Dentists prone to visual illusion

Named after its creator, Joseph Remi Leopold Delboeuf, a Belgian scientist, the illusion was first documented in 1865. It has been reported to be used by restaurants to trick customers regarding the size of their dishes by using smaller plates, among other things.

“When operating, health-care providers try to save as much healthy tissue as possible. It is important to know that their eyes can deceive them into removing more healthy tissue than necessary,” lead author of the study and psychology expert from the University of Otago in Dunedin, Prof. Robert O’Shea commented.

Dental memories haunt brains

The sound of a dental drill or suction system evokes a feeling of fear in almost every tenth dental patient. New findings presented by Japanese researchers at a recent neuroscience meeting in the US have revealed new insights into how the brain of anxious patients may react during treatment.

Using functional magnetic resonance imaging, a neuroimaging procedure to measure brain activity, the researchers found stronger activity in the left caudate nucleus in anxious patients when playing them sounds of various dental instruments. When neutral sounds, like a French horn or pure tone, were played, however, activity in this region was found to be significantly lower.

No significant neural activity was detected when the same sounds were played to a control group of non-anxious patients. Instead, these patients showed stronger brain activity in the right and left superior temporal gyrus, a part of the brain usually associated with auditory processing and other neural functions.

“Recent studies have indicated that the basal ganglia, including the caudate nucleus, may play a role in learning and memory functions. The subjects in the dental fear group therefore may be receiving feedback from memories of sounds of dental treatment,” researcher Hirofumi Karibe from the Nippon Dental University’s Department of Pediatric Dentistry in Tokyo suggested. He said that the findings, which have not been published yet, could be applied to assess the effectiveness of conventional interventions for dental fear, such as cognitive behaviour therapy.

The study is the first to have measured how the sounds of dental instruments relate to brain activity. It confirms the assumption that dental anxiety is mainly due to reasons other than the fear of experiencing pain through surgery.

Minamata Convention bans products, Agrees to amalgam phase-down

Certain products containing mercury will be banned from 2020, according to a new international treaty signed in Minamata in Japan. The regulations apply to the production and trade of batteries, cosmetics and fluorescence lamps containing the toxic material, among other products. Amalgam dental fillings are not affected by the ban.

However, the treaty agreed on a number of provisions on the phasing down of the controversial dental material. The Convention, which was proceeded by five inter-governmental negotiation rounds and an international conference in Minamata in January, was signed by 87 countries. Governments now have three years to develop and implement national strategies to reduce or eliminate the production and industrial use of the toxic metal. Mercury emission from large-scale industrial plants, the main source of mercury pollution worldwide, will also be controlled.

Dental associations reacted positively to the decision, which will permit the use of amalgam as a restorative dental material for the years to come. Dr Stuart Johnston from the British Dental Association, who took part in the negotiations on behalf of the FDI World Dental Federation, commented: “We are delighted that the Minamata Convention allows the dental profession continued access to a key restorative material. Dental amalgam is safe and effective: it has been in use for over 150 years and not shown to be demonstrated any harm to human health.”

He said that despite amalgam not being banned by the treaty, however, the dental profession is committed to phasing down the use of the material through the prevention of dental diseases, the development of alternative materials and effective amalgam management. Guidelines in this respect for professionals, health officials and the public are currently being compiled and will be released by the organisation soon. The initial steps have already been taken with a pilot project launched recently by the FDI in partnership with the United Nations Environment Programme in East Africa that aims to train professionals in the country on managing and recycling amalgam waste more effectively.

Amalgam remains one of the most widely used restorative materials worldwide. Particularly in developing countries, it is often the only affordable means of treating dental cavities, despite the availability of other methods, such asatraumatic restorative treatment. Unfortunately, it is also a significant source of mercury pollution. Recent national tests conducted in Pakistan, for example, found that levels in urban dental hospitals and practices were up to 20 times higher than acceptable levels, which was considered largely due to poor amalgam waste management.

According to estimates by the United Nations Environment Programme, between 300 and 400 metric tons of mercury is used in dental fillings every year worldwide, a tenth of the world’s annual consumption.

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