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Deprivation's role in adolescent social media use and its links to life satisfaction

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ABSTRACT

Adolescents spend more time on social media than ever, making it necessary to understand the impact of social media use on their well-being. A largely unexplored, but potentially important, risk factor which may moderate effects of social media on well-being is material deprivation. Using 10-wave longitudinal data from 23,155 adolescents collected between 2009 and 2019, we test whether adolescents who spend more time on social media report lower levels of well-being, and whether differences in deprivation are associated with heightened sensitivity to positive or negative effects of their social media use. We find that deprived adolescents have less access to social media. However, those adolescents from deprived households who do have social media access spend slightly more time using it. Although we find that deprived adolescents are less satisfied with their lives, deprivation does not seem to affect the longitudinal link from time spent on social media to life satisfaction.

Adolescents are engaging with social media at earlier ages and for longer periods of time each day. Many studies have attempted to help us understand how the current increase in social media use impacts adolescents' well-being (Beyens et al., 2024; Hancock et al., 2022; Ivie et al., 2020; Jensen et al., 2019; Kardefelt-Winther et al., 2020; C. L. Odgers & Jensen, 2020; Shoshani et al., 2024; Siongers & Spruyt, 2024; Valkenburg et al., 2022). Recent reviews illustrate that adolescents have largely been treated as a homogenous group, estimating statistical relations over the whole population (Odgers & Jensen, 2020; Valkenburg et al., 2022). Yet adolescents are likely to differ in how they access and use social media, as well as how this use influences their well-being (Ivie et al., 2020; Valkenburg et al., 2022). Indeed, considerable heterogeneity in associations has been documented (Beyens et al., 2024; Ivie et al., 2020).

One of the most obvious, but still largely unexplored, places to begin when explaining differences in social media access, usage, and associations with well-being is material deprivation. Deprivation is one of the most substantial environmental risk factors for adolescent well-being (Gross-Manos & Bradshaw, 2022); children from low-income households are between two and three times more likely to develop mental health problems (Reiss, 2013). They also spend significantly more time online (Odgers & Robb, 2020) and are less likely to receive support and scaffolding from caregivers and other adults in their online activities (Livingstone & Helsper, 2007; Männikkö et al., 2020; Mascheroni & Ólafsson, 2014). Social media presents unique dynamics that can negatively affect adolescent well-being, and these effects may vary by socioeconomic status. For instance, social comparison theory (Vogel et al., 2014) suggests that deprived adolescents may experience more pronounced social comparisons and feelings of exclusion when viewing peers' participation in activities they cannot afford, such as holidays, dining out, or other costly leisure activities (Nesi, 2020). These negative feelings may intensify for those lacking access to similar offline experiences or alternative social outlets. However, the effect of social media use on life satisfaction might also be more positive for deprived adolescents. In line with compensatory internet use theory (Kardefelt-Winther, 2014), deprived adolescents may use social media to compensate for a lack of offline social opportunities or emotional support caused by material deprivation, enabling them to build connections, access resources, and participate in social interactions that might otherwise be unavailable to them.

While previous research has primarily focused on differences, such as gender (Booker et al., 2018; Orben et al., 2022; Twenge & Martin,

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2020), the impact of socioeconomic factors has been largely overlooked. To address this gap, a longitudinal approach is necessary to explore the distinct within-person connections between social media use and well-being among adolescents growing up in deprivation. However, very few studies to date have been adequately positioned to address this (e.g., Milosevic et al., 2024, examined the relations between deprivation, social media use, and life satisfaction but in a cross-sectional sample that precludes understanding of within-person dynamics). This study aims to fill this gap by answering the following research question:

What role does deprivation play in social media access and usage, and how does it affect the longitudinal relationship between social media use and adolescent well-being?

1. Access to social media

Deprivation not only influences access to digital devices, online resources, and social media but also reinforces existing digital inequalities (Büchi & Hargittai, 2022; Helsper, 2017; van Deursen et al., 2017; van Deursen & van Dijk, 2014). This pattern is evident even in digitalised countries such as the UK, where during the COVID-19 pandemic 1.5 million households did not have access to the internet, smartphones or tablets (Ofcom, 2021). These "digital inequalities" (Büchi & Hargittai, 2022) go beyond access, encompassing disparities in support, experiences, and the impacts of digital technology, which can amplify positive or negative associations with well-being (Metherell et al., 2022). Deprived adolescents may have stronger associations between social media access and well-being because digital technologies provide opportunities for social mobility (Clayton & Macdonald, 2013), digital connection (Yates & Lockley, 2018), and better educational attainment (Jackson et al., 2006; Livingstone & Helsper, 2007). Moreover, social media's potential positive effects on reducing loneliness and increasing social support may be more pronounced among deprived adolescents, who lack access to alternative and costly means of peer connection, such as sports clubs or alternative leisure activities (Best et al., 2014; O'Keeffe et al., 2011).

