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Pathways: How digital design puts children at risk

5RIGHTS FOUNDATION

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5RIGHTS FOUNDATION

About 5Rights Foundation

5Rights develops new policy, creates innovative frameworks, develops technical standards, publishes research, challenges received narratives and ensures that children's rights and needs are recognised and prioritised in the digital world. While 5Rights works exclusively on behalf of and with children and young people under 18, our solutions and strategies are relevant to many other communities.

Our focus is on implementable change and our work is cited and used widely around the world. We work with governments, inter-governmental institutions, professional associations, academics, businesses and children, so that digital products and services can impact positively on the lived experiences of young people.

Preface

Bad actors and bad content online command our attention. While they should and must be addressed, there is another aspect of the online world that gets limited attention: design. The impact of digital design urgently requires greater public understanding and regulatory focus.

Pathways: How digital design puts children at risk offers the opportunity for both.

The Pathways report is the outcome of a research project undertaken by Revealing Reality on behalf of 5Rights Foundation. It examines how design choices embedded in digital products impact the lives of children. Through interviews with digital designers and children, and through innovative research using avatars,[1] it lays bare how the commercial objectives of digital companies translate into design features that impact on children.

The results are alarming and upsetting.

The interviews with design professionals reveal the commercial objectives that put innovators under pressure to produce features that maximise time spent, maximise reach and maximise activity. These features shape children's behaviour. They make it hard for children to put down their devices (*"I kept turning it off and then going back and still using it"* – Lara, 13). They push network growth to the extent that children find themselves introduced to inappropriate adults, often with provocative or sexual content (*"Old men and that sort of thing"* – James, 14). And they encourage children to post, share and enhance to such a degree that many children feel that their 'real selves' are inadequate (*"All my photos have filters…they make you look prettier"* – Carrie, 17).

The designers explain that "*companies make their money from attention. Reducing attention will reduce revenue.*" As one of them ruefully offered: "*There are no safety standards – there is no ethics board in the digital space.*" The digital services that feature in the Pathways report, and the bulk of those that are likely to be accessed by children, are not deliberately designed to put children at risk, but what this research makes clear is that the risks they pose are not accidental. These are not 'bugs' but features.

The digital world is entirely man- and woman-made, engineered and for the most part, privately owned. Every part of it is built by a series of conscious choices to determine one outcome over another. The unavoidable conclusion of the Pathways report is that the choices these designers make are harming children. Children are trapped in highly automated systems that maximise attention, maximise spread and maximise

[1] An online proxy for a real child, see page 67

interaction at any cost, even when the user is a child. A child who merely 'hovers' over a video is inundated with more of the same; who clicks on a dieting tip, by the end of the week, is recommended bodies so unachievable that they distort any sense of what a body should look like; and having told their true age, however young, is offered content and experiences that in almost any other context would be illegal.

Most perturbing are the automated pathways, optimised for commercial goals, that lead to graphic images of self-harm, extreme diets, pornography, extremist content and introductions to adult strangers, all ubiquitous in many places and spaces that children inhabit – ranked, recommended and promoted to them at industrial scale.

It is true that the more interest a child shows in particular content or activity, the more they are given, and in that sense, they are a participant in their digital diet. It is also true that no child is the same. Some have more resilience than others, and the circumstances and support available to help them to navigate childhood vary. But no connected child is exempt from the demands of the digital world and no child can be supervised 24/7. In all other settings, we offer children commonly agreed protections. A publican cannot serve a child a pint, a retailer may not sell them a knife, a cinema may not allow them to view an R18 film, a parent cannot deny them an education, and a drug company cannot give them an adult dose of medicine. These protections do not only apply when harm is proven, but in anticipation of the risks associated with their age and evolving capacity. These protections are hardwired into our legal system, our treaty obligations, and our culture. Everywhere but the digital world.

What the Pathways report highlights is a profound carelessness and disregard for children, embedded in the features, products, and services – the norms – of the digital world.

5Rights commissioned this research before the pandemic, and as such it pre-dates the publication of the draft Online Safety Bill, but its findings could not be more relevant. The most recent Ofcom Online Nation survey shows an increasing number of children are spending an increasing amount of time online at an increasingly young age.[2] And the recent Ofsted review of sexual abuse in schools and colleges reveals the eyewatering scale of sexual harassment among pupils.[3] Pathways goes some way to explaining the toxic nature of the digital world, which, algorithm by algorithm, optimisation goal by optimisation goal, deliberately shapes children's behaviour. Bad actors and bad content are given prevalence and power by systems optimised for attention, reach and interaction.

