

# Stress and sleep predict self-rated health after controlling for negative affect

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## INTRODUCTION:

The association between psychological stress and poor physical health has been well established in the literature and recent evidence suggests that measures of sleep quality may improve stress-health models (Benham, 2010). However, it has been argued that studies which rely on self-reports of stress and health complaints suffer from the confound of negative affectivity (Watson and Pennebaker, 1989). Given this concern, the purpose of the current study was to examine whether stress and sleep were significant predictors of health after controlling for negative affect.

## METHOD:

Three hundred and forty undergraduate students completed an online survey that included the Perceived Stress Scale [PSS], a self-report health/illness measures (the Cohen-Hoberman Inventory of Physical Symptoms [CHIPS]), assessments of sleep quantity and sleep quality (Pittsburgh Sleep Quality Inventory [PSQI]) and a measure of negative affect (International Positive and Negative Affect Schedule – Short Form [I-PANAS-SF]). Participants ranged in age from 18 to 50 (M=22.6, SD=5.5). Approximately three-fourths of the sample (75.5%) was female and the large majority (93%) of participants classified themselves as Hispanic. Participants were recruited on a voluntary basis and were offered extra credit by their respective professors for participation.

## CONCLUSION:

Our results demonstrate that the predictive power of a simple stress-health model is increased by the addition of sleep quality data and suggests that effect sizes obtained in studies of stress and health could be improved by incorporating measures of sleep. Importantly, while all dependent and predictor variables correlated with negative affect, a stress+sleep model was still significant after controlling for negative affect. While the extent of health complaints is certainly associated with subjects' negative affect, subjective levels of stress and sleep quality seem to be something more than a simple epiphenomenon of negative affect.

## RESULTS:

Poor sleep quality and self-reported stress were associated with health complaints as assessed by the CHIPS ( $r(277) = -.60, p < .001$  and  $r(285) = -.48, p < .001$ , respectively). Age was not significantly correlated with sleep quality, stress, or health complaints. Results of Mann-Whitney U tests demonstrated that females had more health complaints ( $z = -4.58, p < .001$ ), more stress ( $z = -4.44, p < .001$ ), and poorer sleep ( $z = -3.84, p < .001$ ) quality than males. Females also had greater negative affect ( $z = -2.57, p = .01$ ). As expected, negative affect was positively correlated with health complaints ( $r(283) = .44, p < .001$ ), stress ( $r(327) = .52, p < .001$ ), and poorer sleep quality ( $r(306) = .30, p < .001$ ). A hierarchical linear regression model using sex and negative affect (1st step), stress (2nd step), and sleep quality (3rd step) as predictors of health complaints was significant ( $F(4,263) = 50.55, p < .001$ ) and accounted for 44% of the variance in health. All variables, except sex, contributed significantly to the final model. Each additional step (stress and sleep quality) significantly increased the predictive value of the model.

