



Discrepancy in Self-Report and Actigraphy Measures of Sleep among Heavy-Drinking Young Adults

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INTRODUCTION

Background

- Alcohol is sometimes used as a sleep aid¹ because it acts as a sedative at low levels.^{2,3}
- Although these effects tend to disappear with tolerance, heavy doses of alcohol have been associated with reduced sleep onset latency (SOL) and increased wake after sleep onset (WASO) in some samples.^{3,4,5}
- Because of these effects, alcohol also impacts sleep efficiency (SE).^{4,6}
- Adults with insomnia tend to report worse diary (subjective) than actigraphy (objective) indicators of sleep disturbance.⁷

Purpose

- To examine the relationship between objective and subjective sleep measures among heavy drinkers with insomnia.

Hypothesis

- Heavy drinkers with insomnia will exhibit discrepancies in subjective and objective sleep measures.
- Heavier drinking will be associated with greater discrepancy.

METHOD

Participants

- Inclusion criteria:
 - Heavy drinking (4+ drinks/day for women; 5+ drinks/day for men)
 - Insomnia (at least 3 days/week with SOL or WASO >30 minutes)
- N = 60 (65% female; 15% Veteran)
- Participants completed daily sleep diaries (subjective measure) and wore actigraphy watches (objective measure) for 7-14 days.

Measures

- Independent variable:** drinking quantity defined in standard drinks
- Dependent variables:** Sleep efficiency discrepancy (subjective-objective; positive values=overestimation)
- Controls:** Veteran Status (1=Veteran, 0=non-Veteran); Sex (1=male, 0=female)

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STATISTICS

Paired Samples T-test

- Examined objective vs. subjective measures for WASO, SE, and SOL.

Linear Regression

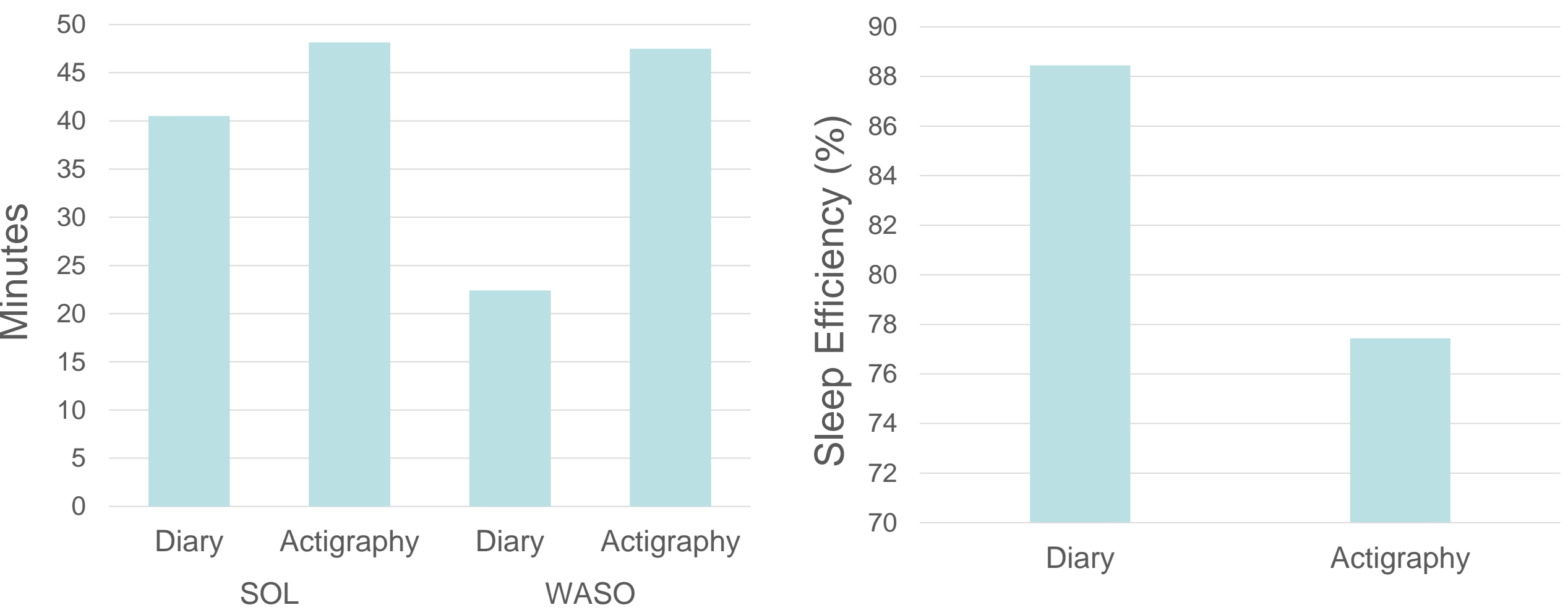
- Examined increased alcohol consumption as a predictor of SE discrepancy.

RESULTS

Paired Samples T-test

- Sleep onset latency (SOL): $t(59)=-1.63$, $p=.11$
- Wake after sleep onset (WASO): $t(59)=-7.10$, $p<.001$
- Sleep efficiency (SE): $t(59)=9.22$, $p<.001$

Figure 1. Differences in diary (subjective) and actigraphy (objective) SOL, WASO, and SE.



Linear Regression

Model predicting discrepancy in SE was not significant, $F(3,56)=0.70$, $p=0.56$

- Alcohol was not a significant predictor (see Table 1)

Table 1. Parameter estimates for model predicting discrepancy in sleep efficiency.

| | B | SE | p | 95% CI Lower | 95% CI Upper |
|---------------|---------|-------|------|--------------|--------------|
| Constant | -11.992 | 2.107 | .000 | -16.213 | -7.770 |
| No. of drinks | .099 | .917 | .915 | -1.739 | 1.937 |
| Veteran | 4.609 | 3.832 | .234 | -3.067 | 12.286 |
| Male | .278 | 2.968 | .926 | -5.668 | 6.223 |

DISCUSSION

Findings

- Compared to actigraphy, participants tended to underestimate wake after sleep onset and overestimate sleep efficiency.
- The tendency for participants to underestimate their sleep onset latency (relative to actigraphy) did not reach significance.

Conclusions

- Heavy drinkers with insomnia underestimated their actigraphy-assessed sleep disturbance.
- Among heavy drinkers, the discrepancy between subjective and objective measures is not explained by the amount of alcohol consumed.

Future Directions

- Given that most individuals with insomnia overestimate (rather than underestimate) sleep disturbance, additional research is needed to see if this effect is unique to heavy drinkers.
- Studies are needed to determine if alcohol use predicts sleep discrepancy in samples that include non-drinking and lighter-drinking participants.
- Future work may determine the cause of discrepancy.

Limitations

- The study consisted of only heavy drinkers.
- Actigraphy measures are not as accurate in populations with insomnia.
- Diary values were reported the morning after the sleep period and, therefore, could have been limited by recall.

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