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The effects of conditioned voices on increasing consciousness during sleep

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ABSTRACT

Although many researches have been performed about sleep, many aspects of this phenomenon are still unknown for us. One of the interesting topics in this area is Conditioned Voices, which has interesting effect on human behavior. Conditioned voices are defined as ones that arouse certain reactions in individuals because, they have happened simultaneously with unconditioned stimuli for a period. These kinds of voices have intriguing effects on human behavior. In this study, the effect of Conditioned Voices has investigated on 30 men during their REM and NREM sleep at night. These men were in the third decade of their life, and a specific set of Conditioned Voices has been applied to each of them in order to scrutinize the hypothesis, which suggests conditioned voices help the brain to reach its consciousness easier than unconditioned voices. The results of chi-squared test represent significance of statistical analysis and confirmation of the hypothesis. Statistical analyses have showed the effectiveness of conditioned voices on increasing consciousness during sleep. In other words, when people are in REM and NREM sleep, a part of their brain remains sensitive to the type of the input voices, and it can restores the body consciousness to a normal level.

1. Introduction

One of the constant important unknowns in the history for people, who have been searching for knowledge, is the sleep matter. It is a state of body in which people consider themselves in relaxing, emotionless state and having no connection with outside of the world. In each age of science throughout history, theorists appeared and tried to set theories based on their findings and experiences for explaining sleep. Today, scientific age is in a condition, in which theoretical views without scientific hard evidence do not have strong authenticity. Thus, the research process of scientists moves toward research-based.

This path of knowledge contains specific parameters, clear research and thought methods, which facilitate comprehension and testing of theories.

Therefore, Most of the researches have been done in sleep fields had biological or behavioral subjects in order to determine outer and behavioral aspect of variables effects on sleep.

Almost all the results of researches have been done by scientists and researchers in field of sleep with biological aspect implies to same data. Sleep consists of several stages and periods which all of them are subsets of two main periods.

Among living organisms, specifically the human race, sleep starts with a latency stage, which is a kind of relaxed wakefulness and happens as an individual starts sleeping. Even so, they have not drift into the main sleep yet. The duration of this stage is different among individuals and depends on their diseases or other problems.

Instantly, after the end of latency stage, sleeping person goes into the first main part of sleep with appellation 'NREM'. In the first stage of NREM sleep, less than half of the waves are Alfa-wave. During the next period, called stage 2 of NREM sleep, spindle waves and K complex can be prominently seen (Kalat, 2015).

The first two NREM stages are called light sleep. Usually when someone is waken in these stages, expresses that they have been experiencing a light dreamless sleep (Drouct et al., 2015).

On the contrary, the two next stages of NREM sleep are known as deep sleep, due to the fact that, person goes into the deepest possible level of sleep and normally awaking him/her in these stages are more difficult than two previous ones. During stage 3 and 4, sleep waves are large-amplitude ones with much slower speed. That is the reason; deep NREM sleep is also called slow-wave sleep (Drouct et al., 2015).

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As soon as NREM sleep stages finish, sleeping person slowly progresses through the REM sleep in which rapid eye movements (REM) is the main characteristic of this period. Moreover, the other features of REM sleep represent the similarity between this sleep period, and when a person is conscious and awake. One of the observable behavioral REM sleep symptoms is complete lack of chin muscle tonus (Drouct et al., 2015).

On top of that, during REM sleep, human brain has the highest level of activity. Scientific hypotheses suggest that most dreams happen in this period.

All of these results are from waves and biological basis, which are related to stages and periods of sleep from visual analysis of 30 seconds of EEG, represented analysis (Drouct et al., 2015).

Sleep has a significant impact on human manner and operation, particularly on working people and children in developmental stages. The theory of chemical transmitters has shown that growth hormone (GH) in infants is mostly released over sleep; therefore, enough sleeping has a vital role in childhood development **B**Kalat, 2015).

According to researches have been done by Giesbrecht et al. (2007), sleep exerts a considerable influence on human psyche. There is clear evidence that sleep can directly affect the behavior, thoughts and emotions (Giesbrecht et al., 2007).

Furthermore, sleep deprivation causes discreteness in these three human aspects. All researchers in this study came up to this overall conclusion that sleep deprivation results in mood deterioration in most psychological aspects (Giesbrecht et al., 2007).

A group of scientists, in the late 20th century, concluded that sleep considerably impacts on consciousness. On the other hand, sleep interruption has serious repercussion on consciousness level and function (Jewett et al., 1999).

In accordance with the study from Frenda, Patihis and Loftus (2014), it is comprehended that disruption in sleep-wake rhythm affects memory performance (Frenda et al., 2014).

It is demonstrated that sleep loss mostly effects on working memory when people are dealing with some issues.

In recent centuries, experiments have been widespread in regard to conditioning stimuli for animals, eventually, a Russian psychologist, Ivan Pavlov with the help of his well-known experiment on dogs, in which he collected and measured saliva and scrutinized the dog responses to food that considered as an unconditioned stimulus and compared it to the amount of dog saliva which is confronted to the sound of a bell considered as conditioned stimulus, could represent a comprehensive accurate definition of classical conditioning.

On the other hand, another renowned scientist, B. F. Skinner carried out a scientific experiment with detailed parameters and introduced operant conditioning to the science world.

In the context of conditioning, we need to explain some expressions like conditional stimulus (CS), unconditional stimulus (US), conditional response (CS) and unconditional response (UR).

In common, classic conditioning consider as a process whereby we cause a unconditioned stimulus lead to controlling response versus stimulus by simultaneity with stimulus make one response that had been neutral before, as in next event, neutral stimulus will motivate the same similar response of unconditioned stimulus (Follette and Dalto, 2015).