Yet evidence for such hypotheses is still limited. This study will therefore first examine how deprivation is associated with access to social media, then test whether access to social media is associated with life satisfaction (in either positive or negative directions), and finally measure whether deprivation levels moderate this link.

2. Time spent on social media

Previous research in the US has shown that economically disadvantaged adolescents from deprived backgrounds spend more time on social media, even when access levels are similar (Odgers & Robb, 2020). This discrepancy could be attributed to parents' lower digital literacy or their need to prioritize income generation, which limits their ability to monitor screen time or provide alternative leisure activities for their children (Conway et al., 2021; George et al., 2020). These findings suggest that the relationship between social media use and well-being is not uniform across socioeconomic backgrounds. Therefore, it is crucial to investigate the underlying factors and mechanisms contributing to this disparity and deepen our understanding of adolescent well-being in various socioeconomic contexts.

This study will therefore test whether adolescents from deprived households spend more time on social media as compared to their more affluent peers, and whether the time they spend on social media is associated with their life satisfaction. Further, we will investigate whether associations between time spent on social media and well-being are different among adolescents experiencing deprivation, both cross-sectionally and over the 10-year study period.

3. The current study

The previous literature suggests a potentially complex set of relations between deprivation, social media use, and well-being because deprivation might not only impact whether social media is accessed but also how much is used (Harris et al., 2017), and how it ultimately impacts adolescent well-being. We focus on life satisfaction as outcome as it reflects an aspect of emotional well-being, a key component of subjective well-being outcomes in social media research (Büchi & Hargittai, 2022). It is a commonly used indicator to measure wellbeing (Akkaş & Turan, 2024; Huang, 2022; Keresteš & Štulhofer, 2020; Li et al., 2024) and has also been consistently measured throughout the 10-year data collection period, enabling us to assess long-term emotional impacts of social media use. This study will address the interplay of deprivation, social media use, and life satisfaction on both cross-sectional and longitudinal levels using a 10-wave sample of 23,155 UK 10–21-year-olds. Its findings can extend beyond the limited conclusions researchers have been able to draw using cross-sectional data to help answer the timely question of whether adolescents from deprived households experience different risks in online spaces. In doing so, our study will provide evidence that can help shape both scholars' and policymakers' approaches to addressing the implications of social media use by diverse adolescent populations.

4. Methods

4.1. Sample

In this study we analyse ten waves of data from the UK annual household panel survey of approximately 40,000 UK households (i.e., Understanding Society, University of EssexInstitute for Social and Economic Research, 2020), collected between 2009 and 2019 (each wave taking two years to collect; released: February 2021). We include data from 23,155 adolescents aged 10–21 (79,486 measurement points) and their parents. Parents completed an adult survey about themselves and their households, 10-15-year-olds completed a youth survey, and 16-21-year-olds filled out the adult survey and a supplementary questionnaire. Out of the 23,155 adolescents, 16,582 completed at least two waves.[1] See Supplementary Fig. 1 for analyses showing that the level of deprivation is similar to that expected in the UK population.

4.2. Measures

Life satisfaction was measured annually. 10–15-year-olds were asked "which best describes how you feel about your life as a whole?" (visual analogue scale, 1 = very happy smiley face to 7 = very sad smiley face, subsequently reversed), while 16-21-year-olds were asked to "select the answer which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation. (…) your life overall" (1 = completely dissatisfied to 7 = completely satisfied).

Social media access and use was also measured annually, except during the first two waves for 16–21-year-olds. 10-15-year-olds were asked about their social media access ("Do you have a social media profile or account on any sites or apps?, 1 = Yes, 2 = No), and their social media use ("How many hours do you spent chatting or interacting with friends through a social web-site or app like that on a normal school day?", 1 = None, 2 = Less than an hour, 3 = 1–3 h, 4 = 4–6 h, 5 = 7 or more hours). The question was adapted between the 7th and 8th wave, as a list of example social media sites was removed. 16-21-year-olds were also asked about social media access ("Do you belong to any social networking web-sites?", 1 = Yes, 2 = No) and use ("How many hours do you spend chatting or interacting with friends through social web-sites on a normal week day, that is Monday to Friday?", 1 = None,

[1] 12,436 adolescents completed three waves, 9410 completed four waves, 6886 completed five waves, 4778 completed six waves, 3153 completed seven waves, 1867 completed eight waves, 933 completed nine waves, and 286 completed ten waves.

