scores were compared between locations using independent t-test and Levene's test for equality of variance.

**Results:** CSM scores in Philadelphia (M=39.9, SD=5.5) were not significantly different from those in Spokane (M=38.9, SD=6.1), although there was a trend for slightly more eveningness in Spokane ($t[541]=1.67$, $P=0.096$). The variance in CSM scores did not differ significantly between the two locations ($F[1,541]=2.2$, $P=0.14$).

**Conclusion:** No significant differences in chronotype distribution were found between Spokane and Philadelphia despite differences in sunlight exposure and population. The purported effects of geographical location and population density, through sunlight exposure, on circadian entrainment may have been moderated in our samples by exposure to artificial light and/or social zeitgebers. If our finding generalizes to other locations, it will lessen concerns about systematic circadian confounds when combining samples in multi-site investigations.

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## 0171

### EPIDEMIOLOGY OF BEDTIME, ARISING TIME AND TIME IN BED: ANALYSIS OF AGE, GENDER AND ETHNICITY

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**Introduction:** Less data exist on behavioral circadian variables than their physiological correlates. Furthermore, there is a paucity of normative behavioral sleep data in the literature. The present study attempts to address this gap by analyzing behavioral variables reported in sleep diaries from our epidemiological survey.

**Methods:** 772 participants from a metropolitan community were enrolled using random-digit dialing, yielding a diverse sample. Demographic data and 14 days of sleep diary data were analyzed for 756 participants. Data was first plotted to determine linearity. Hierarchical regression was performed to analyze the effects of age, ethnicity, and gender on bedtime, arising time, and time in bed (TIB).

**Results:** There is a negative, linear relationship between age and bedtime: as individuals age they tend to go to bed earlier. Furthermore, age has a curvilinear relationship with both arising time and TIB. Individuals initially tend to get out of bed earlier as they age until they reach mid-life, at which time they get out of bed progressively later. The relationship between bedtime and arising time produces a curvilinear relationship, wherein there is a slight decrease in TIB until mid-life, at which point TIB steeply increases. Age was moderately correlated with average bedtime ($r = -.33$, $p<.001$). All other variables were either weakly correlated or were non-significant. Age contributed 10.9% of the variance of bedtime. Ethnicity and gender added only 1.4% of explained variance. Age contributed 7.0% of the explained variance of arising time. Age also contributed 13.3% of the explained variance of TIB. Gender and ethnicity were excluded from the arising time and TIB regression models due to non-significance.

**Conclusion:** There are distinct behavioral sleep patterns based on age but not gender or ethnicity. These results may have significant clinical implications, particularly for older adults.

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## 0172

### MEN AND WOMEN SLEEP AT A SIMILAR CIRCADIAN PHASE

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**Introduction:** Some studies have reported that women sleep at a slightly earlier clock time than men. Other studies have reported that women also have circadian clocks set to a slightly earlier time, as seen in the earlier onset of the endogenous melatonin rhythm collected in dim light (DLMO). However reports on whether women sleep at a different circadian phase to men are mixed: some report that the DLMO is earlier relative to sleep in women versus men (thus women sleep at a later circadian time), while others report no sex difference. Here we reexamined a large data set to look for sex differences in circadian phase angle.

**Methods:** Forty four healthy subjects (19-43 years) maintained a fixed 8 hour baseline sleep schedule (verified with wrist actigraphy) for at least 3 days, determined by their average self-reported bed and wake times from the previous week. This was immediately followed by a circadian phase assessment during which half hourly saliva samples were collected in dim light (<10 lux) for determination of the DLMO. Each man was matched to a woman (free of hormonal contraception) according to age (± 5 years) and wake time (± 30 minutes) as per Cain et al. 2010.

**Results:** Women slept on average 12 minutes later relative to their circadian clock than men (DLMO to bedtime interval 3.0 versus 2.8 hours respectively, $p=0.55$). These results are in the same direction as reported by others, but show no significant sex difference in circadian phase angle.

**Conclusion:** These results suggest that men and women sleep at a similar circadian phase. We are currently adding an additional 20 men-women matched pairs to this data set and so will soon have the largest data set available (n=42 matched pairs) to comprehensively examine sex differences in circadian phase angle.

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## 0173

### ETIOLOGICAL MODERATION OF DIURNAL PREFERENCE BY AGE IN A POPULATION BASED SAMPLE OF ADULT TWINS

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**Introduction:** Quantitative and molecular genetic studies have shown that the self-report analogue of circadian rhythm phase - diurnal preference - is heritable. Diurnal preference is a measure of one's tendency towards morningness or eveningness. With increasing age individuals show a greater tendency towards morningness, yet why and how this age shift occurs is poorly understood. It is possible that the contribution of genetic and environmental influences on diurnal preference varies as a function of age. Accordingly, the present study focuses on age as a continuous moderator of the genetic and environmental influences on diurnal preference in a sample of twins from young to late adulthood.

**Methods:** Data from 768 monozygotic and 674 dizygotic twin pairs participating in the University of Washington Twin Registry was used in the current study (age range 19.12-92.75 years; mean=36.23, SD=15.54). Diurnal preference was assessed by the reduced morningness-eveningness questionnaire.

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