Perhaps the most startling image of the report (found on page 85) is a screenshot in which it is clearly visible that a 'child' avatar is being 'targeted' with adverts for Nintendo Switch, a sweet shop and teen tampons– and at the same time pro-suicide

[2] https://www.ofcom.org.uk/__data/assets/pdf_file/0013/220414/online-nation-2021-report.pdf
[3] https://www.gov.uk/government/publications/review-of-sexual-abuse-in-schools-and-colleges

material ("*It is easy to end it all*"). How on earth is that right? How on earth is that legal? A 13-year-old, known to be 13, not offered a helpline, but enabled to access content and activity in which self-harm and suicide is valorised. One kid, one screenshot? No. On the same page, you can see a child avatar registered as a 15-year-old, targeted by a Home Office advert with an anti-child abuse campaign – and at the same time being offered contact with, and content from, adults in a pornographic pose. In both scenarios, the account was registered as a child. The company monetised that child account, but still they recommended, ranked, rated or offered up material that in many cases broke their own terms and, in every case, should not have been offered to a user registered as a child.

The 5Rights response to Revealing Reality's research can be found in an Executive Summary and in 11 recommendations. They are practical in nature and anticipate working with stakeholders across government and industry to supercharge changes in culture, design and regulation. The Executive Summary makes for sombre reading, but I implore those with responsibilities in this area to read the full detail of the research, to better understand the design features that put children at risk, and the opportunity to reverse these risks by introducing mandatory child risk assessment and standards of safety, by design and default.

The Pathways research also serves as a lament for all the missed opportunities. Looking after children, whether mitigating risk, designing for their capacity and age, or upholding their rights, is not optional – it is a price of doing business. Commercial goals must be considered only *after* children's needs, rights, and safety has been secured. Anything else is a tragic failure of political and corporate will.

The research was conducted after a literature review undertaken by Professor Julia Davidson OBE of the Institute for Connected Communities at the University of East London. Our thanks go to her for her work in formulating the research project. Heartfelt thanks also go to the Revealing Reality team for undertaking such a challenging project, and to the 5Rights team for their unwavering commitment to children. But our biggest thanks, once again, are to the children who share their online lives with us so generously. I urge all readers to hear their voices, and to commit to every one of this report's recommendations.

Baroness Beeban Kidron
Chair, 5Rights Foundation

Executive Summary

The aim of this research project was to understand how the design of digital products and services shape the experiences and behaviours of children and young people. Conducted in three parts – interviews with designers, interviews with children and testing with avatars – the research revealed the following:

- Designers are tasked with optimising products and services for three primary purposes, all geared towards revenue generation:
    - **To maximise time spent** on the service, capturing as much of a user's attention as possible.
    - **To maximise reach** and draw as many people into their product as possible.
    - **To maximise activity** by encouraging as much content generation and interaction as possible.
- Design features that fulfil these objectives (extending use, building networks and increasing engagement) are seen across digital products and services, but for children, they are most prevalent in social media and games, in the form of:
    - Push notifications
    - Endless scrolling feeds
    - Quantifying and displaying popularity
    - Making it easy to share
    - In-app or in-game purchases
    - Making it easy to connect, with friend or follower suggestions
- The designers interviewed were uncomfortable with the solely commercial intent of the companies they worked for but felt that change would only come if commercial goals specifically required them to design for the safety and wellbeing of children. Some acknowledged that the 'products' they were designing were bad for children, but they repeatedly expressed the need for change 'from the top'.
- The concerns of children about their online experiences reflected these design strategies, including:
    - Spending too much time online
    - Being contacted by adult strangers
    - Feeling pressure to behave in ways that gain attention and validation (reach)
    - Feeling pressure to be 'visible' and active online

