

Prospective Relationships of Adolescents' Screen-Based Sedentary Behaviour with Depressive Symptoms: The Millennium Cohort Study

Aims

This study aims to:

- Assess associations of frequency of video game, social media, and internet use at age 11 with depressive symptoms at age 14.
- Determine the extent to which associations between screen time and depressive symptoms may differ by gender.
- Examine whether physical activity may moderate any associations between screen time and depressive symptoms.

Key Findings

Different types of screen-time may have contrasting associations with depressive symptoms during adolescence. Key findings show adolescents interact differently with screen-based devices depending on their gender:

- Using video games most days, at least once a week, and at least once a month were associated with 24.2–31.2% *lower* depressive symptom scores compared to less than once a month/never in boys, but not in girls.
- More frequent video gaming is associated with lower depression symptom scores in boys who are less physically active, but not in those who were physically active. Adolescents who spend less time playing sports and active games may derive more enjoyment and social interaction from playing video games more frequently.
- There is an association between increased social media use and depressive symptoms in girls.
- More-frequent video gaming at age 11 was associated with a lower risk of depressive symptoms at age 14 for boys, but not girls.
- More frequent social media use at 11 was associated with a higher risk of depressive symptoms in adolescent girls, but not boys.

Policy Context

The relationships between screen-time and mental health are complex, and their nuances warrant more careful consideration. Identifying modifiable risk factors for depressive symptoms during adolescence is an essential step towards reducing the future incidence and burden of depression.

Approaches that aim to broadly reduce *sedentary* behaviour or screen-time in young people can overlook these complexities and may not maximise the potential impact on mental health risks. Findings from this study suggest that a more targeted approach to screen time may be necessary for the context of risk of depression in adolescents. Results indicate that interventions may benefit from a gender-specific approach

and considering related factors that improve adolescent mental health, such as physical activity. More research is necessary to understand how different types of screen-time affect the risk of depression in young people.

Methodology

Data was used from the Millennium Cohort Study (MCS), a representative sample of 18,552 families and 18,818 children born in the UK between September 2000 and January 2002. Participants from socially deprived areas and ethnic minority groups were oversampled to increase representation. Frequency of video game, social media, and internet use (at age 11) and physical activity were measured by self-report. The main outcome variable was depressive symptoms, measured with items from a Moods and Feelings Questionnaire (at age 14).

Background

Screen-based devices are embedded in modern life and have many important practical and cultural applications, but there may be risks associated with excessive use. Lower levels of physical activity and higher volumes of sedentary behaviour have consistently been associated with an increased risk of depression in prospective population-based studies of adults. However, the factors contributing to relationships of screen time with mental health in adolescents are complex, and the *type* of screen time may affect mental health differently. While evidence is emerging to suggest that there are varying associations between different types of screen time and depressive symptoms, findings are inconsistent and primarily based on cross-sectional data. Few studies have examined associations between the frequency of video gaming and depressive symptoms in adolescents. This prospective study examined associations of three types of screen time in girls and boys at age 11 with depressive symptoms at age 14.

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