.001), and 58% more likely to have a sustained sleep disorder (OR=1.58; 95%CI[1.40,1.77]; p<0.001). Interestingly, those whose memory worsened were also 39% more likely to have a remitted sleep disorder (OR=1.35; 95%CI[1.10,1.77]; p=0.006).

Conclusion: In older adults, there is a relationship between change in memory function and sleep disorders, such that improved memory is associated with improved sleep and worsened memory is associated with worse sleep or sustained sleep problems. Unfortunately, the specific sleep disorders associated were not reported. Future work should examine these effects in terms of specific sleep disorders, additional effect modifiers/covariates, and the role of sleep health in improving memory function.

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0118

PERFORMANCE ON A COMPUTERIZED THREAT ELIMINATION TASK IN AN ANIMATED ENVIRONMENT DURING TOTAL SLEEP DEPRIVATION

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Introduction: Military and law enforcement operators must make split-second decisions on whether to shoot during confrontations. Quick responses are crucial when force is necessary, but accurate decision-making is also imperative. Often, decisions are made while fatigued, which could impair speed and/or accuracy. Furthermore, the reliability of background information may impact performance. We investigated performance on a computerized shooting task during a total sleep deprivation (TSD) study.

Methods: N=86 healthy adults (39 males, age 21-38) completed a 4-day/3-night in-laboratory study, randomly assigned to a TSD (n=56) or control (n=28) condition. A custom task was administered after 32h or 8h of wakefulness (TSD and control groups). Participants were to shoot enemy robots (press spacebar) and not shoot friendly robots (no response) within 500ms of each robot being revealed inside shipping crates (1-5s inter-trial-interval). The task introduction described which crates would contain enemies, but the intel's accuracy varied across four phases: 100% (20 trials), 80% (120 trials), and 20% (40 trials), then irrelevant in a new environment (60 trials). Reaction time (RT) and accuracy (hits and false alarms (FAs)) were analyzed using 2x4 mixed-effects ANOVAs to determine the effects of condition, phase, and their interaction.

Results: There was a significant effect of phase on RT (p<0.001); in both conditions, participants reacted faster in phase 1 than all other phases. However, there was no effect of condition (p=0.20) or phase-condition interaction (p=0.080) on RT. There were significant effects of condition on hits (p<0.001) and FAs (p=0.004); TSD had fewer hits and more FAs than the control group. There was an effect of phase on hits (p=0.045), with fewer hits in phase 1, and a condition-phase interaction (p=0.026) showing that the TSD group experienced less improvement in hits. For FAs, there was no effect of phase (p=0.86) or phase-condition interaction (p=0.86).

Conclusion: The results suggest a speed/accuracy tradeoff during TSD, where relative to the control group, RTs remained equivalent, but accuracy was worse. In both groups, the RT slowing from phase 1 to subsequent phases, suggests that participants initially used the intel to facilitate quicker decision-making, but disregarded it once it was not completely reliable.

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0119

EFFECTS OF TOTAL SLEEP DEPRIVATION ON PERFORMANCE ON A CONTINUOUS PERFORMANCE MATCHING TASK

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Introduction: Tasks requiring individuals to identify specific stimuli may create response/non-response conflict, which may impair performance depending on stimulus feature overlap. Whether sleep deprivation interacts with such impairment is unknown. We investigated the effects of total sleep deprivation (TSD) on stimulus identification in a continuous performance matching task (CPMT).

Methods: N=85 adults (ages 21–40; 50f) completed a 4-day laboratory study with 10h baseline sleep (22:00–08:00), a 38h acute TSD or 10h sleep opportunity (control condition), and 10h recovery sleep. The ~6min CPMT was administered every 2–4h during wakefulness. Participants completed 300 trials where a 3-digit number was flashed on the screen for 100ms. They were instructed to respond (mouse-click) within 900ms, but only if the number was the same as the preceding number (i.e., a repeat); for all other trials a response was to be withheld. The 5 daytime testing sessions (09:00–21:00) at baseline (day 2) and after TSD/control (day 3) were used for analysis. Trials were classified based on number of digits matching the preceding trial (stimulus feature overlap): none (180 trials), one (30 trials), two (near-repeat; 30 trials), or all (repeat; 60 trials). Hit and false alarm (FA) rates were analyzed with mixed-effects ANOVA for day, condition, trial type, and their interactions. Mean response time (MRT) was analyzed equivalently for repeat trials only.

Results: Hit rate declined from day 2 to day 3 in the TSD group (F[1,83]=0.15, p<0.001), but not the control group (F[1,83]=0.018, p=0.335). Though FA rate was low overall (<0.06), FA frequency was higher on trials with greater stimulus feature overlap. FA rate increased on day 3 for the TSD group (all p<0.004), especially for near-repeats (F[1,415]=-0.014, p<0.001). Changes in MRT were statistically significant, but negligible (<20ms).

Conclusion: Our results suggest that greater stimulus feature overlap on the CPMT was associated with greater costs required to resolve conflict. Sleep deprivation exacerbated these costs. Interpretation is limited however, because a response was not required for non-repeat trials. Implementing a two-alternative forced choice version of the task in future TSD studies would address this limitation.

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