2 = Less than an hour, 3 = 1–3 h, 4 = 4–6 h, 5 = 7 or more hours). We recoded the social media access questions so that 1 = Yes and 0 = No, and recoded the social media use questions so that those participants who stated they did not have social media access were coded as NA.

The Household Material Deprivation Index and Childhood Material Deprivation Index were used to measure deprivation. The household material deprivation index measures whether the household has a range of goods that are considered a necessity to participate in mainstream society. It asked parents whether their family can afford to: holiday away from home for at least one week each year, keep the house in a decent state of repair, have a household contents insurance, regularly save £10 a month or more, replace any worn out furniture, replace or repair major electrical goods (e.g. a refrigerator), have a small amount of money to spend each week on yourself, keep up with bills and regular dept repayments (1 = "We have this, 2 = "We would like to have this but cannot afford this at the moment", 3 = "We do not want/need this at the moment", 4 = "Does not apply"). All items were asked in waves 1, 2, 4, 6, 8 and 10, except the final two which were not completed in waves 1 and 2.

Parents of adolescents aged 10–15 years also completed the Childhood Material Deprivation Index which assesses whether children in the household have access to a number of goods and activities that are considered as necessities for material participation during childhood. Specifically they asked whether they could afford: a family holiday away from home for at least one week each year, enough bedrooms for every child of 10 years or over of a different sex to have their own bedroom, buy leisure equipment for their children such as sports equipment or a bicycle, celebrations on special occasions such as birthdays or religious festivals, a hobby or leisure activity, having friends around for tea or a snack once a fortnight, going on school trips, an organised activity once a week, eating fresh fruit and/or vegetables every day and a warm winter coat (1 = "We have this, 2 = "We would like to have this but cannot afford this at the moment", 3 = "We do not want/need this at the moment", 4 = "Does not apply"). All items were asked in waves 1, 2, 4, 6, 8 and 10, except the last three that were not asked in the first two waves. For both household and childhood deprivation we coded datapoints as NA if parents said they do not need the activity/object (3) or it does not apply (4).[2] If, across all waves, a parent ever said they could not afford a certain activity/object we recoded this as "1", if they could always afford the activity/object, we recoded this as "0".

4.3. Analysis plan

4.3.1. Selecting deprived adolescents

We first use Latent Class Analysis (LCA) to extract discrete classes of deprivation from the Household Deprivation Indices (assessed in 10-21-year-olds) and Childhood Material Deprivation Indices (assessed in 10-15-year-olds). This allows us to move beyond sumscoring the individual indicators and identify subgroups characterized by particular patterns of deprivation (McNeish & Wolf, 2020), accounting for qualitative differences between groups. For example, being unable to buy warm winter clothes might reflect a qualitatively different form of deprivation than being unable to go on holiday, which would not be reflected in a sum score. LCA was chosen here to categorize adolescents into distinct deprivation classes, aligning with our research objective of understanding whether patterns of deprivation relate to differences in social media access and usage. For both analyses, we fit seven LCA models (1–7 classes). We used model fit measures (log-likelihood, BIC, entropy, and CAIC) and theoretical considerations to identify the number of latent classes. We will utilize both the Childhood Deprivation Index (for adolescents aged 10–15 years) and the Household Deprivation Index (for those aged 10–21 years) to measure deprivation, which will involve running separate models for each index.

To check for robustness of our LCA approach we applied two robustness checks. First, we calculated sum scores of deprivation indicators and defined adolescents as deprived if they belonged to the most deprived quartile (see Supplementary Tables 1b–4b for results). Second, we use the deprivation sum scores as continuous predictors (see Supplementary Tables 1c–4c for results). All analytical code is available on OSF (https://osf.io/m7d8a/).

4.3.2. Investigating access to social media

Having selected the best fitting LCA model, we examine associations of deprivation classes with access to social media, and how it relates to life satisfaction. First, we test the influence of deprivation on social media access using two mixed-effect logistic regressions with a logit link function, with dummy-coded deprivation classes, age (z-scored) and sex as predictors of social media access and participant ID as a random intercept. This allows us to investigate whether deprived adolescents have more or less access to social media by examining the association between deprivation classes and social media access while controlling for age and sex. Second, we test whether social media access is associated with life satisfaction, and whether this association is moderated by deprivation, using two multi-level multinomial regressions, with dummy-coded deprivation classes, social media access and their interaction as predictors (same control variables as above; participant ID as a random intercept). This allows us to disentangle the relationships between social media access, deprivation, and life satisfaction, as well as to investigate how the strength and direction of these relationships may change depending on deprivation level. We use cross-sectional observations from all 10 waves for these models. The number of observations varies by model and ranges from 41800 to 61682 (see Supplementary Tables 1–4 for details).

