

# Violent video games have lower effects on highly-exposed teens

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Teenagers who are highly exposed to violent video games—three or more hours per day—show blunted physical and psychological responses to playing a violent game, reports a study in the May issue of *Psychosomatic Medicine: Journal of Biobehavioral Medicine*, the official journal of the American Psychosomatic Society.

"High versus low experience of violent gaming seems to be related to different physiological, emotional and sleep related processes [after] exposure to violent video games," concludes the paper by Malena Ivarsson of the Stress Research Institute at Stockholm University and colleagues.

## Exposure Affects Teens' Heart Rate Responses to Violent Games

The experimental study included two groups of boys, aged 13 to 15, with differing exposure to violent video games. Fifteen boys were highly exposed to violent gaming, playing at least three hours per day. The other fifteen had low exposure, no more than one hour per day.

The researchers monitored the boys' reactions to playing two different video games: a [violent game](#) ("Manhunt") and a nonviolent cartoon game ("Animaniacs"). The boys played the games at home, on two different evenings, for two hours each. Physiological, emotional, and sleep reactions to the two games were compared for boys with high versus low

exposure.

Although there were few differences in reactions during the time spent playing the games, some significant differences appeared later. While sleeping later that night, boys in the low-exposure group had faster heart rates after playing the violent game, compared to the night after playing the nonviolent game. In contrast, for boys in the high-exposure group, heart rate was lower on the night after playing the violent game.

There were also some significant differences in [heart rate variability](#) (HRV), which measures beat-to-beat variations in heart rate. The patterns of HRV differences suggested blunting of [sympathetic nervous system](#) reactions among boys in the high-exposure group.

## **Emotional and Sleep Responses Also Affected**

On sleep questionnaires, low-exposed boys also reported lower sleep quality on the night after playing the violent game, compared to the nonviolent game. For high-exposed boys, there was no difference in sleep quality after playing the two games. After playing the violent game, the low-exposed boys reported increased feelings of sadness.

Both groups had higher anxiety and stress levels after playing the violent game. "The violent game seems to have elicited more stress at bedtime in both groups and it also seems as if the violent game in general caused some kind of exhaustion," Ivarsson and colleagues write. "However, the exhaustion didn't seem to be of the kind that normally promotes good sleep, but rather as a stressful factor that can impair sleep quality, especially for low exposed gamers."

Previous studies have shown that playing violent video games can induce anger and aggressive behavior, as well as sleep problems. [Heart rate](#) and HRV are useful indicators of physical reactions to stress and

emotions—mediated through sympathetic nervous system responses. "Both types of violence-related psychophysiologic outcomes probably reflect increased sympathetic activation," according to the authors.

The differences between groups may represent a desensitizing effect of frequent exposure to [violent video](#) games, the researchers speculate—although it's also possible that boys with certain traits may be attracted to violent games. Ivarsson and coauthors note they had difficulty in finding and recruiting [boys](#) with high exposure to violent gaming to participate in the study.

The study adds to previous evidence that playing [violent video games](#) can affect sympathetic nervous system activity and physiological responses, which "proceed concurrently" with emotional and [sleep](#) responses. It adds the new information that these responses are different for appear to differ for youth with high versus low exposure to such games. The authors call for further study to "chisel out" the mechanisms of the responses, and to see if they're linked to behavior changes related to violent gaming.

**More information:** [www.psychosomaticmedicine.org/](http://www.psychosomaticmedicine.org/)

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