- Enhancing their appearance through image alteration

- Many of the children that feature in the report received unsolicited sexual content from adults within hours of being online.
- The children expressed the view that the digital world is one that 'their' adults do not understand. They are clear that a less toxic, demanding and adult digital world would suit them better, but are worried that if they 'switch off', they may be excluded. The design strategies of the report describe how the fear of being left out is engineered into the system.
- Children are often reluctant to say what they see and do online.[4] They underestimate the time they spend online; some are embarrassed or worried about revealing what happens online; some feel guilty, many worry that they will be punished by having their phone taken away; many are not aware of the outcomes of their online use and most are not aware of how their behaviour or content is spread, used and consumed online.
- To validate their experiences, the researchers tested using avatars as proxies for the children (see methodology section on page 68). The avatars were set up with the correct age of the individual child on which their profiles were based, and all the avatars were above the minimum age of use for each service.
- The avatars were set up to recreate the profiles of real children, but to protect their experiences and the experiences of others, the avatars did not interact with other children. For this reason, the findings from the avatar research are emblematic of the child's experience, rather than an exact recreation. However, the outcomes across the entire group of children show similar patterns. These patterns mirror the recorded experiences of children more broadly, including those captured in recent reports from Ofcom[5] and Ofsted.[6]
- Despite being registered as the age of a child, and being targeted with child-focused, age-appropriate advertising, the avatars were served up sexual content, requests from adults for contact, self-harm and suicide material, crash diets and other extreme body image content.
- The types of recommended content varied between the different genders of the avatars. All of the 'boy' profiles were contacted by adults clearly offering pornography. The 'girls' were offered commercial products and services including music accounts and clothing brands.
- The avatars were registered as 13+, and the children we spoke to also met the minimum age of use for the services. However, 42% of children under 13 are also

[4] https://www.revealingreality.co.uk/wp-content/uploads/2019/01/CML-wave-5-report.pdf
[5] https://www.ofcom.org.uk/__data/assets/pdf_file/0013/220414/online-nation-2021-report.pdf
[6] https://www.gov.uk/government/publications/review-of-sexual-abuse-in-schools-and-colleges/review-of-sexual-abuse-in-schools-and-colleges

using these services,[7] being guided to the same experiences and served up the same content.

The digital world has been allowed to be risky by design. It is fixated on outcomes that do not account for the presence of children. It does not abide by the rights, rules or respect that children are due. 98% of UK children over the age of 10 are online[8] and the features and commercial drivers that put children at risk are normalised, unfettered and happening at scale. But just as the risk is designed in, so too can it be designed out.

[7] https://www.ofcom.org.uk/__data/assets/pdf_file/0025/217825/children-and-parents-media-use-and-attitudes-report-2020-21.pdf
[8] https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/childrensonlinebehaviourinenglandandwales/yearendingmarch2020

Recommendations

This report is published as the Age Appropriate Design Code comes into effect (2 September 2021), as the new regulations for video-sharing platforms take root and crucially, as the Draft Online Safety Bill is published. Together, they provide a unique opportunity to embed protections for children into the products and services of the digital world. Revealing Reality's research shows a status quo in which children are being exploited and put at risk, and an unacceptable number are coming to harm. It is unlikely that the Online Safety Bill will be introduced in Parliament before 2022, and the Codes of Practice setting out how services are to comply with the Bill will be produced only *after* it receives Royal Assent. This means that the effects of the Bill are unlikely to be delivered to children for another three or four years. For this reason, our recommendations are divided between the Online Safety Bill and other actions that the government must take immediately. A child, whether aged 8, 12 or 15, does not have three or four years to wait. They need protection now.

These recommendations relate specifically and only to the issues that the Pathways report outlines.

Online Safety Bill

1. The aspects of design that create risk for children are not deliberately designed to hurt them but are nonetheless 'intentional', designed to fulfil the commercial goals of a product or service. The most common response we hear from engineers and designers is 'I never thought about it like that'. While the current list of duties set out in the draft Online Safety Bill is welcome, they do not add up to a 'duty of care.' An overarching duty ***to*** care would drive companies to consider the impact of their services on children, in advance and in the round. This principle is used in many other sectors and settings, including health and safety and consumer protection. A duty of care would futureproof the Bill and ensure that the regulator is not always behind the curve. ***The Online Safety Bill must include an overarching duty of care for services 'likely to be accessed by children.'***
2. Principles of safety by design should underpin all the duties and requirements for products and services likely to be accessed by children, with compliance assessed against enforceable minimum standards. Many of the design features brought to light in this report are entirely unnecessary for the delivery of a service. For example, hiding visible popularity metrics such as 'likes' would not stop a child engaging with content they enjoy. Preventing the micro-targeting of children would not stop contextual advertising for health campaigns or child-focused products. A mandatory safety by design framework would usher in a new world of digital design, set out clear expectations and ensure that services, both big and small, understand that some design choices are simply not appropriate in relation to children. ***The requirement to make services safer by design must be set out on***

the face of the Bill, and Ofcom must be charged with creating a safety by design framework that is mandatory and enforceable across the sector.