Classic conditioning is the most straight and clear associative learning sample which somehow leads to progress in stimulus-stimulus approaches (Follette and Dalto, 2015).

The information about the amount of adjacency between CS, also the information that CS presents about event of US to researchers and US have been noticed by many scientists (Rescorla and Wagner, 1972).

The conditioned voices in individuals are different and various but people's reaction against these conditioned stimuli are almost limited to few special cases.

The conditioned voices are somehow the same voices, which are familiar for each person, arouse special mode and associate particular events or memories. Some music that individuals have been conditioned to them over time. When a person is listening to a special song, represents some changes in his/her behavior, in that time he is saying the hypothesis of researchers which have studied this topic.

The experiment has been done in 2007, had indicated one person can easily understand the concepts of voices in noisy environment along with different noises (Rosenblum et al., 2007).

It means person in that influx of noise pollution has ability to discriminate between different voices and familiar voices which heard before, also can process the contents of it.

In addition, some voices that consider as a familiar voice by him/her have ability to process of locating about received voices in human mind. Hence, person can get into the location of familiar voice in crowded environments (Johnsrude, 2013).

Some of electrophysiology studies have audited the correlation of placement voices in cognitive memory with conditioned voices (Wilding and Rugg, 1997).

Craik and Kirsner were first peoples in 1974 that experimented the role of voice fixing on memory performance or play over words which have being said (Craik and Kirsner, 1974).

Researchers find out subjects have better and faster operation in cognitive consecutive test, when listening to the similar and familiar words during test run.

2. Materials and methods

Examinations for evaluating the hypothesis of current study, have been done on 30 male

participants with a mean age of 24 years (SD= 24, range= 20-30).

In this experiment, there were some variables, which were controlled in both, experimental and control groups such as lightness, redundant voices, sleep time, comfort and tranquility of the experimental environment, and also environmental changes like voices produced by climatic fluctuations.

Current study has focused on overnight sleep and the impacts of conditional/conditioned voices on normal nightly sleep.

Before experiment started, subjects had been asked to clearly define the voices that they were sensitive to or were conditioned by. In the next step, by using Adobe Audition Software, mentioned voices were edited and converted into intended and scientific quality.

All the experimental voices (conditioned or unconditioned) had three main design features, including: a frequency between 6000 to 10000 Hz, lower sound intensity of 35 Db and playing in 150 cm distance from participants' ears.

One of the researcher's assumptions was that unconditioned voices with mentioned features could not awaken subjects. In order to prove this assumption, an examination with unconditioned voices was carried out on sleeping subjects and none of the participants was awakened.

The conditioned sounds by participants were included: ringtone, doorbell, parent's calling and even car alarm.

Then, in mentioned conditions, the sounds were converted into the ones with a quality that was mentioned earlier, so that they would not result in awakening, sleeping subjects, for the following reasons: sound loudness, annoying soundtracks and short distance between sound player and subject's ear.

When sleeping subjects were awakened because of hearing their specific conditioned voices, conscious signs like getting up from their berth or opening their eyes, were recorded in detail. It was considered that none of the subjects has hearing loss, hearing problems and sleeping sickness.

In all cases mentioned, participants after the end of examinations and waking up in the morning completely remembered everything had happened during the previous night.

3. Result

When all 30 subjects (mean age: 24) were tested through the experiment, results were collected as raw data and have analyzed by SPSS 17 statistical software.

Among 30 participants which were tested by conditioned voices in the second part of experiment, 28 subjects became almost conscious and just 2 participants did not show any reaction to their own conditioned voices.

In addition, in the group that were presented to them neutral, unconditioned sounds, none of them does not have any reaction to above determined characteristics, and they were not awakened by presented sounds.

In second step of the experiment in which conditioned voices were played for sleeping subjects, Statistical analyses were performed using Chi-Square test. Results revealed significant difference between the number of subjects who became conscious and sleep ones (Table 1 and 2).

Table 1: Count (second step of the experiment)

		voice		Total
		conditional	unconditional	
response	awake	28	0	28
	deny	2	30	32
Total		30	30	60

Table 2: Chi-Square Tests (second step of the experiment)

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	52.500[a]	1	.000		
Continuity Correction[b]	48.817	1	.000		
Likelihood Ratio	68.215	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	51.625	1	.000		
N of Valid Cases	60				

The error of measurement which is considered in this test is 0.005 and as seen in Table 2, the achieved number for sig was less than the error of measurement which indicate overall meaningful results of this test.

4. Discussion and conclusion

At the end of statistical analysis in this test, the researcher's hypothesis confirmed based on the effects of conditioned voices on increasing consciousness in sleep.

In this experiment despite of spread combinations of different scientific cases, which for testing the hypothesis of conclusion resulted according to obtained data, and statistical analysis of them, the conditioned voices for every person have

meaningful effect on quality of relative consciousness of person in sleep. It means familiar voices of every person causes person awakening in sleep which the amount of awakening quality depend on provided intensity of the stimulus and other factors.

The accomplished experiment indicate the way towards the more controlling of people for taking biological modes of body to human, modes like sleep that still other aspects is latent for humans.

To control unavailable conditions of patients' body was being one of the specialists' constant demands in medical field. Perhaps the results of this experiment elicit thus some people in low level of consciousness, like comatose peoples or peoples in coma, can force to operate the biological organs related to referring persons from uncontrollable mode by confronting to familiar and conditioned voices by them.

In addition, in usage of psychotherapy through the field of hypnotherapy, peoples in high level of hypnotic can referred into their normal level of physiology through these voices and methods, which this test has been investigated.

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