Roles of cyberbullying, sleep, and physical activity in mediating the effects of social media use on mental health and wellbeing among young people in England: a secondary analysis of longitudinal data

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a nationally representative, longitudinal study of 12 866 young people from age 13 years to 16 years in England

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## Implications For Stakeholders About

Healthcare

# Abstract

Background There is growing concern about the potential associations between social media use and mental health
and wellbeing in young people. We explored associations between the frequency of social media use and later mental
health and wellbeing in adolescents, and how these effects might be mediated.
Methods We did secondary analyses of publicly available data from the Our Futures study, a nationally representative,
longitudinal study of 12 866 young people from age 13 years to 16 years in England. The exposure considered was the
frequency of social media use (from weekly or less to very frequent [multiple times daily]) at wave 1 (participants aged
13–14 years) through wave 3 of the study (participants aged 15–16 years). Outcomes were mental health at wave 2
(with high 12-item General Health Questionnaire [GHQ12] scores [≥3] indicating psychological distress), and
wellbeing at wave 3 (life satisfaction, feeling life is worthwhile, happiness, and anxiety, rated from 1 to 10 by
participants). Analyses were adjusted for a minimal sufficient confounding structure, and were done separately for
boys and girls. Cyberbullying, sleep adequacy, and physical activity were assessed as potential mediators of the effects.
Findings Very frequent use of social media increased from wave 1 to wave 3: from 34·4% (95% CI 32·4–36·4) to
61·9% (60·3–63·6) in boys, and 51·4% (49·5–53·3) to 75·4% (73·8–76·9) in girls. Very frequent social media use in
wave 1 predicted a high GHQ12 score at wave 2 among girls (adjusted odds ratio [OR] 1·31 [95% CI 1·06–1·63],
p=0·014; N=4429) and boys (1·67 [1·24–2·26], p=0·0009; N=4379). Persistent very frequent social media use across
waves 1 and 2 predicted lower wellbeing among girls only (adjusted ORs 0·86 [0·74–0·99], N=3753, p=0·039 for life
satisfaction; 0·80 [0·70–0·92], N=3831, p=0·0013 for happiness; 1·28 [1·11–1·48], N=3745, p=0·0007 for anxiety).
Adjustment for cyberbullying, sleep, and physical activity attenuated the associations of social media use with GHQ12
high score (proportion mediated 58·2%), life satisfaction (80·1%), happiness (47·7%), and anxiety (32·4%) in girls,
such that these associations (except for anxiety) were no longer significant; however, the association with GHQ12
high score among boys remained significant, being mediated only 12·1% by these factors.
Interpretation Mental health harms related to very frequent social media use in girls might be due to a combination
of exposure to cyberbullying or displacement of sleep or physical activity, whereas other mechanisms appear to be
operative in boys. Interventions to promote mental health should include efforts to prevent or increase resilience to
cyberbullying and ensure adequate sleep and physical activity in young people.

# Outcome

"We found that strong, longitudinal associations between very
frequent social media use and mental health and wellbeing in
girls were largely mediated by cyberbullying and the
displacement of sleep and physical activity. The same factors
mediated this relationship in boys, but to a much smaller
degree. Our paper is the first longitudinal mediation analysis
of data from a nationally representative cohort, and suggests
that much of the harm attributed to social media is unlikely
to be directly related to social media use, but instead related
to the content consumed (eg, cyberbullying) or the
displacement of healthy amounts of sleep and physical
activity." (Viner et al., 2019: 686).