

The stages of sleep



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The human brain can function in a number of ways, some of which are still being studied today. A process that we have studied intensely and have been able to generate a systematic explanation for, is the sleep cycle. The ability of the mind to slip from consciousness, an awareness that makes sense of all the things happening around us at any given time, to unconscious, as sleep following a cycled pattern happens every night and oscillates between states (MyPsychLab). Human survival hinges on sleep as it is a form of relaxation and rejuvenation for the mind and body. The following paper will discuss sleep; including the five stages of the sleep cycle and what is happening in the brain while sleeping.

To date, there are five different stages of sleep that a person will cycle through in a full night's sleep. The amount of sleep needed to properly function varies from person to person and the suggested "good night's sleep" is around seven hours (MyPsychLab). Sleep is initiated by a person experiencing tiredness or exhaustion and will slip into stage one of sleep, the transitional phase. This stage is classified as NREM, non-rapid eye movement, and a person will come in and out of consciousness as they may be partially awake and aware until the mind begins to drift (CrashCourse, 2014). During this transitional phase, the brain wave activity will have both alpha and theta waves. At the beginning of this stage, the waves start as low-frequency alpha waves and eventually will take the form as an even lower frequency theta wave (Advancing Better Sleep T, 2018).

As sleep gets deeper, the body will settle in and relax for the resting period. During this time the heart rate will slow down, the body temperature drops, and muscles will relax as the body prepares for this form of light sleep

(CrashCourse, 2014). Still considered an NREM sleep, multiple brain waves happen during this time, but they are interrupted sporadically by an activity known as a sleep spindle. A sleep spindle also referred to as a sigma band or sigma wave is a short burst of a higher frequency brain wave related to memory and learning (Advancing Better Sleep T, 2017). These spindles are generated in the reticular nucleus of the thalamus. There are two types of sleep spindles that can occur, fast spindles that are 13-15 Hz occurring in the centro-parietal part of the brain and slow spindles that are 11-13 Hz that occur in the frontal portion of the brain (Advancing Better Sleep T, 2017). Along with sleep spindles, a K-complex can occur in this second stage of sleep (MyPsychLab). A K-complex is categorized as a brain wave with high amplitude that occurs in a response to a stimulus from the environment. This arousal could be caused simply by a partner shifting in bed, a temperature change that causes the person to shiver, or a noise loud enough to be heard by the sleeping person (Advancing Better Sleep T, 2018).

Stage three or deep sleep is known as slow-wave sleep due to the delta waves that occur during this time. Delta waves are categorized as slow in speed and have large amplitudes. Stage three of the sleep cycle is less likely to be interrupted as it is the deepest form of sleep (Aramli M, 2017). If a person is extremely tired, this stage can be lengthened each cycle of the sleep pattern. The most trouble with sleeping can also occur in this stage, known as parasomnias, which includes sleepwalking, wetting the bed, nightmares, and sleep talking (CrashCourse, 2014).

Deep sleep progresses into stage four of the sleep cycle, another NREM, which also is represented by the slow delta waves. The body truly takes

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advantage of the deep sleep happening in this stage as the respiratory rate and heart rate drop but increases in the release of growth hormones occur and the immune system restores (Advancing Better Sleep T, 2018). It is not fully studied but it is assumed that during this stage is when the brain performs its reset for the day to begin another. Often stages three and four are referred to together because both are periods of slow wave sleep, SWS. In this slow wave sleep, there is no movement from the body, and it becomes immobile entirely and even the eyes do not move (CrashCourse, 2014).

REM, rapid eye movement, sleep is the fifth and final stage of the sleep cycle and is the brain's busiest time (MyPsychLab). The eyes are moving and dart in many directions while the body remains immobile and briefly paralyzed. This temporary paralysis is thought to be the body's way of protecting itself from injury by acting out one's dreams. A person's respiration becomes irregular and shallow, while the heart rate and blood pressure rise. During this REM stage is when most dreaming takes place (CrashCourse, 2014). Dreams are caused by the irregular brain waves that occur in this stage that resemble a person being conscious and aware (Aramli, M 2017). A person experiences on average, three to five REM periods in their sleep cycle, with the longest one occurring right before the person wakes up (Advancing Better Sleep T, 2018).

Sleep is vital for human life as it is what restores our energy, bodies, and basic abilities to function. If a person is not regularly experiencing the five stages of sleep, his or her mental function and body could be greatly affected. Sleep and understanding the fluctuation between consciousness

and unconsciousness is pertinent to psychology and is very much a part of the framework of the field.

Work Cited

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