**NICOTINE'S ADDICTIVENESS LINKED WITH MEMORY BOOST**

1. Nicotine's addictive properties are closely tied to its ability to improve memory and learning, new research has shown. The findings present an obstacle to using the tobacco chemical, or similar artificial drugs, to treat conditions such as Alzheimer's disease.
2. Previous research has shown that nicotine boosts memory and alertness, both of which are lost by Alzheimer's patients. But nicotine is difficult to administer other than by smoking, and is highly addictive. Although not as toxic as other tobacco chemicals, it may have some harmful side effects, especially during pregnancy. Pharmaceutical companies are keen to develop safe nicotine-like substances for Alzheimer's and other forms of dementia.
3. The research presented at the Forum of European Neuroscience meeting in Geneva, Switzerland, shows why this goal is so elusive. Scientists led by Professor Ian Stolerman, from the Institute of Psychiatry at King's College London, studied the underlying mechanisms behind nicotine's effects on the brain. They identified the role of nicotinic receptors - proteins that respond to nicotine - and several neuro-signalling chemicals in the brain, including dopamine, noradrenaline, glutamate and serotonin.
4. Prof Stolerman said: "We found several similarities and only small differences between the cognitive mechanisms and those involved in the addictive effects of nicotine. The cognitive 'boost' that many smokers experience from nicotine probably contributes to the reason people smoke cigarettes, so it may not be possible to totally prevent addiction. Nevertheless, the potential for abuse of a medicine based on a pure nicotine-like substance is likely to be very small."
5. The new findings may speed the discovery of agents that are better brain boosters than nicotine, with longer lasting effects, he said. "This is a promising stage in the years of research that have endeavoured to separate the beneficial from the harmful effects of nicotine," Prof Stolerman added.
6. Professor Clive Ballard, director of research at the Alzheimer's Society, said: "Nicotine has previously been shown to help treat Alzheimer's disease in animal studies. This new review brings together evidence to explain the processes behind this and which types of nerve cells nicotine affects in the brain. "Although nicotine has therapeutic qualities, when it is absorbed through smoking the health risks outweigh the benefits. Smoking increases risk of vascular dementia, the second most common form of dementia and is associated with a number of other health risks. More research is now needed to find a safe and effective treatment for dementia, with the potential benefits of nicotine, but without the health risks."

**Section A: Definitions**

1. nicotinic receptor
2. nicotine
3. vascular dementia

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**Section B: Study Summary**

**Summarize the details of the study reported in the article. In your answer cover the following factors: research questions/hypotheses, procedure (including sample size, duration, manipulation), results, and conclusions.**

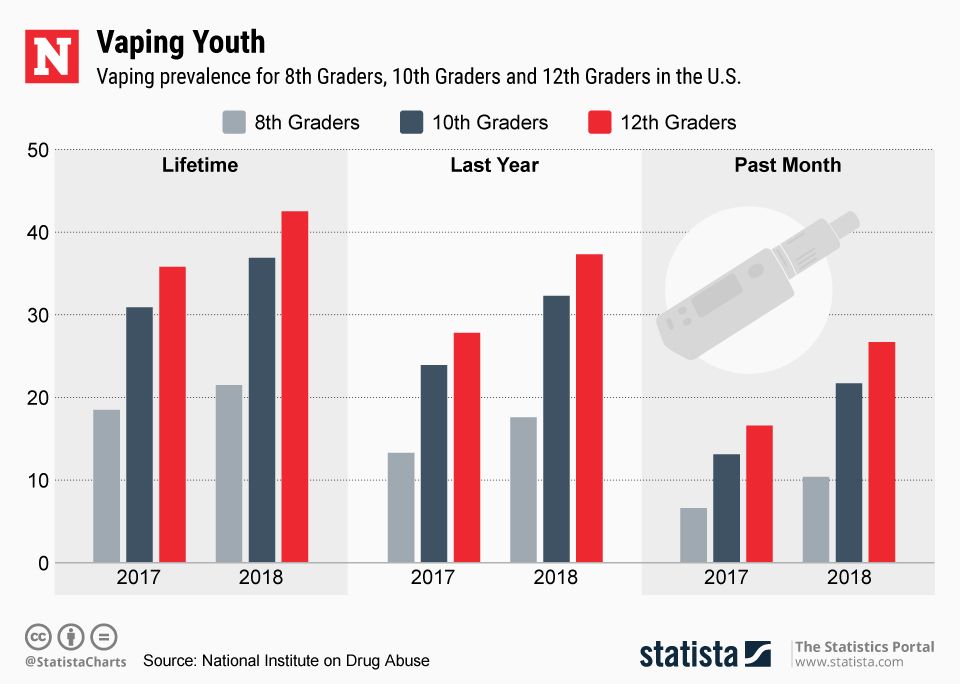
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**Section C: Comparing and Contrasting (20 points)**