3. Throughout the Bill, there are concessions for small businesses in the name of innovation and reducing the regulatory burden. However, small is not necessarily safe. Often, small services do not have sufficient moderation or reporting processes in place and have become a haven for those who spread mis and disinformation.[9] They should not be held to lesser regulatory standards than services with more users or a larger workforce. Small companies should be given the support they need to comply with regulation, not permission to harm. ***Children have a right to be protected wherever they are online and the Bill must be applicable to all services likely to be accessed by or impact on children.***

4. The risk assessment requirements in the Bill are focused on risks associated with content and the actions of other users, rather than the system design that puts children at risk. As currently drafted, there is no clear requirement for service providers to act on and mitigate the risks identified in their risk assessment process. They can be punished for failing to undertake or hand over their risk assessment, but there is no clarity or accountability for the scope, quality or speed of mitigation for the risks the assessment reveals. ***The Bill must set out the scope and minimum standards for a Child Risk Assessment framework, requiring all services likely to be accessed by or impact on children to mitigate the risks identified and to disable features until mitigation measures have been undertaken to the satisfaction of the regulator. Minimum standards for a Child Risk Assessment framework must address content, contact, conduct and contract as well as cross-cutting risks to children,[10] and set out categories of risk that it seeks to prevent.***

5. The current definition of harm in the Bill is focused on harmful *content.* This misses a full range of potential risk and harm from contact, conduct and contract risks. The concentration on harmful content opens up the government to accusations of curtailing free speech, rather than taking the more neutral and holistic approach to tackle risk at a systemic level. The digital products and

[9] For example, the video-sharing platform Clapper, which has under 500,000 downloads on the Google Play store. Despite a minimum user age of 17, the service's weak age assurance means a child can log in to Clapper via their Google account, even if they are underage. The service is known to harbour misinformation and its terms of service explicitly state that it "cannot ensure the prompt removal of objectionable material as it is transmitted or after it has been posted."

[10] Livingstone, S & Stoilova, M (2021). The 4Cs: Classifying Online Risk to Children (CO:RE Short Report Series on Key Topics). Hamburg: Leibniz-Institut für Medienforschung | Hans-Bredow-Institut (HBI); CO:RE - Children Online: Research and Evidence: https://doi.org/10.21241/ssoar.71817

[10] https://www.gov.uk/government/publications/review-of-sexual-abuse-in-schools-and-colleges/review-of-sexual-abuse-in-schools-and-colleges

[10] There are other mentions in reference to certain offences in the Schedules.

[10]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985033/Draft_Online_Safety_Bill_Bookmarked.pdf#page=123

[10] https://assets.publishing.service.gov.uk/media/601965568fa8f53fbe1a0795/_Proposed_Negative_SI_-_Audiovisual_Media_Services_Amendment_Regulations_2021_SI.pdf

[10] https://ico.org.uk/for-organisations/guide-to-data-protection/key-data-protection-themes/age-appropriate-design-a-code-of-practice-for-online-services/3-age-appropriate-application/

[10] The Age Assurance (Minimum Standards) Bill:

services in scope of the Bill are consumer-facing products. Ensuring that they do not present a risk to children is simply a price of doing business, like in any other sector. ***The Bill must establish a definition of harm that includes risks created by the design and operation of products and service. The definition should ensure that a child's right to freedom of association, expression and thought are upheld.***

6. Children are exposed to pornography online and introduced to both real (human) and automated (bots that may appear human) purveyors of pornography at an industrial scale. The impact of pornography on children is widely reported and can be seen in our schools and colleges.11 Parents, teachers and children themselves are united in their call to prevent companies from exposing children to pornography, and the government has made repeated promises to do this that have not been fulfilled. The word 'pornography' is mentioned only once in the Bill,12 in reference to the repeal of the unimplemented part 3 of the Digital Economy Act,13 which would have brought in mandatory age verification for commercial pornography companies. **The Bill must include a definition of adult content and a specific requirement *for* services hosting pornography, whether user-generated or commercially provided, to have age assurance measures in place. It must also include a specific requirement for companies not to offer (recommend, rank or provide) adult content to under 18s. Age assurance systems introduced to prevent access to adult content must be privacy-preserving and secure.**