We then extract within-person longitudinal associations between access to social media, and life satisfaction to investigate whether these within-person associations vary by deprivation. We use multi-group Random-Intercept Cross-Lagged Panel Models (RI-CLPM) to create longitudinal within-person models for each participant (Hamaker et al., 2015; Usami et al., 2019) and constrain cross-lagged paths to either vary or be constant across deprivation classes. RI-CLPM was selected to address our objective of isolating within-person changes over time while accounting for stable between-person differences, such as baseline social media use. By doing so, we can more accurately test whether deprivation moderates the relationship between social media access and life satisfaction longitudinally. Gender was added as a covariate (see Supplementary Code for extensive model description). If a model with cross-lagged paths from social media to life satisfaction that are allowed to vary fits better, it suggests that differences in deprivation affect the strength (weak/strong) and/or nature (positive/negative) of the associations between change in access to social media and life satisfaction one year later.

4.3.3. Investigating time spent on social media

Similar methods are used to examine the impact of deprivation on time spent on social media. To study whether deprived adolescents spend more time on social media, we first run two multi-level multinomial regressions with deprivation (dummy-coded) predicting time spent on social media (same control variables and random intercepts as above). We then investigate whether time spent on social media is related to life satisfaction and whether deprivation moderates that association, using two multi-level multinomial regressions with deprivation, time spent on social media, and their interaction predicting life satisfaction.

We also conduct longitudinal analyses to further investigate whether deprivation changes the association between time spent on social media and life satisfaction using identical RI-CLPMs as above but replacing access to social media with time spent on social media (see

[2] We run an additional analysis where we calculated sum scores and treated items that parents said they do not need as "0". The choice of coding did not affect the results of our analysis substantially (Supplementary Tables 1c–4c).

Supplementary Code for more information). FIML is used to account for missing data in cross-sectional and longitudinal models. All results for the individual models, including number of adolescents and observations used, can be found in the supplementary tables (https://osf.io/m7d8a/).

5. Results

5.1. Latent Class Analysis

Household Material Deprivation. We fit seven LCA models (1–7 different classes) to the eight dichotomous Household Material Deprivation Index variables completed by parents (n = 23,155). Following a data driven approach to select the number of classes, fit statistics, including information criteria and entropy, pointed towards a solution with two deprivation classes (Supplementary Figs. 1 and 2). Respondents in one class experienced only low levels of deprivation (n = 13,135, 56.7%) because they had a high likelihood of being able to afford most items (Fig. 1, left panel), with only a small fraction (23%) unable to afford to go on holiday once a year. Adolescents in the other group (n = 10,020, 43.3%) experienced high levels of childhood deprivation, with 77% of families being unable to go on holiday. Further, 25% of deprived households were unable to pay their bills, whereas this likelihood dropped to ~1% among households who only experienced low levels of deprivation.

Childhood Material Deprivation. We also fit a LCA to the 10 dichotomous variables of the Childhood Material Deprivation Index completed by parents of 10-15-year-olds (n = 13,882). As above, fit improved substantially up to the two-factor solution (Supplementary Fig. 2), we could extract a group that experienced high levels of deprivation (n = 1,925, 13.9%; Fig. 1, right panel) and one that experienced low levels of deprivation (n = 11,957, 86.1%), as their parents were likely to be able to afford the queried items. In contrast, in the deprived group, parents could often not afford various items such as going on holiday (89%) or giving each child their own bedroom (51%).

5.2. Relationship between deprivation, access to social media and life satisfaction

First, we found that adolescents experiencing deprivation, had less access to social media, both for household deprivation (OR = 0.89, CI = 0.82–0.97, p < 0.001) and childhood deprivation (OR = 0.69, CI = 0.62–0.78, p < 0.001; see Supplementary Table 1a). For example, 76% of adolescents who did not experience deprivation had access to social media by age 11 versus 69% in the deprived group. These differences vanish by the age of 18 (Supplementary Fig. 3), when social media access reaches ~99% for both groups.

Second, to test whether deprivation moderates the association between social media access and well-being, we examined the association between access to social media and well-being on its own. Access to social media was not significantly associated with life satisfaction among adolescents whose parents filled out the household deprivation survey (est = −0.01, CI = −0.05– 0.02, p = 0.501, Supplementary Table 3) and weakly associated with lower life satisfaction among adolescents whose parents filled out the childhood deprivation survey (est = −0.03, CI = −0.06– 0.00, p = 0.049).[3] Additional analyses using deprivation sum scores did not find a significant relation (Supplementary Tables 3a and b). We found weak evidence that adolescents experiencing childhood deprivation had a slightly higher chance of experiencing a negative association between access to social media and life satisfaction, as indicated by a small interaction effect (est = −0.09, CI = −0.16 – 0.02, p = 0.018). However, this effect was small and was not observed in the household deprivation group (est = −0.04, CI = −0.09 – 0.01, p = 0.140).

