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EDITORIAL

Phasic or Transient? Comment on the Terminology of the AASM Manual for the Scoring of Sleep and Associated Events

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In the recently published American Academy of Sleep Medicine (AASM) scoring manual for sleep stages,[1] the term *phasic* was replaced throughout by *transient*. Recommendations for changes in terminology should be made with great care, especially when terminology is a core topic, as indicated by the subtitle of the AASM manual, "Rules, Terminology, and Technical Specifications." The decision by the Visual Task Force was substantiated in an accompanying paper.[2] The recommendation was based on the following reasoning, "Dictionary definitions of *phase* do not include short-lived transient activity and the term is used in physics for a *particular appearance or state in a regularly cycle of changes*."[2p129] This argument is misleading, since the term *phasic* in the context of rapid eye movement (REM) sleep was derived from physiology not physics. Physiologists discriminate between phasic and tonic muscle fibers according to the discharge pattern (see, e.g.[3]). This also becomes clear by the following quotation from Hobson and Scheibel.[4] "Orlovsky (1970) has shown that, complementing these slowly conducting systems, fast reticulospinal fibers are activated in phase with mainly the flexors of one of the limbs in each step and Shimamura and Kuruge (1977) have demonstrated that the reticulospinal neurons thought to be part of the spinal-bulbar-spinal reflex are also phasically activated. Phasic rhythmic activity may also be recorded in vestibulo-spinal and rubrospinal pathways during locomotion (Orlovsky, 1972a,b)."[4p62] In his book *Neuronal Substrates of Sleep and Epilepsy,* Steriade devoted a whole chapter to phasic events.[5p187-98]

Phasic events in the context of sleep medicine were clearly defined as early as 1979 in the glossary of terms used in sleep disorders medicine[6]: "**Phasic event (-activity)**. Brain, muscle or autonomic events of a brief and episodic nature occurring in sleep; characteristic of REM sleep such as eye movements, or muscle twitches; usually the duration is milliseconds to 1-2 s,"[6p126] or, to cite a more recent definition, "Physiological traits can occur as phasic bursts during a given state (phasic latency criterion) or can occur tonically throughout an arousal state (tonic latency criterion)."[7] For several reasons, I see no convincing argument for the recommendation to replace the term *phasic* with the term *transient*. (1) For the sake of consistency in scientific communication, established and well-defined terms should only be replaced if they are no longer appropriate, which is not the case here. (2) The term *phasic* is more appropriate than *transient* to describe short-lasting events in the range of milliseconds, as the following quotations exemplify: (a) "animal studies have shown that a brief EMG suppression is coincident with a phasic event—the PGO spike"[8] and (b) "They suggested that a function of serotonergic neurons is to confine phasic events as PGO spikes to REM sleep."[9] In both cases, the use of the term *transient* instead of *phasic* would be inadequate. (3) *Phasic* has been used in combination with other terms in sleep science, as for example, in *phasic integrated potentials*.[10p452-3] Such compound terms would unnecessarily become orphans when the parent term is replaced.

For the given reasons, I plead to retain the established term *phasic* for REM sleep events of brief duration, usually shorter than 2 seconds, and episodic nature.

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