Institution: University of Oxford		
Unit of Assessment: 20 – Social Work and Social Policy		
Title of case study: Teens and Screens – Shaping Policy and Public Debate		
Period when the underpinning research was undertaken: 2014-2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Andrew K. Przybylski	**Role(s) (e.g. job title):** Associate Professor and Director of Research, Oxford Internet Institute	**Period(s) employed by submitting HEI:** 1st September 2013 - present
Period when the claimed impact occurred: May 2018 – 31 December 2020		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact (indicative maximum 100 words)

Przybylski's research applies psychological models of motivation and health to study how people interact with virtual environments, including video games and social media, and provides a counterfactual evidence-based narrative to the common belief regarding the psychological effects of screen-time on children and teenagers. Through briefings to the Chief Medical Officer and evidence to the Commons Science and Technology Select Committee and to the Digital, Culture, Media and Sports Committee's investigations into the effects of screen-based activities on young people, Przybylski's research has helped shaped key aspects of the UK Government's online political agenda, as articulated in its 'Online Harms' White Paper. The research has also influenced guidance by the Royal College of Paediatrics and Child Health (RCPCH) on screen time for children and adolescents and has framed the political and public debate around children and adolescents' use of social media and screen-time.

2. Underpinning research (indicative maximum 500 words)

Przybylski's research investigates the relationships between child and adolescent technology use and health and well-being. His research demonstrates that: 1) the dominant way of thinking about the effects of digital screens on young people is not evidence-based; and 2) 'screen time' is a poor surrogate for technology engagement and that many of the supposed effects that the public, scientists, and policymakers are most worried about are likely to result from statistical noise or artefacts.

R1: This study explored how time spent playing electronic games accounts for significant variation in positive and negative psychosocial adjustment using a representative cohort of children aged 10 to 15 years (n=4899 respondents). The links between different levels of electronic game engagement and psychosocial adjustment were small (<1.6% of variance) yet statistically significant.

R2: Using a preregistered plan for analysing data collected from a representative sample of English adolescents (*n*= 120,115 respondents), Przybylski and Weinstein (Reading University and a Research Associate at the University of Oxford's Internet Institute) obtained evidence that the links between digital screen time and mental well-being are described by quadratic functions, i.e. supporting a "Goldilocks hypothesis" that moderate engagement in digital activities is not harmful. Their results showed that these links vary as a function of when digital technologies are used (weekday vs. weekend), suggesting that a full understanding of the impact of these recreational activities will require an examination of their functionality among other daily pursuits. Overall, the evidence indicated that moderate use of digital technology is not intrinsically harmful and may indeed be advantageous in a connected world.

R3: Data from 19,957 telephone interviews with parents of 2-to 5-year-olds assessed their children's digital screen use and psychological well-being in terms of caregiver attachment, resilience, curiosity, and positive affect in the past month. Evidence did not support implementing screen time limits as recommended by the American Academy of Pediatrics.

R4: Przybylski and Orben (Oxford DPhil student and Researcher) applied specification curve analysis (SCA) across three large-scale social datasets (*n* = 355,358) to examine correlational evidence for the effects of digital technology on adolescents. They found that the association between digital technology use and adolescent well-being is negative but small, explaining at

most 0.4% of the variation in well-being. Taking the broader context of the data into account suggests that these effects are too small to warrant policy change.

R5: There is little clear-cut evidence that screen time decreases adolescent well-being, and most psychological results are based on single-country, exploratory studies that rely on inaccurate but popular self-report measures of digital screen engagement. This study encompasses three nationally representative large-scale data sets from Ireland, the United States, and the United Kingdom (*n*= 17,247 respondents) and included time-use diary measures of digital screen engagement. The research found little evidence for substantial negative associations between digital screen engagement and adolescent well-being.

R6: Large-scale representative panel data (n=12,672 respondents) was used to disentangle the between-person and within-person relations linking adolescent social media use and well-being. This study found that social media use is not a strong predictor of life satisfaction across the adolescent population, but rather that social media effects are nuanced, gender specific, and contingent on analytic methods.

