Eveningness, Insomnia, and Delayed Sleep Phase Syndrome in University Students

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Morningness & Eveningness

- The Morningness/Eveningness Questionnaire (MEQ) is intended to classify people along a scale of morningness/eveningness in circadian rhythms (Anderson et al., 1991).

- Evidence suggests that eveningness is associated with moodiness, emotional problems, and decreased academic performance (Medeiros et al., 2001; Gau et al., 2007).
Insomnia

- Insomnia is characterized by difficulty falling asleep, maintaining sleep, or a frequent feeling of nonrestorative sleep (Brown, 2006).

- Severe/chronic insomnia affects around 10% of the general population
  - ~ 30% of the population complains of occasional insomnia symptoms (Brown, 2006).
Delayed Sleep Phase Syndrome

- Delayed Sleep Phase Syndrome (DSPS) is a circadian rhythm disorder which shifts the sleep-wake cycle significantly later than what is socially acceptable (Dagan et al., 2006; Herman, 2006).

- The prevalence of DSPS in the general population is unknown, but it is estimated to affect 7%-16% of young adults (Dagan et al., 2006).
Potential of Misdiagnosis

- Because DSPS and insomnia share the characteristic of difficulty falling asleep, it is possible that the two may sometimes be misdiagnosed.

- What may appear to be insomnia could in fact be a combination of DSPS and environmental factors (i.e. early morning class times).
Hypotheses

- Evening types will score worse than morning types on GPA and other measures of daytime functioning.

- A significant percentage of those students with self-reported insomnia will actually have DSPS.

- Daytime functioning will be the lowest in subjects with DSPS, then higher in subjects with insomnia, and highest in those subjects without a diagnosable sleep problem.
Method

- Cross-sectional survey of UNT students ($N = 824$) aged 18-26, conducted in Fall 2006 and Spring 2007.
Method

- Survey contained many inventories, including:
  - Measures of Independent Variables:
    - Morningness/Eveningness Questionnaire (MEQ)
    - Sleep Diaries
    - Health Survey
  - Measures of Dependent Variables:
    - Quick Inventory of Depressive Symptomatology – self report (QIDS)
    - State-Trait Anxiety Inventory (STAI)
    - Alcohol Use Disorders Identification Test (AUDIT)
    - Brief COPE
    - Perceived Stress Scale (PSS)
    - Marijuana Problem Scale (MPS)
Method – Operational Definitions

- Insomnia - Participants self-reported insomnia in the Health Survey.

- DSPS - Classification as a subject with DSPS required a self-reported bedtime between 2-6 am.
  - Bedtime data obtained from the Sleep Diary.
Analyses

- Polynomial Regression Analyses between the MEQ and dependent variables.
- Frequency analysis to determine the prevalence rate of DSPS in subjects with self-reported insomnia.
- Chi-square goodness of fit (DSPS vs. DSPS + Insomnia), with equivalence assumed.
- Multivariate Analysis of Variance to determine if levels of daytime functioning differ between groups
  - Normal vs. DSPS vs. Insomnia vs. DSPS + Insomnia
MEQ Analyses Results

- **MEQ**
  - Linear relationship with
    - MPS ($p = .032$)
  - Cubic relationship with
    - AUDIT ($p < .001$)
    - Cumulative GPA ($p < .001$)
  - All other variables NS
Insomnia vs. DSPS

- **Frequency Analysis**
  - 28% \((n = 229)\) report insomnia
  - 26% \((n = 203)\) report DSPS bedtime

- **How many people with insomnia report DSPS?**
  - Total insomnia \(n = 229\)
    - 64% \((n = 147)\) have insomnia only
    - 36% \((n = 82)\) report DSPS as well
  - \(\chi^2 = 6589.78, p < .001\)
DSPS vs. Insomnia

- Normal
- Insomnia Only
- DSPS Only
- DSPS and Insomnia
Univariate Analyses

QIDS

AUDIT

p < .001

p < .001

p = .008

p < .001

p < .001

QOL

COPE

p = .006

p = .009

p = .035

p = .015

PSS

GPA

p < .001

p < .001

p < .001

p = .037

p = .012
Conclusions

- Eveningness predicts poorer academic performance in college students.
- 28% of subjects self-report insomnia.
  - Of those, 36% report DSPS bedtimes as well.
- Subjects with DSPS, insomnia, or both perform differently on measures of daytime functioning and academic performance than those without a sleep problem.
  - Differences vary between measures
    - In general subjects with DSPS only performed worse, except on QOL.
      - More research is needed on QOL discrepancy.
References


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