7. The research shows a multiplicity of features that put children at risk. While a mandatory risk assessment, mitigation and review process, alongside a robust and enforceable safety by design regime, would bring about many necessary protections and design changes, there is considerable confusion about the scope, status and enforceability of the Codes of Practice and guidance that Ofcom is charged to produce, and the right of the Secretary of State to change or revoke them. ***The Bill must require Ofcom to produce a statutory Code of Practice for child online safety. This should set out the requirements for companies assessing and mitigating risks to children and set minimum standards for safety by design, including age-appropriate published terms, age assurance, and moderation, reporting and redress systems. These standards must be mandatory and enforceable, and independent of political considerations.***

8. Companies have known for many years that their services are risky by design and put children in harm's way. They are aware that they disseminate content that children should not be offered and that the features they optimise for commercial ends also put children at risk. Whether hiding child sexual abuse material behind

[11] https://www.gov.uk/government/publications/review-of-sexual-abuse-in-schools-and-colleges/review-of-sexual-abuse-in-schools-and-colleges

[12] There are other mentions in reference to certain offences in the Schedules.

[13] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985033/Draft_Online_Safety_Bill_Bookmarked.pdf#page=123

end-to-end encryption, introducing children to adult strangers, making a child's real-time location visible, targeting children with scams, misrepresenting the age restrictions on apps, games and content, or using only 'tick box' age assurance, the sector has failed to act. ***The Bill must introduce company director liability, not only for information offences, but for failure to fulfil a duty of care and all other duties, relating to products and services likely to be accessed by children.***

Immediate action in advance of the Online Safety Bill

The current timetable of the Online Safety Bill, and the deferral of responsibility to Ofcom to work out detailed Codes of Practice, mean that many of the advances offered by the Bill will not be felt by children for several years. Children cannot wait. Already we have legislation that requires[14] or will shortly require age assurance,[15] but no formal minimum standards these systems must meet, or what a 'risk-based' approach means in practice, nor clarity on how it will be enforced.

There are few parents who would not be alarmed by the findings in Ofsted's recent report or concerned for a teenager who may be propositioned to provide naked or sexual pictures as many as eleven times per evening, for a pre-teen consuming adult material or being nudged to participate in a culture that is normalising these demands. Taking action now offers them their childhood back.

9. The government should introduce minimum standards for age assurance, including a requirement for Ofcom to set out an explicit risk-based framework that would allow businesses to understand what level of assurance is required in different scenarios. The private member's bill recently introduced by 5Rights Chair Baroness Kidron,[16] could be usefully co-opted and amended for this purpose. The widespread adoption of privacy-preserving age assurance is widely supported by age verification providers, children's charities, parents and the tech sector itself. It could be rolled into the Online Safety Bill at the time of Royal Assent, but would allow Ofcom to develop a standard that could be operational within months. A standards-based age assurance scheme not only offers safety but also opportunity for children to be given different information, privileges and access to age-appropriate services. ***The government must urgently introduce standards for age assurance with a risk framework, to drive commercial innovation and sector-wide use of privacy-preserving age assurance solutions.***

[14] https://assets.publishing.service.gov.uk/media/601965568fa8f53fbe1a0795/_Proposed_Negative_SI_-_Audiovisual_Media_Services_Amendment_Regulations_2021_SI.pdf
[15] https://ico.org.uk/for-organisations/guide-to-data-protection/key-data-protection-themes/age-appropriate-design-a-code-of-practice-for-online-services/3-age-appropriate-application/
[16] The Age Assurance (Minimum Standards) Bill: https://bills.parliament.uk/bills/2879

10. The government should ask Ofcom to develop a Code of Practice for child online safety concurrently with the passage of the Bill. This would allow co-development with Parliament, public consultation and stakeholder engagement, while ensuring that by the time of Royal Assent, the code for online safety for children is ready to be published. While this may not be the usual practice, this pace is required to keep up with the tech sector which works swiftly and iteratively and will advance the protection of children by many months and very likely some years. The sector is clear that a single code of practice, from an independent regulator, would be preferable to a number of separate interventions on the face of the Bill. ***The government should formally write to Ofcom, the named regulator, to ask that they start work on a Children's Online Safety Code of Practice with the aim of having it ready by or before Royal Assent.***