Third, we tested whether these results hold in a longitudinal multigroup Random-Intercept Cross Lagged Panel Model (RI-CLPM) (for detailed results see Supplementary Tables 5–8). We restricted variances, covariances, autoregressive paths of social media use, and the effect of the control variables to be equal between groups, focusing specifically on group differences in the cross-lagged paths. One exception was the autoregressive path of life satisfaction that was allowed to differ across childhood deprivation as the data suggested that the relationship between life satisfaction and its past observations is weaker among deprived adolescents ($AIC_{constrained}$ = 141126, AIC_{freed} = 141111, $\chi^2(1)$ = 6.96, p = 0.008).

We did not find significant differences between restricted models and models that allowed variation in the cross-lagged path predicting life satisfaction from changes in within-person access to social media one year (Fig. 2, left; household deprivation: $AIC_{constrained}$ = 263673, AIC_{freed} = 263672, $\chi^2(1)$ = 1.28, p = 0.26; childhood deprivation: $AIC_{constrained}$ = 141127, AIC_{freed} = 141126, $\chi^2(1)$ = 0.61, p = 0.43). We therefore found no evidence that deprivation influenced the within-person longitudinal links between access to social media and life satisfaction.

5.3. Relationship between deprivation, time spent on social media and life satisfaction

First, we found that adolescents experiencing household deprivation spent slightly more time on social media (est = 0.09, CI = 0.07–0.11, p < 0.001, see Supplementary Table 2a).[4] Different levels of childhood deprivation were, however, not related to time spent on social media (est = 0.02, CI -0.01 – 0.06, p = 0.157).

Second, we assessed the relation between deprivation, time spent on social media and life satisfaction. Deprivation was associated with lower life satisfaction (Fig. 3; household material deprivation: est = −0.18, CI = −0.25 to −0.11, p < 0.001; childhood material deprivation: est = −0.19, CI = −0.29 to −0.09, p = < 0.001). Time spent on social media was also associated with lower life satisfaction (Fig. 3 and Supplementary Table 4a; household material deprivation: est = −0.07, CI = −0.09 to −0.06, p < 0.001; childhood material deprivation: est = −0.08, CI = −0.09 to −0.06, p < 0.001). Being from a deprived household, however, did not change the association of time spent on social media and life satisfaction (household deprivation: est = - 0.01, CI = −0.03 – 0.02, p = 0.645; childhood deprivation: est = −0.02, CI = −0.05 – 0.01, p = 0.300). We therefore found no cross-sectional evidence that deprived adolescents show more negative links between spending time on social media and life satisfaction.

We also tested this longitudinally using a multi-group RI-CLPM, restricting variances, covariances, autoregressive paths of time spent on social media, and the effect of the control variables to be equal between groups to focus specifically on group differences in the cross-lagged paths. One exception was the autoregressive path of life satisfaction that was allowed to differ across childhood deprivation as the data suggested that the relationship between life satisfaction and its past observations was weaker among deprived adolescents ($AIC_{constrained}$ = 174989, AIC_{freed} = 174975, $\chi^2(1)$ = 6.11, p = 0.013).

We found that models that allowed the cross-lagged paths predicting life satisfaction from social media use one year earlier to vary between high deprivation and low deprivation groups did not fit significantly better than the constrained versions (household deprivation:

[3] This effect was not significant when using sum scores to define deprived adolescents. We used sum scores based on deprivation indicators as a continuous predictor (Supplementary Table 3c) and as a binary indicator (Supplementary Table 3b) defining the quartile with the highest deprivation sum score as deprived.

[4] The difference in time spent mainly occurs from age 14 on and is from there on stable until 21 (Supplementary Table 8).

