

SHORT COMMUNICATION

Effect of movie violence on mood, stress, appetite perception and food preferences in a random population

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Very little is known about media violence and its effect on appetite and eating behavior. The present study aims at investigating the immediate acute effect of violence in movies on mood, stress, appetite perception and food preferences in a real-life setting. A total of 447 subjects (F = 202; M = 239) completed a validated visual analog scale to record their subjective feelings of hunger, satiety and desire to eat immediately at their way out of any of the three types of movies (horror, romance/comedy and drama/action). There was a significant difference between the three movie categories for the tensed feeling ($P=0.003$), anxiety ($P=0.021$), the sleepy feeling ($P=0.000$) and a preference to eat something sweet ($P=0.019$). Horror/violence movie types affected the subject by making him feel more stressed and anxious; however, romance made him feel sleepier and less tensed. Movie types did not seem to affect hunger or appetite directly, but rather triggered some food preferences.

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INTRODUCTION

Movie and TV watching have been associated with an increased risk for obesity. Weight gain is promoted because of both the sedentary behavior aspect of watching TV/movies and the increase in energy intake while doing the activity (snacking, eating alone and impulsive eating). A distinctive feature of several recent TV series and movies is violence. Violence exposure has been shown to have effects at a psychological level, such as change in attitude toward aggression and making people prone to violent acts and in developing addictive behaviors in children and adolescents.^{1,2} However, violence in media also acutely affects the body at a somatic level. In fact, media violence increases heart rate,³ blood pressure⁴ and affects cardiovascular health at a more general level.⁵ Although extensive work has been done on the effect of media violence on attitudes, behaviors and cardiovascular health, very little is known about media violence and its effect on appetite, eating behavior and attitude toward foods specifically. Can exposure to media violence directly trigger food consumption? Would watching violent scenes affect our appetite control system through stress and shift our food preferences? Recently, Siervo *et al.*⁶ have found that in a randomized controlled setting playing video games involving violence affected blood pressure and appetite compared with playing nonviolent games or watching TV; they concluded that the harmful physiological effects of violent video games extend beyond their contribution to sedentary behavior.

This study aims at investigating the immediate acute effect of violence in movies on mood, stress, appetite perception and food preferences in a real-life setting.

PROTOCOL

A total of 447 subjects (F = 202; M = 239) completed a validated visual analog scales questionnaire to record their subjective feelings of anxiety and stress, depression, sleepiness and tiredness, hunger, satiety, food preferences and desire to eat

immediately at their way out of a movie. Movies were divided into 3 categories: (a) horror, $n=96$ (Mama, The Conjuring); (b) romance or comedy, $n=188$ (Safe Haven, Scary Movie, Pitch Perfect, We're the Miller, Turbo, Smurf, Planes); and (c) drama/action, $n=163$ (Lonely place to die, Jack the Giant, Olympus has fallen, GI Joe, Snitch, Pearsy Jackson, Two guns). Participants were selected as a convenient sample before getting into any of the movies they chose and were asked whether they would agree to answer a questionnaire straight after the end of the movie. Movie theaters were located in Beirut, Lebanon. Body weight and height and the time of last meal were also recorded.

The statistical analysis was done on SPSS v.17 (SPSS Inc, Chicago, IL, USA). Descriptive statistics were first conducted, followed by One-way analysis of variance to test for differences between different movie categories. Pearson's correlations were used to determine the relationship between variables. We chose to analyze only nine of the questions that are relevant to the research question to avoid possible results owing to excessive statistical analysis. Significance was set at $P < 0.05$.

RESULTS

Average age was 21.7 years (s.d.=5.0) and average body mass index was 23.4 kg/m² (s.d.=3.9). There was a significant difference between the three movie categories for the tensed feeling ($P=0.003$; action > horror > romance), the anxious feeling ($P=0.021$; horror > action > romance), the sleepy feeling ($P=0.000$; romance > action > horror) and a preference to eat something sweet ($P=0.019$; romance > action > horror). The hunger feeling was highly correlated with a high preference to eat something sweet, fatty, salty or savory ($P=0.000$ for all), but it did not correlate with any of the tensed, stressed or anxious feelings. However, the time of last meal positively correlated ($P=0.000$) with the following question: how much do you think you can eat? The sleepy feeling correlated with a preference for

sweet ($P=0.014$) and fatty foods ($P=0.000$). Men showed higher appetite ($P=0.001$) and hunger feeling ($P=0.042$) after any type of movie compared with women. They also showed higher preference for eating something fatty compared with women ($P=0.03$) independently of movie type. No other gender differences for the main outcomes were noted.

Our study, which completes previous work by Sievro *et al.*⁶ on violence in video games, elucidates the acute effect of violence and its consequent stress on food intake and preferences in a real-life setting. Our study is a step forward going beyond the classical energy balance theory for explaining obesity. It allowed us to have a first vision on the impact of receiving violence passively through watching a movie for 2 h on our stress level and therefore on our eating behavior and food preferences. The study is very basic in its design, and stems its strength in that it is integrated in real-life situation and it is not an imitation of the reality in a lab. Horror/violence movie types affected the subject by making him feel more stressed and anxious; however, romance made him feel sleepier and less tensed. Movie types did not seem to affect directly hunger or appetite but rather triggered some food preferences, such as a preference for sweet after a romance movie, which was the opposite for a horror movie. Those results are different from the previous results by Sievro *et al.*⁶ in which they showed that men who played violent games had a higher preference for sweet foods. The difference can be explained by two hypotheses: first, in our study there was no randomization (only convenient sampling), which means that we are not sure whether the people who prefer sweet usually pick romantic-comedy movies and people who prefer fatty or salty food usually pick violent/thriller movies. It is essential to have in a future study a randomization into different types of movies. Second, our study did not have correction for meals before and during the movie, and it was passive watching, whereas in the video games it is an interactive process, and no food was offered in the middle of the game. The results confirm the need of a more complex, randomized and controlled investigation in which eating during

and after the movie will be measured along with different outcomes related to stress and food preferences.

The complexity of the mechanisms by which media violence can affect our body and mind and probably our appetite means that research is very valuable to help us understand and highlight the mechanisms underlying this effect, thus allowing us to understand better the associated obesity and weight gained with TV/movie watching.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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