Reply to Dr. Kawada's letter

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Dear Editor,

The main objective of our study was to evaluate the effects of methamphetamine self-administration and abstinence on sleep-like measures derived from Actiwatch monitors in rhesus monkeys under well-controlled experimental conditions (Andersen et al. 2013). We agree with Dr. Kawada that actigraphy is not a substitute for polysomnography. In fact, we clearly acknowledged in the discussion section that actigraphy is a complementary approach to polysomnography with limitations: “As hypothesized, methamphetamine produced marked impairments in sleep-like behavior. Because the Actiwatchers used in the current study can only measure activity, it is assumed that during periods of low activity, the animals exhibited behavior that could be inferred as ‘sleep.’ However, only an objective measure (e.g., polysomnography) could indeed provide this definitive information.”

There are several important similarities between humans and diurnal nonhuman primates favoring the use of nonhuman primate species to model alterations in human sleep (Zhdanova et al. 2002). We are aware of the relevant literature related to sleep–wake patterns in rhesus macaques. The available methods for monitoring neurophysiological activity underlying sleep are difficult and laborious to implement (Darbin et al. 2009) and pose a significant challenge for nonhuman primate studies. Actigraphy is less demanding of resources than conventional

polysomnography, both in terms of equipment costs and the time required for analysis of extensive data, as discussed previously by Terrill et al. (2010). If sleep-related variables derived from behavioral activity are based on clear operational definitions of sleep-like behavior, then the use of actigraphy can provide a useful resource that is clearly warranted. We agree that the application of actigraphy to nonhuman primates needs additional validation through well-designed, multidisciplinary studies such as those reported by Andersen et al.

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