# The Temporal Dynamics of the Association Between Sleep Continuity Disturbance and Depressive Symptoms

Ivan Vargas PhD[1,2], Alexandria Muench MS[1,3], Julia T. Boyle MS[1,3], Amy Gencarelli MS[1], Waliuddin Khader BA[1], Knashawn Morales ScD[4], Michael A. Grandner, PhD[5], Jason Ellis PhD[6], Jackie D. Kloss PhD[1], Donn Posner, PhD[7], Michael L. Perlis, PhD[1,2]

[1] Behavioral Sleep Medicine Program, Department of Psychiatry, University of Pennsylvania
[2] Center for Sleep and Circadian Neurobiology, University of Pennsylvania
[3] Department of Psychology, Philadelphia College of Osteopathic Medicine
[4] Department of Biostatistics and Epidemiology, University of Pennsylvania
[5] Sleep & Health Research Program, College of Medicine, University of Arizona
[6] Northumbria Center for Sleep Research, Northumbria University
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**Introduction:** Sleep continuity disturbance (i.e., insomnia) is a significant risk factor for the development and recurrence of a depression. Few studies, however, have assessed the temporal dynamics of insomnia and depression (e.g., how changes in sleep continuity are related to episodes of dysthymia).

**Methods:** Analyses were conducted on a sub-sample of subjects ($n$ = 190; 79% female) that participated in a larger study on the natural history of insomnia. Subjects included 95 adults who developed an acute dysthymic episode (i.e., PHQ-9 ≥ 10; DEP10 Group), and an equivalent gender, age, and BMI-matched control group. Controls were also matched by time of assessment. Sleep continuity disturbance was quantified as total wake time (TWT, in minutes) as assessed by daily sleep diaries. The data was anchored in time to the onset of the dysthymic episode (Time 0) in order to compare group differences in TWT prior to (3 weeks), during (2 weeks), and following (3 weeks) the acute episode. A 2 x 8 repeated measures ANOVA (group X time) and linear mixed modeling were used to assess whether there were any group differences in TWT during any of the weekly intervals.

**Results:** The DEP10 group, relative to controls, reported significantly greater TWT during the two weeks prior to the endorsement of a dysthymic episode (the main effects of time and group and the time by group interaction were all significant, $p$'s < 0.05; mean change in TWT from baseline to Time 0, in minutes: DEP 10 = 24.7; Controls = -4.6). Mixed effects models also showed that there was a significant difference in the linear slope to Time 0 ($p$ = 0.04).

**Conclusions**: These results indicate that sleep continuity disturbance may significantly account for a portion of the variance in week-to-week fluctuations in depressive symptoms, at least for acute increases in dysthymia. Analyses are ongoing to determine whether these effects vary by insomnia sub-type (i.e., initial, middle, and late insomnia) or depression severity (PHQ-9 ≥ 15).