The Theory of Planned Behavior as a Model for Predicting the Sleep Intentions and Behaviors of Undergraduate Minority Students

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The Theory of Planned Behavior as a Model for Predicting the Sleep Intentions and Behaviors of Undergraduate Minority Students

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Abstract

Purpose: Minimal data is available concerning the sleep health of minority undergraduate students. A psychometrically robust Theory of Planned Behavior based instrument was employed to specify a theory-based model for predicting the sleep intentions and behaviors of undergraduate minority students.

Methods: A convenience sample of African American, Asian American, and Hispanic American students (n=70) attending a large Midwestern university participated in the investigation. A power analysis was conducted to determine an adequate sample size (\(\alpha = 0.05\), \(\beta = 0.80\), \(f^2 = 0.20\)).

Results: The majority of the sample received insufficient sleep (M=405.09 minutes, SD=112.21). Regression analysis identified perceived behavioral control and attitude toward the behavior as significant predictors of behavioral intention. Conversely, subjective norm was a non-significant predictor of behavioral intention. Further specification of the model found behavioral intention to be significant in the prediction of sleep behavior.

Conclusion: Perceived behavioral control and attitude toward the behavior are modifiable constructs which need to be addressed through health education and promotion interventions. In prior research employing the same instrument on a predominately white population, subjective norm was a significant predictor of intention. This discrepancy suggests social pressure is not a salient factor in the behavioral intention to achieve adequate sleep among minority students.

Key Words: Sleep health, minority health, college students, Theory of Planned Behavior

Introduction

Sleep health is a growing area of concern among health researchers and practitioners (Centers for Disease Control and Prevention [CDC], 2011). Little research has investigated sleep from a health education perspective, particularly in the context of minority sleep health. The current study presents the findings of a psychometrically robust Theory of Planned Behavior based instrument administered to a sample of undergraduate minority students at a large, public Midwestern University (Knowlden, 2011).
night; completely disagree—completely agree”. ATB was measured through six items arranged on an attitudinal scale. The stem statement that preceded the items was, “for me to sleep for 7 to 8 hours every night would be...” Sample endpoints included, “not healthy—healthy” and “bad—good”. BI was measured with 3 items using 7-point semantic differential scales. The BI item response anchors included, “I intend”, “I will try”, and “I plan” to gauge the intention of the participants to engage in adequate sleep behavior within the next 24 hours. The instrument was validated by a panel of six experts for face and content validity. Construct validity, test retest reliability and internal consistency were all found to be satisfactory (Knowlden, 2011).

Results

Demographics: The TpB-based instrument was administered to a sample (n=70) of African American (n=27, 38.6%), Asian American (n=29, 41.4%), and Hispanic American (n=14, 20.0%) students (68.6% female, age: M=20.60 years, SD=1.797) attending a Mid-western University. Construct Analyses. The mean minutes of total sleep at night time of the sample was 405.09 (SD=112.21). Only 12 (17.14%) of the participants achieved adequate sleep behavior. Among the pool of participants, 40 (57.14%) received insufficient sleep and 18 (25.71%) obtained excessive sleep. Table 1 illustrates the descriptive statistics for each of the theoretical constructs measured. (TABLE 1)

Theoretical Modeling. Prior to running the analyses, diagnostics confirmed satisfaction of the underlying regression assumptions of normality of the outcome variable residuals, homoscedasticity of the variance, linearity between the predictors and outcome variable, absence of outliers, and absence of multicollinearity. Model 1. Multiple linear regression applying the backwards elimination method modeled the predictors of PBC (β=0.574, t=5.946, p < 0.001) and ATB (β=0.196, t=2.034, p = 0.046) on BI. SN was not significant in the prediction of BI (β=-0.109, t=-0.946, p = 0.348). Collectively, the significant predictors produced an R2adjusted value of 0.358 (F (2, 69) = 20.240, p < 0.001), suggesting the model accounted for 35.8% of the variance in the behavioral intention to obtain adequate sleep in the sample. Model 2. A second regression analysis was conducted applying the backwards elimination method to model the relationship between BI and SB. BI (β=0.416, t=3.770, p < 0.001) was found to account for 16.1% of the variance in SB (F (1, 69) = 14.215, p < 0.001).