11. The Age Appropriate Design Code comes into effect on 2 September 2021. This has the potential, if robustly enforced, to address some (not all) of the issues children face online. The government review of representative action provisions under Section 198 of the Data Protection Act (2018) concluded that in spite of considerable support, charities and third sector organisations that protect children would not be permitted to take action on their behalf against companies in breach of the Age Appropriate Design Code. Nonetheless, robust enforcement of the AADC would provide evidence for and experience of regulating the sector and offer immediate benefits to children. ***The government should resource and support the ICO to ensure that the Age Appropriate Design Code is fully complied with.***

We heard again and again from designers that they could design for safety, but their companies require them to design to maximise time spent, maximise reach and maximise activity. They want and need leadership. The UK is singularly well placed to be a leader in child online safety. The government should position the UK loudly and proudly as a global leader in child online safety and, as we do so, ensure that its actions meet its rhetoric.

Pathways:
How digital design puts children at risk

REVEALING REALITY

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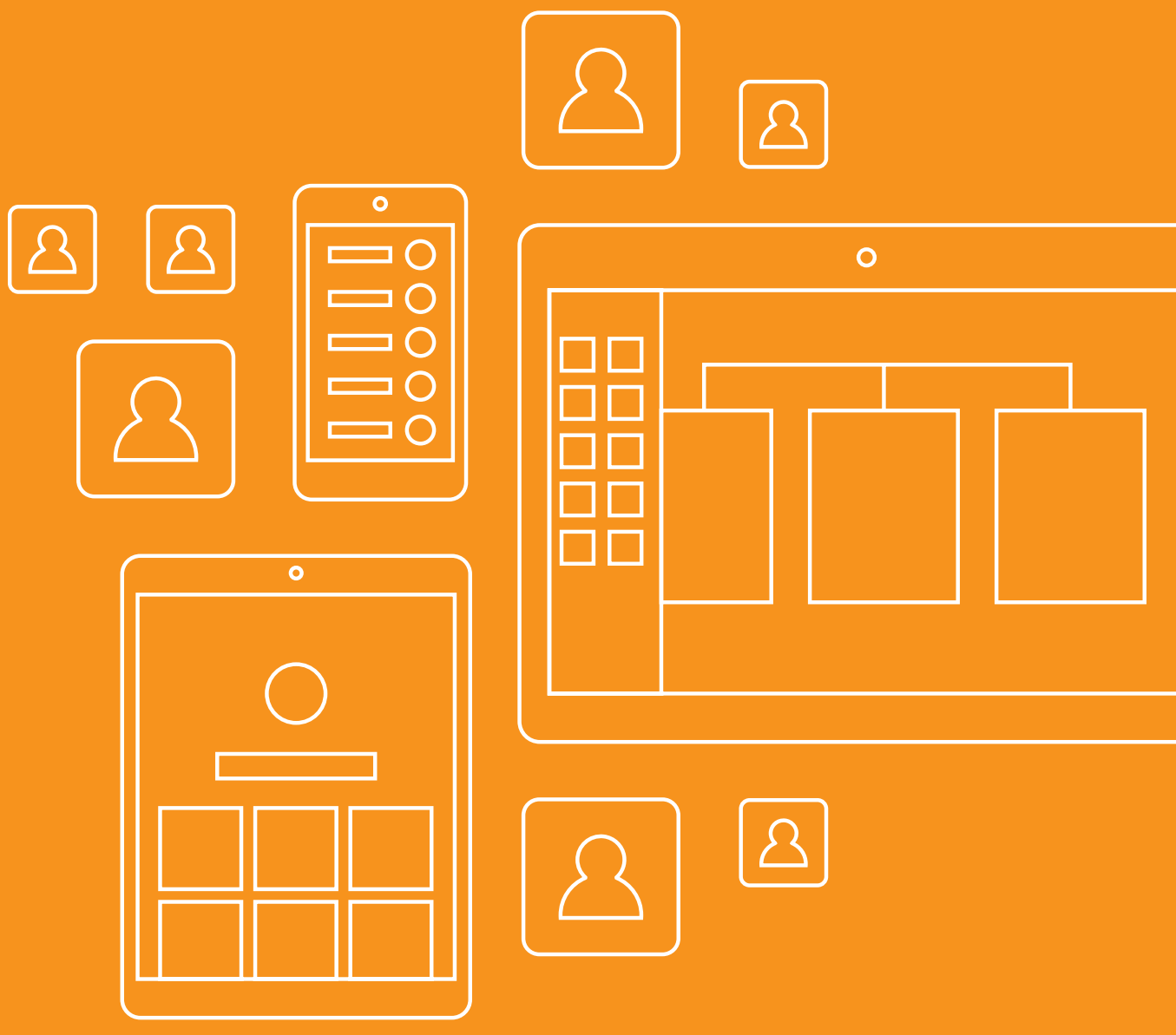
Introduction



About Revealing Reality

Revealing Reality is an independent social research agency, working with regulators, government and charities to provide independent and rigorous insight into young people's experiences online.

