Effects of Sleep Quality on Depression and Anxiety Symptomology

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Purpose of Sleep: Slow Wave Sleep and Rapid Eye Movement

• Some Theories
  • Adaptive/Energy Conservation
  • Restorative
  • Consolidation

• Can we live without sleep?
  • Rats will die under 2-3 weeks of total sleep deprivation (Everson, Bergmann, Rechtschaffen, 1989)
  • Fatal Familial Insomnia
Sleeping well?

**Good Sleep**
- Average of 7-8 hours per night
- Sleeping soundly throughout the night
- Awake and alert during the day

**Poor Sleep**
- Sleeping more or less than average
- Waking up throughout the night
- Falling immediately asleep or cannot sleep
- Drowsy/tired throughout the day

(NIH, 2011)
Effects of Poor Sleep Quality

• Memory impairment – link to memory consolidation
  • 3 hours of sleep deprivation can cause worsened hippocampal memory in rats (Prince et al., 2014)
• Poor Attention – restorative (?)
  • Adverse sleep behavior correlates with poor attention in 11 year olds (Lehto & Uusitalo-Malmivaara, 2013)
• Stress and mood
  • Sleep deprivation correlates with greater anger and anxiety in response to mild stressors. (Minkel & Banks, 2012)
Sleep and Mental Health

- Sleep Deprivation in the DSM-5

- Depression
  - Hypersomnia/Insomnia

- Generalized Anxiety Disorder
  - Sleep deprivation

(American Psychiatric Association, 2013)
Current Study

• Sleep quality and somatoform/depression/anxiety symptoms in a subsyndromal sample

• Co-effects of alcohol and caffeine

• Online self-report questionnaire
Hypotheses

• Expect to see a positive correlation between poor sleep quality and increased symptomology
  • Worse sleep quality would predict higher rates of Depression/Anxiety symptoms

• Heavy use of alcohol and caffeine to also show a relationship with poor sleep.
The Measures: Pittsburgh Sleep Quality Index

- Common measure developed in 1989
- Asks not only about sleep duration
  - Waking behavior
  - Heat sensations
  - Bad dreams
  - Pain
  - Daytime fatigue
  - Interactions with roommate/bed partner

(Buysse et al., 1989)
Mental Health Measures

- Personal History Questionnaire – measures mental health symptoms specifically for depression and somatoform symptoms.
- Generalized Anxiety Disorder 7 scale

<table>
<thead>
<tr>
<th>1. Little interest or pleasure in doing things</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Alcohol and Caffeine

• Alcohol
  • Helps get to sleep, but will cause poor sleep quality or waking. (NIH, 2011)
  • Alcohol Use Disorders Identification Test (AUDIT) (WHO, 2001)
    • Total alcohol consumed
    • Drinking behavior (e.g. binge drinking)

• Caffeine
  • Small amounts before bed can cause worse overall sleep quality. (Lloret-Linares, 2012)
  • Caffeine Questionnaire (Olsen, 2013)
    • Adapted from a University of New Hampshire marketing thesis
    • Examines milligrams of caffeine instead of individual drinks
Current Demographics

- 49 participants
  - 1 did not complete the survey
  - 12 removed due to reporting a mood/neurological disorder
- 30 females, 6 males
- Enrolled in undergraduate courses at Central
- Average grade level: Junior (σ: 1.251 years)
- 83.3% Caucasian, 8.3% Hispanic, 5.6% Asian, 2.8% Multiracial
- Average age: 21.19 (σ:2.936) (Range:18-32)
## Descriptive Statistics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean Score/σ</th>
<th>How To Interpret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep Quality</td>
<td>M=6.53, σ=3.435</td>
<td>&gt; 5  poor sleep quality</td>
</tr>
<tr>
<td>Somatoform</td>
<td>M=7.69, σ=5.291</td>
<td>5-9 mild, 10-14 moderate</td>
</tr>
<tr>
<td>Depression</td>
<td>M=6.17, σ=6.772</td>
<td>5-9 mild, 10-14 moderate</td>
</tr>
<tr>
<td>Anxiety</td>
<td>M=5.86, σ=5.832</td>
<td>5-9 mild, 10-14 moderate</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>M=3.44, σ=3.613</td>
<td>≤7 low risk/abstinent</td>
</tr>
<tr>
<td>Caffeine Use</td>
<td>M=169, σ=204.218</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Correlations: Associations between measures

<table>
<thead>
<tr>
<th></th>
<th>Somatoform Symptoms</th>
<th>Depression Symptoms</th>
<th>Anxiety Symptoms</th>
<th>Caffeine Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor Sleep Quality</td>
<td>0.391*</td>
<td>0.483**</td>
<td>0.328+</td>
<td>-.235</td>
</tr>
<tr>
<td>Somatoform</td>
<td></td>
<td>0.720***</td>
<td>0.735***</td>
<td>-0.348*</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td>0.828***</td>
<td>-.133</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td>-.220</td>
</tr>
</tbody>
</table>

+: p=.051, *: p<.05, **: p<.01, ***: p<.001
Findings

• Poor sleep quality correlates with increasing symptom severity in somatoform, depression and anxiety scales even in a subsyndromal population.

• Overall alcohol and caffeine use do not significantly impact sleep quality in this sample.
Other considerations

• Depression, anxiety and somatoform symptoms typically correlate

• Lack of significance between sleep quality and alcohol/caffeine was surprising as was the negative value

• Gender disparity in the sample; while gender was not associated with any of the measures, it would be beneficial to have a more balanced sample.
Future Implications

• Clinical
  - Creating healthy sleep behaviors and schedules is important to treating depression to treating anxiety

• Research
  - Poor sleep quality and subsyndromal mood concerns can and should be examined alongside normal populations

• Individuals
  - Good sleep is important in lowering stress and increasing happiness.
Questions?

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References