Discussion

PBC defines how much control an individual believes they have to enact a behavior. In planning sleep health programs for minority students, practitioners should primarily focus on increasing students’ PBC. In the current study, the mean PBC score for the sample was 17.94, suggesting substantial room for improvement. From an intervention perspective, goal setting, time management, financial management, and stress reduction in the context of sleep health can increase PBC. ATB scores were high in the sample (M=38.29, SD=4.39) implying that while ATB is significant in the prediction of BI, less emphasis needs to be placed on the construct when designing sleep health programs for minorities.

SN encompasses an individual’s perception of the social pressure to perform or not perform a given behavior. In this investigation, SN was non-significant in the prediction of sleep intentions in the sample. This finding differs from a previous study conducted by the investigators which suggested SN was beneficial in predicting BI in a predominantly white sample (93%). For practitioners, this finding suggests SN does not need to be included in sleep health interventions targeting minority undergraduate students.

Limitations: There are several limitations which may be considered when interpreting the findings of this report. Respondents were polled from a convenience sample of students; therefore, the results cannot be extrapolated beyond the participants. The sample was predominately female, which may skew the predictive validity of the model. The research design was cross-sectional in nature, inhibiting the ability to imply causal relationships between the variables. This study considered sleep behavior in the context of voluntary sleep restriction. Medically diagnosed sleep disorders were not included in the instrument. The findings of the study were based on self-report which make the measured items susceptible to misinterpretation and response bias. From a theoretical perspective, the TpB predicts rationale behavior-based decision making but does not account for affective-based decision making. Finally, basic assumptions about the relationship between sleep and health presented in this report may become outdated as the field of sleep science advances.
Conclusion(s)

The results of this study coincide with previous literature which suggests that, as a population, undergraduate college students receive insufficient sleep (Lund, Reider, Whiting, & Prichard, 2010). Two TpB based models were specified to predict the sleep intentions and behaviors of the sample. The first model regressed PBC, ATB, and SN on BI. The second model regressed BI on SB. Regression analysis identified perceived behavioral control and attitude toward the behavior as significant predictors of behavioral intention. Conversely, subjective norm was a non-significant predictor of behavioral intention. Further specification of the model found behavioral intention to be significant in the prediction of sleep behavior.

References

Illustrations

Illustration 1

Table 1: Distribution of Possible Score Ranges, Observed Score Ranges, Means, and Standard Deviations for the Theory of Planned Behavior Constructs in the Sample of Undergraduate Minority Students (n=70)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Possible</th>
<th>Observed</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep Behavior</td>
<td>0 – 1,440</td>
<td>120 – 756</td>
<td>405.09</td>
<td>112.21</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>3 – 21</td>
<td>3 – 21</td>
<td>14.24</td>
<td>6.02</td>
</tr>
<tr>
<td>Perceived Behavioral Control</td>
<td>4 – 28</td>
<td>4 – 28</td>
<td>17.94</td>
<td>7.50</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>4 – 28</td>
<td>7 – 28</td>
<td>20.53</td>
<td>5.27</td>
</tr>
<tr>
<td>Attitude Toward the Behavior</td>
<td>6 – 42</td>
<td>26 – 42</td>
<td>38.29</td>
<td>4.39</td>
</tr>
</tbody>
</table>

Note. Sleep behavior measured in minutes.
Illustration 2

Figure

Theoretical model predicting the sleep intentions and behaviors for the sample of undergraduate minority students (n=70). Multiple Coefficient of Determination values ($R^2$) are presented as adjusted values. Beta coefficients are presented as standardized weights.
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