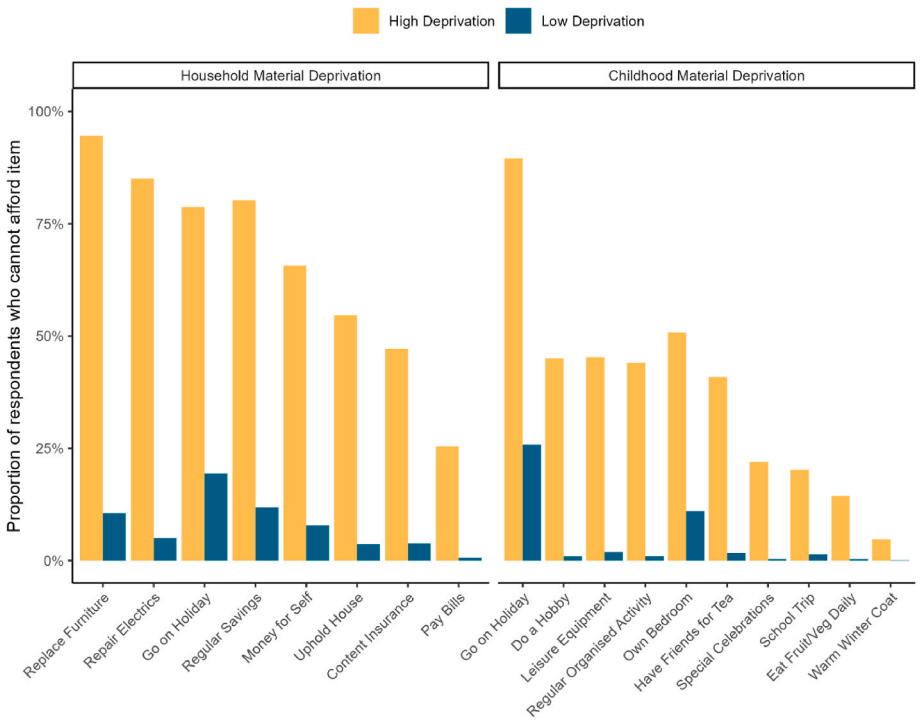

Fig. 1. LCA of both the Household Material Deprivation (left) and Childhood Material Deprivation (right) measures, both of which showed two main classes of deprivation levels. Household Material Deprivation: low deprivation (n = 13,135, 56.7%) and high deprivation (n = 10,020, 43.3%). Childhood Material Deprivation: low deprivation (n = 11,957, 86.1%) and high deprivation (n = 1,925, 13.9%).

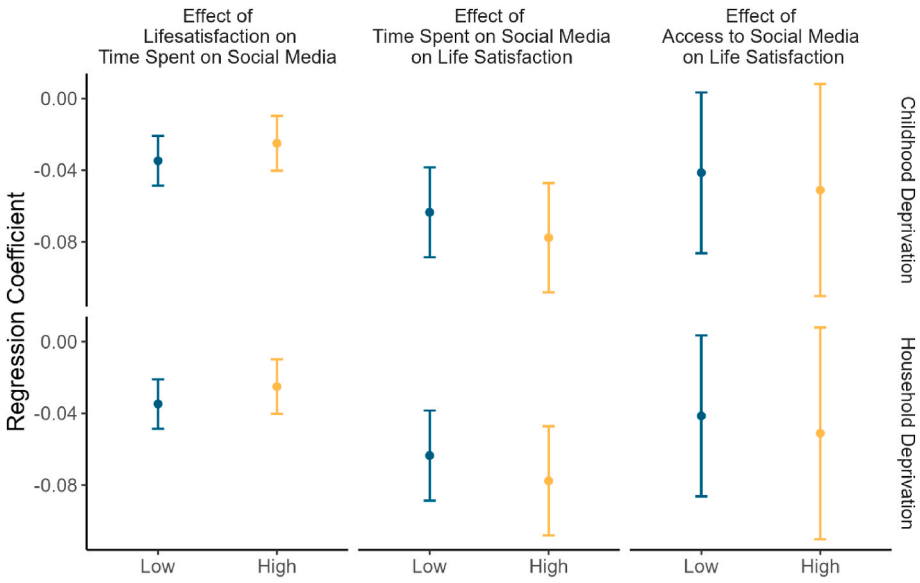

Fig. 2. Regression coefficients of effects between social media use, access, life satisfaction, and vice-versa obtained from RI-CLPMs. Models are split by deprivation classes ($n_{childhood\ deprivation}$ = 13,877 of whom 1924 are in the deprived group; $n_{household\ deprivation}$ = 23,149 of whom 10,017 are in the deprived group). Error bars represent confidence intervals at the 0.95 level. The regression from life satisfaction to access to social media is not displayed for clarity reasons. It was not significantly different from 0 with confidence intervals ranging between + - 0.01 (Supplementary Fig. 4).

$AIC_{constrained}$ = 355593, AIC_{freed} = 355594, $\chi^2(1) = 0.67$, p = 0.41; childhood deprivation: $AIC_{constrained}$ = 175014, AIC_{freed} = 175016, $\chi^2(1) = 0.01$, p = 0.94). Therefore, there was no evidence that adolescents from households experiencing deprivation differed in their small and negative within-person longitudinal links between time spent using social media and life satisfaction.

