

# Functions of sleep



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In today's society sleep is absolutely vital, especially considering that our generation gets less sleep than other generations. We've added about 158 hours to our year of working time, this is equivalent to a month. Alongside this young mothers with children have an extra 241 from as early as the 1960s plus the British work the hardest in Europe but co-incidentally sleep less, and live shorter lives. Sleep functions as many different ways of restoring and stabilizing the human mind and body. Explained by many theorists like Freud who says sleep is the expression of repressed desires. Or Webb & Cartwright who suggest sleep allows us time to think properly about the decisions we make. In this essay I will go through many theories that explain the function of sleep and contrast them.

Freud believed that sleep was the period where human desires and urges are released, through our subconscious because of our fear to release them in public. When we sleep they can be expressed due to the detachment from the outside world, therefore less likely to hurt and affect us. This theory is also known as the wish fulfillment theory. However this theory is not proven, because dream interpretation is subjective. Also the assumption of symbolism in dreams causes varying conclusions in findings. This theory contrasts greatly to many other theories where other theories suggest sleep and dreaming is to stabilize physical issues, or to help the brain manage information collected during the day. Freud suggests that our unwanted desires stick with us from childhood and effectively haunt us in our sleep. This doesn't give dreaming and sleeping much other purpose.

In comparison to this Oswald's theory to explain sleep would be the restorative theory that says sleep is used to repair the body, as well as

repairing the brain. Oswald says that the period of sleep called slow wave sleep, is the period to body repairs and similarly REM sleep is the period the brain goes through reparations. This concept is backed up because during SWS the secretion of growth hormones increases. The brain activity is also higher during REM sleep, this could explain that.

This theory and Oswald's theory these theories could go together. In the way that this is the method used to repair the brain during times of REM sleep. Activation synthesis theory coined by Stern and Morgane support Oswald and his theory on REM sleep. Activation syntheses model suggests that the physiological process of the brain cause dreams they say, backed up by their research that during periods when people are on anti depressants, their REM sleep periods of reduced, REM sleep is supposed to be used to synthesize dopamine and nor-adrenaline, which are used as anti depressants. Being a correlation study it doesn't show causality.

Another theory called Evans theory says the brain breaks away from the outside world, or external world, whilst in the sleeping period. During this time it sorts and manages the data and information that was taken in during the day. This theory suggests the brain is similar to a computer that has big memory capacity and a lot of control programs. These control programs can be learned throughout time and experience, and others are inherited

Sleep, especially REM, is a period where the brain disengages itself from the motor neural and sensory pathways. Whilst going through this disengagement the various programs and memory banks are checked and modified alongside reorganised, based upon the experiences of the day.

Evans theory suggests that we were not consciously fully aware of the amount of management and processing happening whilst in REM sleep.. In Evans view, dreams simply are information collected during the day that is being managed at night, (well not necessarily night), but during the active day and managed during sleep and REM sleep.

Also the theory gives no room for random dreaming, or dreaming with meaning like Freud would suggest. It makes dreams seem like nothing more than a test run on the mental processes of the mind. It doesn't investigate the way in which sleep itself affects the body or the positive and negative functions of sleep. Due to it being unable to prove it will always lack support where as in other cases, like the sleep studies on puppies, we see that the loss of sleep can even result in death.

Crick and Mitchison's theory is based upon the fact that the cortex is very different to other areas of the brain, being that it is made up of interconnected neuronal networks, in these networks every cell has the ability to excite cells beside it, however because of this if there's an overload of information it is easy for the networks to malfunction, manifested in fantasies, or weird associations. To counteract this, the brain fixes and tunes the network. Due the brain being offline during Sleep and REM, it can easily tune the networks by randomly activating networks and eliminating spurious connections. This theory goes quite well with the theory before due to the way in which the brain is perceived more as a computer than as a human component. It believes dreams are simply cleanups and the theory before believes that they are test runs, they both believe they are a form of fixing the brain whilst sleeping. All these theories so far believe that the majority of

activity happens through REM sleep. Only theories that talk about the effects of sleep loss actually reduce the amount REM sleep is focused on and sleep as a whole is looked at.

However unlike the theories that suggest that we sleep to express unwanted desires, or theories that suggest that we sleep to manage heavy loads of information. Maas says we sleep to produce energy to remain conscious.

Maas says we all have our own sleep accounts that consist of 8 hours to cancel out 16 hours of continuous alertness. When compared with the theory by Theorist Derment who says that the majority of us have heavy sleep debts. A lack of rest that accumulates for as long as months and as short as days and this is potentially lethal. We've seen it countless times how we function without sleep, pilots who land planes recklessly due to sleep deficit, and drivers who can't stay awake whilst driving. The Exxon Valdez disaster and the challenger space shuttle disaster were caused by sleep debts.

Problems with lack of sleep as said by Hilber-Weidman, 1976 are impaired attention, delusions. These theories highly support each other and definitely influence the idea that sleep is mainly a way of refuelling conscious to make it through the next 16 hours of constant alertness.

Another theory is the problem solving theory by Webb & Cartwright, they suggest that dreams and sleep allow people to disengage and think properly, and then come up with solutions this explains the phrase "sleep on it". This theory can be proven true because people who suffer from more problems have longer REM time. This theory can be linked to most of to Evans and Crick and Mitchison's theory, due to the idea that after a cleanup the brain can then produce more accurate answers once the day's events had been

entirely processed. This theory suggests that REM sleep is vital to the decision making process, especially the big ones.

However the earliest of the systematic sleep deprivation studies of 1894 reported haemorrhages in the cortex of puppies which were terminally deprived. Each succeeding experiment would typically report a new change and a failure to find the changes reported in the previous experiment

Recent studies have found there is a single chemical on which the transformation of food energy to bodily useful energy is dependent. This compound known as ATP adenosine triphosphate is a necessary catalyst for energy release. Recent research has found substantial evidence to support the fact that after about four days of sleep deprivation the production of this critical energy substance almost ceases. A further sleep return this balances to normal these four theories in contrast the other theories suggest that sleep has more a direct effect on our immediate health. In some cases linking lack of sleep to death, however this theory has only been tested in puppies. However because this research is only tested on animals we cannot apply it to humans. These theories investigate more into the biological effects of sleep loss and explain parts of sleep the other theories don't touch on. Freud doesn't investigate what a lack of sleep produces in the mind, Oswald doesn't propose that if not enough sleep is achieved than our brains malfunction. These tests and studies try to investigate into the direct link between sleep loss and health.

In conclusion the theories I have investigated into all provide a very wide look into the functions of sleep. When combined together they give a good

insight into its possibilities. Theories on the brain disengaging from the body during REM sleep to fix itself is a valid argument when put alongside Oswald's restorative theory that suggests the body and brain heal during sleep and REM. This also corroborates with the theories and studies that show how important sleep, and dreams are to being healthy, alert, and stable. There are many different explanations for the functions of sleep, and I believe that they can all be applied together to understand sleep properly.