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Watch to Eat Less: VR Videos Curb Candy Cravings

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Summary: Researchers find that watching immersive videos of candy consumption can significantly reduce one's craving for sweets. Participants who viewed the video 30 times ate an average of a third less candy compared to the control group.

The phenomenon, known as 'habituation,' shows that repeated visual cues diminish the desire to eat. Adding a scent cue like the smell of chocolate further enhanced this effect, leading to even fewer candies consumed.

Key Facts:

1. The study involved 317 Singapore residents aged 21-28, reflecting the multi-racial society of Singapore.
2. Watching an immersive video of candy consumption 30 times led to a 32-38% decrease in candy eating, equivalent to around three pieces less.
3. Adding the scent of chocolate to the immersive video experience further decreased candy consumption by 11%.

Source: Nanyang Technology University

People who have watched repeated immersive videos of others consuming candy, subsequently have a significantly decreased craving for it, a team of scientists from Nanyang Technological University, Singapore (NTU Singapore) has found.

Immersive video viewing involves using innovative technologies, such as virtual reality (VR) or augmented reality (AR) headsets, 360-degree videos, and motion tracking, to transport the viewer into the video itself, allowing them to feel like an active participant rather than a passive observer.

Previous studies have found links between watching an immersive video once and then reporting a decreased appetite but have not investigated the impact of repeated exposure to the videos.

The NTU team will be conducting further research to explore the long-term effects of visual immersive exposure to a certain food product on a person's craving for it. Credit: Neuroscience News

They found that viewers who watched the immersive candy-eating video 30 times subsequently consumed an average of a third less candy (32% to 38% less candy), equating to around three pieces less.

This is compared to those who ate an average of ten pieces of candy after watching the control video, which showed a single coin being inserted into a laundry machine 30 times.

The NTU researchers suggest that repeatedly watching the videos makes the participants imagine themselves ingesting and tasting the candy, leading them to think or believe that they had already consumed the candy, reducing their desire for it.

The researchers explained that the reduced desire for candy was caused by an effect called habituation, which is a decrease in one's physiological and behavioral response resulting from repeated stimulation.

Individuals who are habituated therefore become less motivated to respond to food cues, showing less desire to obtain or consume the food item.

To measure the effect of repeated exposure to immersive videos on a person's desire to consume candy, the researchers offered M&Ms candy to participants who had watched an immersive video of people consuming M&Ms that was repeated 30 times, totaling eight minutes of viewing.

The study involved 317 Singapore residents, of 21 to 28 years of age, with the demographics of the participants reflecting the make-up of Singapore's multi-racial society.

Assistant Professor Benjamin Li Junting, from NTU's Wee Kim Wee School of Communication (WKWSCI), who led the study, said, "Our findings suggest that viewing food-related immersive videos may be a way to induce satiation and reduce the amount of food consumed after watching.

"This could be helpful for individuals looking to curb their appetites or manage compulsive eating behaviors. For example, clinicians might tap into habituation as a psychological mechanism in therapy interventions for patients.

"This can possibly appear in the form of repeated viewings of other people eating food, leading to reduced desire to eat or induce feelings of satiation or fullness."

The researchers said the study was inspired by mukbang videos, which originated in South Korea and are known for showcasing excessive food consumption.

They added that their findings could contribute to a deeper understanding of how immersive videos impact binge eating habits and inform strategies for designing interventions or guidelines to promote healthier eating behaviors in media consumption contexts.

The immersive nature of these videos, combined with their visual and auditory stimuli, sparked interest in understanding how watching such content could potentially impact binge-eating habits.

The researchers were curious to investigate whether immersive videos, such as mukbang, could evoke strong cravings or trigger unhealthy eating behaviors in viewers. However, the results suggest that the opposite behavioral effect is taking place.

Co-author of the study, Lee Hui Min, a master's student from NTU's WKWSCI, said, "We were intrigued by the mukbang phenomenon where people seem to enjoy watching others eat large amounts of food, with some reporting feeling full afterwards.