3. References to the research (indicative maximum of six references)

R1: Przybylski, A. K. (2014). Electronic Gaming and Psychosocial Adjustment. *Pediatrics*, *134*(3), e716–e722. https://doi.org/10.1542/peds.2013-4021

R2: Przybylski, A. K., & Weinstein, N. (2017). A Large-Scale Test of the Goldilocks Hypothesis: Quantifying the Relations Between Digital-Screen Use and the Mental Well-Being of Adolescents. *Psychological Science*, *28*(2), 204–215. https://doi.org/10.1177/0956797616678438

R3: Przybylski, A. K., & Weinstein, N. (2017). Digital Screen Time Limits and Young Children's Psychological Well-Being: Evidence From a Population-Based Study. *Child Development*. https://doi.org/10.1111/cdev.13007

R4: Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*. https://doi.org/10.1038/s41562-018-0506-1

R5: Orben, A., & Przybylski, A. K. (2019). Screens, Teens, and Psychological Well-Being: Evidence from Three Time-Use-Diary Studies. *Psychological Science*, 095679761983032. https://doi.org/10.1177/0956797619830329

R6: Orben, A., Dienlin, T., & Przybylski, A. K. (2019). Social media's enduring effect on adolescent life satisfaction. *Proceedings of the National Academy of Sciences*, *116*(21), 10226–10228. https://doi.org/10.1073/pnas.1902058116

All of the above are journal articles (output type D). Funded project: *Understanding Society Policy Fellowship: Building Robust Evidence-Based Policy for Children in the Digital Age* (2018-2020). U.K. Economic and Social Research Council (GBP60,000, PI – A. Przybylski)

4. Details of the impact (indicative maximum 750 words)

Professor Przybylski's engagements with policy makers, health practitioners and media have consistently delivered the same messages: that the evidence base for the implications of sustained technology, social-media and screen use is thin, and the received wisdom that too much screen-time is 'bad' is unfounded. His research, which aims to fill the evidence lacuna, has had the following impacts:

Impacting government research priorities

Przybylski's observation, that the evidence base regarding the effects of screen-time usage on young people needs improvement, has been picked up by policy makers and health professionals alike. Three influential reports in particular echoed Przybylski's call: the House of Commons Science and Technology select committee's report on the 'Impact of Social Media and Screen-Use on Young People's Health' (January 2019); the UK Chief Medical Officers' (CMO) commentary on 'Screen-based activities and children and young people's mental health and psychosocial wellbeing: a systematic map of reviews' (published February 2019); and the Digital, Culture, Media and Sports (DCMS) Committee's 'Immersive and Addictive Technologies' (September 2019). Przybylski submitted oral and written evidence to the two select committees,

largely based on **R2, R3** and **R5**, and prepared a brief for the CMO commentary which became the foundation of **R6**. All three of these reports have informed the UK Government's Online Harms political agenda.

The House of Commons Science and Technology Select Committee's report highlighted the importance of Przybylski's work: '*across the written and oral evidence, both academics and non-governmental organisations highlighted the work of Professor Andrew Przybylski as the "best quality" research currently available on the effects of digital screen-time on the mental wellbeing of young people'* **[E3a, para.32]**. The report stated that otherwise the existing evidence base was *'mixed and generally low in empirical quality'* and recommended that the government 'Areas of Research Interest' be updated to include screen-based activity and that additional research funding be provided **[E3a, paras 29-40]**. To assist with such research, the report repeated Przybylski's call for social media companies to *'make anonymised high-level data available, for research purposes, to bona fide researchers so that a better understanding of social media's effects on users can be established'* **[E3a, para.31]**. In its response to the report, published May 2019, the Government acknowledged that a *'more robust evidence base'* was needed **[E3b]**.

The brief that Przybylski prepared for the CMO's commentary, based on a report they had commissioned on the effects of screen-based activities, noted the low quality of existing research in this area. Consequently, the CMO commentary reported that '*Scientific research is currently insufficiently conclusive to support UK CMO evidence-based guidelines on optimal amounts of screen use or online activities (such as social media use)*' and that '*The technology industry must share data they hold in an anonymised form with recognised and registered public sector researchers for ethically agreed research, in order to improve our scientific evidence base and understanding*' **[E2]**.

The DCMS report similarly noted Przybylski's finding that there was a '*lack of clear, consistent scientific research on gaming disorder and problems with the diagnostic tools being used* **[E4a]**. Przybylski's research, according to the current chair of the DCMS Committee, informed the '*call for digital platforms to be required to share data* **[E4b, p.62]***, and to fund independent research, to support understanding of gaming disorder* **[E4b, p.61]***…The Committee also cited Professor Przybylski's oral evidence when making the case for Government to support high-quality research into the effects of gaming'* **[E4b, p.61 [E4a]**. The Government, in its response to the report in June 2020, committed to include video games in the next update of the DCMS 'Areas of Research interest' and to '*lead a programme of work to set a framework supporting future independent video games research…to inform the government's ongoing development of evidence-based policy'* **[E4c, paras.6,9, 10 & 12]**. It also '*committed to "explore the potential for the government to create a mechanism to request and analyse industry data"'* **[E4a, E4c, para.11]**. To further the agenda, a number of roundtable discussions have been arranged by the DCMS and the Department of Health and Social Care, in which Przybylski has participated. However, these efforts have been slowed by the current pandemic.