6. Discussion

Analysing data from a 10-year UK sample of 23,155 10–21-year-olds, we use Latent Class Analysis, Mixed-Effects Models and longitudinal modelling to examine the relation between household and childhood material deprivation, access to social media, time spent on social media and life satisfaction. Findings from this study advance our understanding of the interplay between social media, well-being and deprivation in

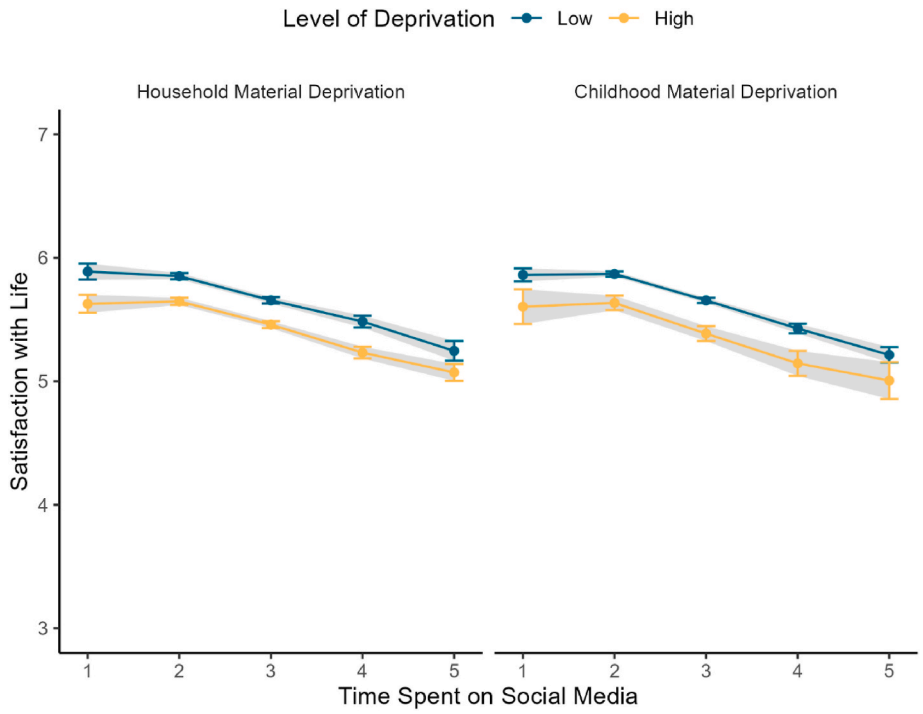

Fig. 3. Correlation between social media use and life satisfaction by Deprivation Class: Household Material Deprivation (left), Childhood Material Deprivation (right). Mean = point, ± 95% CI = grey area.

three ways. First, we find that deprived adolescents reported lower life satisfaction and less access to social media. However, among adolescents living in materially deprived households who had access to social media, we found they also spent more time online than their less deprived counterparts.

Second, the relationship between access to social media and life satisfaction was inconsistent. We did not find a positive effect of access to social media on life satisfaction. Indeed, we found that adolescents experiencing childhood deprivation were more likely to have slightly more negative associations between access to social media and life satisfaction (est = - 0.09, CI = −0.16 – 0.02, p = 0.018). However, we could not find similar results in our longitudinal analysis which did not show any impact of deprivation on the links between social media access and life satisfaction ($\chi^2(1) = 0.61$, p = 0.43). We, therefore, do not find concrete support for the idea that access to social media has a positive association with well-being among deprived adolescents in our sample. However, our results are limited to the UK and positive effects of access to social media on well-being have been observed in international samples (Vuorre & Przybylski, 2024).

Third, we found that deprived adolescents did not experience different links between time spent on social media and life satisfaction. In general, adolescents who spent more time on social media tended to be less satisfied with their lives. This association was small but significant throughout cross-sectional (household deprivation: est = −0.07, CI = −0.09 to −0.06, p < 0.001; childhood deprivation: est = −0.08, CI = −0.09 to −0.06, p < 0.001) and longitudinal analyses (household deprivation: est = −0.07, SE = 0.01, p < 0.001; childhood deprivation: est = −0.11, SE = 0.02, p < 0.001). Yet deprivation group membership did not moderate this relationship, even though adolescents experiencing deprivation reported lower life satisfaction overall (household material deprivation: est = −0.16 CI = −0.22 to −0.11, p < 0.001; childhood material deprivation: est = −0.15, CI = −0.22 to −0.08, p < 0.001). There were also no differences in longitudinal links between time spent on social media and life satisfaction among adolescents who experienced deprivation and those who did not. Therefore, we did not find evidence that the small negative link between time spent on social media and life satisfaction is more pronounced among adolescents experiencing deprivation.