"We were motivated to find out if there was a way that we can explore this through a series of studies and determine if watching food consumption videos can have effects on their actual eating behavior."

Asst Prof Li added, "Mukbang videos might be satisfying cravings and potentially causing people to consume less food. It appears that seeing so much food being consumed has the possibility of inducing habituation among viewers leading to some kind of satiation."

The findings were recently published in the journal *Scientific Reports*.

Want to crave it less? Smell it more

Adding on to their study, the researchers wanted to test if another stimulus—smell—while watching immersive videos of candy eating, could impact participants' desire for candy, as scent plays a significant role in our perception of food and our eating behaviors.

Studying the impact of smell in immersive videos allows researchers to understand how the combination of visual, auditory, and olfactory stimuli can influence individuals' eating behaviors and cravings. It helps to explore whether the inclusion of smell in immersive videos intensifies the desire to eat or affects food-related responses, such as appetite regulation or satiety cues.

To test the effect of scent on consumption combined with visual stimuli, the researchers repeated the experiment and diffused the scent of chocolate while participants watched the same immersive videos 30 times, as in the previous tests.

They found that smelling chocolate while watching the videos resulted in the participants consuming fewer M&Ms (11% less candy), or one less piece of candy, than if they watched the same repeated videos without the scent.

The researchers found that by adding an olfactory cue, the chocolate scent, to the previous experiment, participants cumulatively ate an average of four pieces less of candy.

Asst Prof Li added, "Smelling chocolate had a similar, habituating, effect as watching people consuming chocolate and decreased the participants' desire for the candy. Our study found that exposure to food scent cues alongside visual food cues can lead to a sensory stimulation of tasting the food.

"Some researchers have termed this embodied cognition. This makes sense as the experience of food consumption typically involves more than one sense,

and the addition of a food scent appears to enhance the effect of one feeling satiated, or full."

The NTU team will be conducting further research to explore the long-term effects of visual immersive exposure to a certain food product on a person's craving for it.

Lee added, "As we only tested a chocolate scent in our study, we are keen to explore if the results might be different for other types of smells, for example, savory scents like garlic, or scents of greasy foods like French fries.

"There is also the question of whether the length of scent exposure will have a stronger influence, and whether the results of habituation through watching 360-degree videos persist over time."

They expect that watching videos repeatedly over a period, such as a week, would help reinforce the participants' decreased appetite for chocolate.

Asst Prof Li added, "In future studies, we hope to test the long-term effects of repeatedly watching such immersive videos. We hypothesize that it would have a long-lasting effect on eating behaviors, as the visual and olfactory stimuli could be learned by participants, such as in the well-known physiology experiment Pavlov's Bell, conducted by Russian physiologist Ivan Pavlov, where subjects learned a behavior or bodily reaction after being repeatedly conditioned to stimuli, such as an audible or visual cue."

About this neurotech and food craving research news

Author: Lee Hui Min
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Image: The image is credited to Neuroscience News

Original Research: Open access.
"Exploring the effects of habituation and scent in first-person 360-degree videos on consumption behavior" by Lee Hui Min et al.
Scientific Reports

Abstract

Exploring the effects of habituation and scent in first-person 360-degree videos on consumption behavior

Although immersive virtual environments can influence food-related thoughts, emotions and behavior, the influence of repeated exposure to food cues in such environments has rarely been explored.

This study seeks to understand if habituation, a decrease in one's physiological and behavioral response that results from repeated simulation, can take place while repeatedly watching 360-degrees of food being consumed.

The influence of scent as an olfactory cue is further explored, based on past research on embodied cognition.

In Study One (n = 42), participants who viewed 30 repetitions of someone eating an M&M ate significantly fewer M&Ms than those who viewed three repetitions.

Study Two (n = 114) used a 2 (behavior: eating M&M/inserting a coin) × 2 (repetitions: 3/30) between-subjects experiment to confirm that results from Study One were due to habituation of the consumption video, finding that there were only significant differences between repetitions in the M&M condition.