Influencing UK Policy: The Online Harms White Paper

In April 2019 the UK government published its Online Harms White Paper, which put forward *'ambitious plans for a new system of accountability and oversight for tech companies'* with *'a new regulatory framework for online safety'* **[E1a, Introduction]**. The White Paper was drafted '*in line with the recommendations of the* [Science and Technology] *Committee*' **[E3b]** and also drew extensively on Chief Medical Officers' (CMO) commentary [**E2],** and through them Przybylski's research**.**

In common with the aforesaid reports, dominant themes in this proposal were the need for good evidence regarding screen use, addictive technologies and the mental effects of social media on young people, necessitating investment in research to obtain such evidence; and empowering a regulator to implement, oversee and enforce '*a new regulatory framework for the online safety [that] will make clear companies' responsibilities to keep UK users, particularly children, safer online*' **[E1a, Forward and paras.34-41 & pp.53-58]**.

The Minister for Digital and Culture told the House of Lords in May 2020 that despite parliamentary delays caused by the COVID-19 pandemic, her department's focus was on *'bringing this [legislation] about as a matter of urgency.'* **[E6]** The government, in September 2020, stated its commitment to introducing the Online Harms legislation *'as soon as parliamentary time allows'* **[E5, p.11]**, and this commitment was reiterated in their response to the consultation feedback on the White Paper in December 2020, stating that the Online Harms *'is a key legislative priority for this government* **[E1b]***'.*

Despite these delays in the legislature, some progress has been made enacting the recommendations of the White Paper: in December 2020, Ofcom confirmed that had been appointed as the regulator for online harms in the UK **[E1b, para.11; E7]**. Ofcom's new duties will include a commitment to would '*undertake and commission research to improve the evidence base'* and '*encourage and oversee the fulfilment of companies' existing commitment to improve the ability of independent researchers to access their data'* **[E1a]**.

Reframing the debate: an evidence-based challenge to the accepted wisdom on screen time

Przybylski's exposure of the lack of evidence-base for the commonly held belief that screen time for young people ought to be limited, and subsequent challenge of that premise, has informed official guidance on the issue, and allayed the concerns of parents.

In January 2018, Przybylski was asked by the Royal College of Paediatrics and Child Health (RCPCH) to provide feedback on their guidance on screen-time for clinicians and parents. The RCPCH's Health Improvement Officer has consistently commented on the usefulness of Przybylski's research findings: '*At a time when there is limited high quality research in this area, this study* **[R2]** *is very welcome'* **[E8a]**. '*The analysis* **[R5]** *is robust and suggests an overall population effect too small to warrant consideration as a public health problem.* [Przybylski] *also questions the widely held belief that screens before bedtime are especially bad for mental health'* **[E8b]**. In response to the publication of **R5**, he continues *'The controversy around screen use and adolescent wellbeing has always suffered from an excess of opinion relative to data, and this paper helps to correct this imbalance'* **[E8d]**. Though the RCPCH guidance, published January 2019, advised parents to limit screen-time, it acknowledged that there was no intrinsic danger to time online: *'Evidence is weak for a threshold guide to children and parents to the appropriate level of screen time…It is perhaps better to think of screens as displacing desirable minimum levels of positive activities, such as sleep, time with family and exercise, and the effects this may have'* **[E8c, pp.5-6]**.

Przybylski's research on the effect of social media, and digital technology more generally, on adolescents both before and during the COVID-19 pandemic, resulted in significant press and public attention. In May 2019, The Times featured a front-page article '*Social Media doesn't make teenagers unhappy, huge study shows*' including second-page analysis of **R5**, stating it '*goes further than any other study to unpick the tangle*' between correlation and causation in the research informing this debate **[E7a]**. Similar BBC and Daily Mail articles collectively elicited 856 reader comments, (many of which expressed surprise or scepticism at Przybylski's findings) and a Guardian report recorded over 480 reader interactions **[E9]**. Altmetric shows coverage of **R5** in 166 news stories from 141 outlets in multiple languages, whilst **R4** was covered in 66 news stories, 28 blog posts and 3540 original tweets. The Altmetric attention score places it in the top 5% of all research outputs ever tracked **[E9]**.