**Compare the results of the different experimental conditions, referring to both similarities and differences. Write at least 4 sentences. Use suitable connectors to express the points of comparison. Use some of the following expressions:**

*similar similarities different differences in contrast both on the other hand likewise although unlike while like whereas differ*

**Section D: Describing Trends**



**Introduce the graph** (the variables and the unit measures, and what each axis represents). Then, **make up at least 3 sentences** to describe the trends it presents. Close your description with **a concluding sentence**, referring to the main trend/s shown in the graph.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section E: Parts of Speech - Vocabulary**

|  |  |  |  |
| --- | --- | --- | --- |
| **Verb** | **Noun** | **Adjective** | **Adverb** |
| addict | addiction  addict  addictiveness | addictive | addictively |
| enable | ability | able | ably |
| harm | harm  harmfulness  harmlessness | harmful  harmless | harmfully  harmlessly |
| affect  effect | effect  effectiveness | effective | effectively |
| develop | development  developed | developed  developing  developmental | developmentally |
| identify | identification | identified |  |
|  | similarity | similar | similarly |
| differ | difference | different | differently |
| benefit | benefit | beneficial | beneficially |

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to other artificial drugs, the tobacco chemical also poses an obstacle to treating Alzheimer's disease.
2. The current study shows that nicotine is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to improve memory skills.
3. The researchers tried to distinguish between nicotine’s benefits and the potential \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it may cause.
4. Cigarette \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ find it hard to stop smoking due to the cognitive 'boost' it gives them.
5. The researchers concluded that although nicotine may be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to people’s cognitive performance, it is too risky for our health.
6. Cognitive mechanisms and mechanisms involved in the addictive effects of nicotine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ only slightly form one another.
7. As nicotine has proven cognitively beneficial, pharmaceutical companies are working on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of safe nicotine-like substances for various forms of dementia.
8. It has been known for years that nicotine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both the body and the brain.
9. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the role of nicotinic receptors could teach us ore about its potential harm and benefits.

**Section F - Grammar:**

1. In an intriguing test, which (1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (conduct) in 2012, researchers (2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (try) nicotine patches as a memory booster for nonsmokers with mild declines in their thinking ability, a precursor to [dementia](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001748/) or [Alzheimer's disease](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001767/). They (3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (find) improvements in attention and memory performance in patients who (4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (take) the nicotine patch compared to those with the placebo patch, according to lead researcher [Dr. Paul Newhouse](http://kc.vanderbilt.edu/site/people/20801/newhouse-paul.aspx), a Vanderbilt University psychiatrist. He says, "The placebo patients (5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (stay) the same or got worse."
2. Though the study (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (be) modest in size, as it (7) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (involve) about 70 people over six months, lead researcher Newhouse says it's the largest [trial](http://clinicaltrials.gov/ct2/show/NCT00091468) ever performed looking at how nicotine might improve memory. Previous research (8)\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (link) nicotine to improved alertness, coordination and cognitive functioning. The latest work, which (9) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (publish) in Neurology, (10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (suggest) it may help improve attention, memory and mental processing in people with mild memory loss.
3. So how does nicotine affect memory? The chemical actually (11)\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (mimic) the neurotransmitter [acetylcholine](http://neuromuscular.wustl.edu/mother/acetylcholine.htm), which (12) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (stimulate) nerve cell receptors in the brain. Stimulating these receptors (13)\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (boost) the system involved in attention, learning and memory skills.