The results therefore suggest that material deprivation alone may be insufficient to capture the nuanced ways in which social media impacts adolescent well-being. While highlighting that deprived adolescents report overall lower life satisfaction, our findings call for a broader framework that integrates socio-digital factors, such as parental mediation and digital literacy, which might be relevant across the socioeconomic spectrum (Männikkö et al., 2020; Mascheroni & Ólafsson, 2014). Given that these mediating factors may shape how adolescents engage with social media, future research should adopt a multidimensional approach to social media effects that considers factors like cognitive vulnerabilities, content exposure (Vranken et al., 2022), peer engagement (Van Zalk and Monks, 2020), or usage patterns (Beyens et al., 2024). This perspective challenges prior assumptions that material disadvantage inherently exacerbates negative outcomes, suggesting instead that digital inequalities might interact in complex ways with socio-economic status.

Since our findings do not indicate that deprived adolescents are more vulnerable to the negative effects of social media, we suggest that policies focus on broad, universal regulations that benefit all adolescents. Universal guidelines, like limiting targeted ads (Radesky et al., 2020), reducing harmful content exposure (Vranken et al., 2022), or increasing adolescents' data ownership (Winstone et al., 2023), could support balanced and healthy social media use across socioeconomic groups.

It is important to note some constraints of our study. Our analyses are based on self-reported social media access and use, which might lead to over reporting of time spent on social media (Araujo et al., 2017) due to recall bias and/or social desirability bias. As more recent studies suggest that different types of social media use, such as active (e.g., messaging) versus passive (e.g., scrolling), can have different effects on well-being (Beyens et al., 2024; Godard & Holtzman, 2023), studies have moved beyond measuring simple time metrics cannot capture. While more recent studies have increasingly utilized data collection methods like daily diary designs or data donations to capture more nuances of social media use. Our data was collected between 2009 and 2019, reflecting

the methodologies prevalent at that time. Additionally, our longitudinal inferences are made based on a 1-year time window between waves, which can limit validity and generalizability of our findings. In our analysis, we measured both household material deprivation and childhood material deprivation, which are commonly used indicators to measure deprivation (Knies, 2022). However, researchers have warned that not all socio-economically disadvantaged families are identical, and there could be additional aspects of disadvantage, like disparities in educational opportunities, that our study did not consider (Paus-Hasebrink et al., 2014).

We also need to note the limited generalizability of these results to populations outside of the UK. Deprivation is an intrinsically localized concept, and its definition and impact can differ significantly across various cultural and economic contexts. For instance, in some regions, access to technologies such as smartphones or social media can have transformative impacts by enabling access to essential services like banking, healthcare, or education (Madge et al., 2019; Rotondi et al., 2020). In light of these differences, future research should prioritize diversifying samples (Ghai et al., 2022) to explore how various cultural and economic contexts, as well as intersectional identities, influence the relationship between deprivation, digital inequalities, and well-being.

7. Conclusion

It is important to understand which adolescents might be most vulnerable to negative social media use effects. In this study, we examined the role of deprivation using both cross-sectional and longitudinal data from the UK. In doing so, we found that adolescents experiencing deprivation report lower life satisfaction and less access to social media. While adolescents from deprived households, who have access to social media, spend slightly more time using it, deprivation did not change the cross-sectional and longitudinal links between time spent using social media and life satisfaction. Future research will need to consider the specific mechanisms, such as parental mediation, cognitive vulnerability or the type of content accessed to better understand how social media impacts disadvantaged adolescents.

CRediT authorship contribution statement

Sebastian Kurten: Writing – review & editing, Writing – original draft, Visualization, Software, Project administration, Methodology, Formal analysis, Data curation. **Sakshi Ghai:** Writing – review & editing, Writing – original draft. **Candice Odgers:** Writing – review & editing, Methodology, Conceptualization. **Rogier A. Kievit:** Writing – review & editing, Methodology, Conceptualization. **Amy Orben:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Statement of relevance

Material deprivation and social media use have both been shown to have negative relations to adolescent well-being. But are adolescents from deprived households more vulnerable to these negative associations of social media use? Using data from 23,155 adolescents, we find that deprived adolescents have less access to social media but spend more time using it, once access is established. Time spent on social media was negatively associated with well-being between and within adolescents, regardless of their level of deprivation. Our findings shed light on the complex mechanisms that link media use to well-being and help us understand the interaction between social media use and deprivation in the lives of adolescents.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.chb.2024.108541.

Data availability

Code is available through OSF. Data is available through the UK data archive.

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