During the 2020 COVID-19 pandemic, the amount of screen time young children and adolescents were exposed to was a concern for parents and educators faced with the reality of lockdown. In a co-authored Op-ed for the New York Times, '*Don't Freak out about Quarantine Screen Time*' Przybylski challenged the conventional notion that video games are inherently bad for children's wellbeing, arguing instead that cooperative and team-oriented video games can have a positive effect on mental wellbeing and that moderate screen-time (less than 11 hours daily) does not have any significant negative effects on children's well-being **[R5, E9f]**. Responding to the same global family pressures and again highlighting **R5**, ABC Online in

Australia reassert Przybylski's finding that '*It's not how much screen time, but what kind*' that matters concluding, '*perhaps screen guilt is one burden we can choose to leave behind'* **[E9g]**.

5. Sources to corroborate the impact (indicative maximum of 10 references)

E1. Online Harms White Paper
- a) HM Government 'Online Harms White Paper' (April 2019) Online Harms White Paper – UK
- b) Government initial consultation response (15 December 2020)

E2. UK Chief Medical Officers' commentary on the report 'Screen-based activities and children and young people's mental health and psychosocial wellbeing: a systematic map of reviews" (February 2019) and confirmatory email from the Head of Office to the Chief Medical Office

E3. House of Commons Science and Technology select committee's report on the Impact of Social Media and Screen-Use on Young People's Health (January, 2019)
- a) Report https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/822/822.pdf
- b) Government Response (May 2019) https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/2120/212002.htm

E4. DCMS parliamentary committee's inquiry into immersive and addictive technologies:
- a) Letter from the current chair of the DCMS parliamentary committee
- b) 'Immersive and Addictive Technologies' report (September 2019) https://publications.parliament.uk/pa/cm201719/cmselect/cmcumeds/1846/1846.pdf
- c) Government repose to the DCMS report on Immersive and Addictive Technologies (June 2020)

E5. Government response to the House of Lords Democracy and Digital Technologies Committee Report on Digital Technology and the Resurrection of Trust (September 2020). https://committees.parliament.uk/publications/2308/documents/22803/default/

E6. Oral evidence, House of Lords Select Committee on Democracy and Digital Technologies, Tuesday 12 May 2020. https://committees.parliament.uk/oralevidence/414/html/

E7. Ofcom press release (15 December 2020): Ofcom to regulate harmful content online https://www.ofcom.org.uk/about-ofcom/latest/features-and-news/ofcom-to-regulate-harmful-content-online

E8. Guidance on the health impacts of screen time by the Royal College of Paediatrics and Child Health:
- a) 'Social media doesn't make teenagers unhappy, huge study shows', *The Times,* May 7th 2019, pp.1-2.
- b) The Guardian, 'Screen time has little effect on teenagers' wellbeing, says study', 5th April 2019.
- c) RCPCH guidance: https://www.rcpch.ac.uk/sites/default/files/2018-12/rcpch_screen_time_guide_-_final.pdf
- d) Evidence letter from the Research team, RCPCH

E9. Collection of relevant media:
- a) Daily Mail (7 May 2019), 'Social Media does not harm teenagers Oxford study says' https://www.dailymail.co.uk/news/article-6999807/Social-media-does-not-harm-teenagers-Oxford-study-says.html
- b) BBC news (7 May 2019), 'Social Media effect 'tiny' in teenagers, large study finds' https://www.bbc.co.uk/news/health-48147378
- c) The Guardian (6 May 2019), 'Children's social media use has 'trival' effect on happiness –study' https://www.theguardian.com/society/2019/may/06/childrens-social-media-use-has-trivial-effect-on-happiness-study
- d) Altmetric data for media coverage of **R5**: https://sage.altmetric.com/details/58401655/news
- e) Altmetric data for media coverage of **R4**: https://www.altmetric.com/details/53918668
- f) New York Times (6 April 2020), 'Don't Freak Out About Quarantine Screen Time https://www.nytimes.com/2020/04/06/opinion/screen-time-kids-covid.html
- g) ABC Online Australia (24 June 2020), 'Do parents need to worry about screen time?' https://www.abc.net.au/life/do-parents-need-to-worry-so-much-about-screen-time/12336896