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Morning people are stable people: Circadian rhythm and the higher-order factors of the Big Five

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Abstract

A personality model based on the Big Five and their higher-order factors or metatraits was used to examine associations between personality and individual differences in circadian rhythm, as assessed by the Morningness–Eveningness Questionnaire (MEQ). Based on previous research with Eysenck's personality model and a neurobiological model implicating serotonergic function in the metatrait Stability (the shared variance of Neuroticism reversed, Agreeableness, and Conscientiousness), we hypothesized that morningness would be positively related to Stability. Structural equation modeling in a sample of 279 undergraduates confirmed this hypothesis.

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1. Introduction

Some people are early birds; others are night owls – morning people and evening people. This is a common lay observation, but there is also scientific evidence for the validity of these classifications and, additionally, for the existence of people who prefer the middle of the day to either morning or evening. Preferences for time of waking and sleeping, as well as for time of day for accomplishing demanding intellectual and physical tasks, can be reliably measured and appear to have a biological basis. Like most organisms, human beings show circadian rhythms in many behavioral and biological variables. When not exposed to environmental cues providing temporal information, the human circadian cycle has a free-running period of about 25 h. Normally, however, it is entrained to a 24 h period, primarily through exposure to the daily cycle of light and dark (Miller, Morin, Schwartz, & Moore, 1996). Like most characteristics of organisms, circadian rhythm is subject to individual variation. Barring extenuating circumstances, people feel most alert, energetic, and capable at a particular time of day, which varies from person to person but remains reasonably stable in a given individual (although there are regular changes over the lifespan – during early adolescence, for example, peak arousal typically shifts from morning toward later in the day; Kim, Dueker, Hasher, & Goldstein, 2002). These stable differences in time of peak arousal appear to be responsible for the existence of morning people, evening people, and middle-of-the-day people.

Given the importance of circadian rhythms in human functioning (they regulate sleep, appetite, and cognitive function, among other things), it is of interest to know whether their variation is associated with personality more generally. A number of studies have examined associations between time of peak arousal and Eysenck's three personality dimensions, Extraversion, Neuroticism, and Psychoticism. Most attention has been paid to Extraversion because Eysenck originally hypothesized that cortical arousal was the biological factor linked to variation in Extraversion (Eysenck, 1967). Results have been mixed. In a review of 30 years of research on individual differences in circadian rhythms, Tankova, Adan, and Buela-Casal (1994) reported 15 studies examining Extraversion, 11 of which also examined Neuroticism, and two of which also examined Psychoticism. Nine of these studies found a significant association between eveningness (late peak arousal) and Extraversion, and two more reported trends in that direction. Four studies reported a significant association between eveningness and Neuroticism, and one more reported a trend in that direction. Hess, Sherman, and Goodman (2000) demonstrated an association between eveningness and Neuroticism and cited one additional study not covered in Tankova and colleagues' review that also found this association (Mura & Levy, 1986). Finally, the two reviewed studies that examined Psychoticism found it to be significantly associated with eveningness. One later study found associations between eveningness and both Psychoticism and Extraversion, but not Neuroticism (Mitchell & Redman, 1993), and another found associations between eveningness and both Psychoticism and Neuroticism, but not Extraversion (Mecacci & Rocchetti, 1998). Lateness of peak arousal, therefore, may be associated with Extraversion, Neuroticism, and Psychoticism, but the number of null results suggests caution in drawing conclusions.

The apparent association between Extraversion and circadian rhythm is complicated by the history of Eysenck's personality model, which originally contained only two factors, Extraversion and Neuroticism (Eysenck, 1947). When Psychoticism was added to the model (Eysenck &

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