



An Examination of Sleep Deprivation, the Workplace and Productivity

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Introduction

The current literature demonstrates strong correlation between sleep quality and duration and cognition, mood and motor ability. These relationships can be especially acute when sleep debt is not mitigated, resulting in impaired judgment, decision making and if left unchecked can lead to the heightened risk for the development of psychological and physical disruptions which can eventually lead to mental and physiological illness (Chung, Shapiro & Wolf, 2009; Banks & Dinges, 2007, Van Dongen et al, 2003).

Exercise Setting

The Goodman Theatre outbound call center employs two shifts five days each week, one from 9:00 a.m. until 1:00 p.m. and another from 5:00 p.m. through 9:00 p.m. Employees sell season ticket packages via telephone. Each shift is staffed with 12 employees each. Employee and shift performance is quantified via a computer program, which tallies the number of telephone calls, the duration of the calls, the call result (sale, refusal, call-back, no answer or disconnected number).

Workers are compensated at \$8.00 per-hour plus commission, which increases from 2 percent to ten percent depending on their weekly sales total. The sales room is centrally heated and air conditioned with a separate thermostat which requires a key held by a manager to control room temperature. The default

Subjects and Methods

Data for three months was collected and reviewed, showing the evening shift consistently outperformed the morning shift. An exercise outline was composed in an effort to determine why the morning callers underperformed when compared to their evening counterparts.

Consent and survey forms were prepared with the assistance of a Harold Washington College professor. Goodman management allowed an informational meeting to be held in the workplace, where callers were asked to participate in an exercise that would seek to determine what influences cause the evening shift to outperform the morning shift.

Four SleepTracker wristwatches were obtained from Harold Washington College to monitor sleep patterns among a sampling of the top morning and evening callers.

All 12 of the evening and nine of the 12 morning callers agreed to complete the consent form and 28-question survey. Significant variance in survey responses is noted between the two shifts, with the morning shift reporting higher self-perceived stress levels and higher sleep restriction than the night shift.

Findings

Six of the 28 survey questions sought subject quantification on the amount, quality and disruption of sleep. Participants were asked to rate the amount and quality of their sleep using less-than-normal, normal and more-than-normal rankings, with eight hours of sleep each night defined in the survey as a normal amount of nightly sleep.

The average age of those on the morning shift who completed the survey is 34. The average age for evening workers is 41. All who completed the survey indicate they work another job besides their employment at the Goodman. The evening shift is composed of five females and seven males and the morning shift has four females and eight males.

Morning workers also reported poorer quality, higher non-uniform sleep and wake times and higher caffeine and alcohol consumption than their evening counterparts.

Sleep Pattern Results as Recorded by SleepTracker

Two morning and two evening callers wore for a ten-day period SleepTracker wristwatches to assist in an effort to quantify their sleep patterns. The subsequent data shows the two evening callers logged longer duration sleep and more REM cycles six out of the ten nights recorded.

Work data for the same period shows the two evening callers made more telephone calls than their morning counterparts and made 69 percent more sales than the two morning callers.

Exercise Caveat

The exercise did not include quantification of the ergonomic structure of each caller's work station. It is unclear if some call stations are easier to work at, which

could facilitate better work efficiency and production. The chairs the callers sit in during their shift are not uniform and some workers have complained they are uncomfortable. This too could have a negative correlation to work productivity. While demographic data was collected through the survey indicating age, gender, approximate income and educational levels, responses were not sought whether callers are right handed or left handed. Again, an industrial engineer might find this data valuable in quantifying the ease of work flow for each caller from their respective desks.

Discussion and Conclusion

Since consistent sleep restriction of six hours or less per night can inhibit cognitive performance it would appear the night shift at the call center outperforms the day shift at least in part due to better quality and increased quantity of sleep.

Continued data collections would yield a much more comprehensive picture of what influences are at play in the work production variance between the two shifts.

In summary, the findings should be viewed as no more than a snap-shot of the sleep habits of the top callers of the morning versus the evening shifts. Research bias must also be accounted for in quantifying the survey findings, as the student completing the exercise also works at the Goodman.

Never-the-less, the preliminary data collected is consistent with literature that suggests sleep restriction and deprivation has direct correlation with cognitive function and work output and efficiency.

References

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