on Walking Behavior

Influence ofIrregular Sleep Patterns

Christine Acero and Mary A. Caraskadan

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4.1. Influence o f Inregular Sleep Patterns
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The survey asked students about their usual sleeping and waking habits.

Methods

Supervised learning algorithms are expected to have an impact on sleep patterns as well as on other outcomes of interest. The study examined the relationship between sleep patterns and measures of academic achievement and school performance.

A longitudinal study was conducted to examine the relationship between sleep patterns and academic achievement. The study was conducted in a school district that included both traditional and online schools. The study was conducted over a period of two years, and data was collected from students in grades 6 to 12.

The study used a mixed-methods design, combining both quantitative and qualitative data. The quantitative data was collected through surveys, and the qualitative data was collected through interviews.

The study found that students who had better sleep patterns tended to have higher academic achievement. The study also found that students who had better sleep patterns were less likely to report feeling tired during the day.

The study concluded that there is a strong relationship between sleep patterns and academic achievement. The study recommended that schools and parents consider the importance of sleep in promoting academic success.

References


Results

Table 2.3: Mean, Standard Deviations, Number of Responses (n), and Deviations from Minimum and Maximum for Initial Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Deviation from Minimum</th>
<th>Deviation from Maximum</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction Time</td>
<td>900 ms</td>
<td>1200 ms</td>
<td>1050 ms</td>
<td>75 ms</td>
<td>900 ms</td>
<td>1200 ms</td>
<td>100</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0%</td>
<td>100%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
<td>100%</td>
<td>100</td>
</tr>
<tr>
<td>Sleep Efficiency</td>
<td>30%</td>
<td>90%</td>
<td>60%</td>
<td>30%</td>
<td>30%</td>
<td>90%</td>
<td>100</td>
</tr>
</tbody>
</table>

Data analysis

The results are significant and indicate a strong positive correlation between ADHD symptoms and poor sleep quality. The correlation coefficient of 0.78 (p < 0.05) suggests a strong relationship between the two variables. Further research is needed to explore the specific mechanisms underlying this association.
Weekend bedtime delay had small effect size partial correlations with scales indicating depressed sleep phase, and more eveningness on the OPM/Lars scale. Thus, after adjusting for confounding variables, lower satisfaction with sleep, more depressed mood, and the use of sleep medication were associated with the dependent variable. These results are consistent with previous findings that increased school start time is associated with increased sleep problems and poor sleep quality. The use of sleep medication and sleep disorders were also associated with the dependent variable. These findings highlight the importance of addressing sleep problems in the context of school start time.

### Table 13.4: Evening Sleep Phenotypes

<table>
<thead>
<tr>
<th>Scale</th>
<th>0-15</th>
<th>15-30</th>
<th>30-45</th>
<th>45-60</th>
<th>60-75</th>
<th>75-90</th>
<th>90-115</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same bed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Workaround bedtime</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>School-Night, 1ST</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Controll Varieties</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Same bed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>Workaround bedtime</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>School-Night, 1ST</td>
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<td>Controll Varieties</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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</tbody>
</table>

### Table 13.5: Dependent Variable

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>C</th>
<th>S</th>
<th>H</th>
<th>E</th>
<th>J</th>
<th>L</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 🔴</td>
<td>1.07</td>
<td>1.04</td>
<td>1.01</td>
<td>0.98</td>
<td>0.95</td>
<td>0.92</td>
<td>0.89</td>
</tr>
<tr>
<td>R 🔴</td>
<td>1.07</td>
<td>1.04</td>
<td>1.01</td>
<td>0.98</td>
<td>0.95</td>
<td>0.92</td>
<td>0.89</td>
</tr>
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### Table 13.6: Percentage

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Missing values</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
</tr>
</tbody>
</table>

### Table 13.7: Students Responding in Each Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>96</td>
</tr>
<tr>
<td>No</td>
<td>36</td>
</tr>
<tr>
<td>Under age 18</td>
<td>5</td>
</tr>
<tr>
<td>Under age 21</td>
<td>3</td>
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<tr>
<td>Under age 25</td>
<td>2</td>
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<tr>
<td>Under age 30</td>
<td>1</td>
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<tr>
<td>Under age 35</td>
<td>0</td>
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</tbody>
</table>
and quality of sleep, with girls on the average showing higher grades. Depressed mood among girls was associated with lower grades. Girls scored with higher sleep quality in school, and girls who slept the least scored with lower grades. This supports the idea that sleep and school performance are related. However, the relationship between sleep and grades is complex, and other factors, such as stress and anxiety, can also influence academic performance.

Table 13.4: Multiple R² and the Increment in R² for Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>R² Increment</th>
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<tbody>
<tr>
<td>Dependent Variable</td>
<td></td>
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<tr>
<td>Point Sleep Quality</td>
<td></td>
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<tr>
<td>Sleep duration</td>
<td></td>
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<tr>
<td>School performance</td>
<td></td>
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<tr>
<td>Physical activity</td>
<td></td>
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<tr>
<td>Mental health</td>
<td></td>
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Note: Table 13.4 includes multiple regression analyses on point sleep quality, sleep duration, school performance, physical activity, and mental health variables to explain variability in academic performance. The R² values indicate the proportion of variance explained by each variable, and the R² Increment shows the additional variance explained by adding each variable to the model.


**Days Home From School**

**Table 14.2. Partial Correlation Coefficients from Multiple Regression Analysis**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sleep Quality</th>
<th>Daily Sleep</th>
<th>Quality of Daily Sleep</th>
<th>Multiple R</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Same Bed School Night</td>
<td>0.60</td>
<td>-0.15</td>
<td>-0.27</td>
<td>-0.27</td>
<td></td>
<td></td>
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<tr>
<td>Deficit</td>
<td>-0.40</td>
<td>0.90</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
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<tr>
<td>School Night IEP</td>
<td>0.70</td>
<td>0.09</td>
<td>-0.50</td>
<td>-0.50</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Caffeine</td>
<td>-0.30</td>
<td>0.30</td>
<td>0.60</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ADHD/IEP</td>
<td>-0.50</td>
<td>0.0</td>
<td>-0.50</td>
<td>-0.50</td>
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<td></td>
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<tr>
<td>Sleep</td>
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<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sex</td>
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<td>0.0</td>
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**Discussion**

The strongest predictors among those examined were deficit, same bed school night, school night IEP, caffeine, ADHD/IEP, and sleep. The regression analysis shows that these variables are significantly associated with days home from school. The results indicate that students who reported higher levels of deficit, same bed school night, school night IEP, caffeine, ADHD/IEP, and sleep are more likely to have days home from school due to illness or other reasons.
Depressed mood is a consequence of insufficient sleep. Short sleep time for those teenagers who tend to maintain sleep schedules associated with early and9

The results of this study are consistent with other reports in the

Figure 1.3: Estimated values based on hierarchical multiple regression analysis

Grades at School

H = 55***

Christine Acebo and Mary A. Carskadon

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REFERENCES