Studying how the digital world is shaping people's lives is something we do every day. We've tracked how children use social media and the impact it has on them for the past seven years as part of Ofcom's Children's Media Lives[1] research, and we've conducted some of the most detailed qualitative behavioural research on digital behaviours,[2] observing how people really use digital products, services and technology.

We have been thinking for a long time about how design shapes behaviour – across technology, gambling, financial products, the health service, and more. Behaviour change techniques are at play in almost every interaction we have with the world around us, and analysing who is making decisions about design, and why, is central for making people happier, healthier, and more empowered.

We were excited by the opportunity to conduct this work with 5Rights, to bring this thinking together with their drive for achieving impactful policy change, to improve the lives of children.

1 Ofcom – *Children's Media Lives Wave 6*: https://www.revealingreality.co.uk/wp-content/uploads/2020/02/cml-year-6-findings.pdf

2 Revealing Reality – *Through the Looking Glass*: https://www.revealingreality.co.uk/wp-content/uploads/2019/06/Through-the-Looking-Glass_Revealing-Reality.pdf

Definitions

Digital services – any product or service that is delivered via a digital interface such as a smartphone, laptop or games console. This includes digital apps, websites and online games, including (but not exclusively) social media products and services.

Social media – a subcategory of digital services that enable the creation and sharing of digital content via virtual communities or networks.

Examples of social media products and services that are referenced in this report include: TikTok, Instagram, Snapchat, Facebook, Twitter, Discord, Twitch, Yubo, YouTube, Omegle.

Features – for the purposes of this report we refer to 'features' of digital services when we are talking about individual components, capabilities or user interface design that offer specific functionality for the user of that digital service. Examples might include 'search', 'commenting', 'posting'. Features may also include elements of the design that are less visible or self-evident to users, including algorithm-driven content selection or recommendations.

Designers – in the tech industry there are a wide range of job roles and professions that all contribute to the creation of digital services – from product managers to behavioural psychologists, who might not all be involved in 'design' in its literal meaning. However, for the purposes of this report we use the catch-all term 'designers' to refer to any professional who is working on and contributing to the creation of digital services.

Children and young people – a child is any person under the age of 18.[3] The children and young people referenced throughout this report are the sample of 21 respondents that took part in the qualitative interviews, who ranged in age from 12 to 18.

Digital products and services are commonly used by children from a very young age: 82% of children aged 3–4 'went online' during 2020 and 42% of children between age 5 and 12 have used social media,[4] although social media companies specify a minimum age limit of 13 or older.

Avatars – we use the term 'avatars' to describe a component of the research methodology where we set up social media profiles that replicate some of the behaviours of real children to observe what happens to those profiles. Avatars were used as 'online proxies' for real children who took part in this research. For more detail on how we used these avatars, see page 66.

3 *The United Nations Convention on the Rights of the Child*

4 Ofcom - *Children and parents: media use and attitudes report*, 2020/21

Research summary

Research objective

To explore how the design of digital products, in particular social media, shapes the experiences and behaviours of children.

Research approach

Digital products and services vary hugely, and each is constantly changing and introducing new features. While many features are similar across services, there is little transparency about how they function.

The children who use these digital products have different life experiences, interests, and underlying vulnerabilities or influences on their lives; different parents, friends, schools. We cannot entirely disentangle which factors are driving differing outcomes.

With these challenges, we designed a research project to try to get as close as possible to how social media products and services are shaping the experiences and behaviours of children. We used three approaches:

- **Interviewing designers:** How are these products and services designed? How are the people who build them making decisions about design? What are their objectives?
- **Interviewing children:** What are their experiences online? How do they feel about what they see and do online?
- **Testing avatars:** What happens when you replicate the experiences of children on social media using an 'avatar' profile: a proxy for a real child? What does social media show them? What behaviour does it enable?

Together, these three strands of research present a substantial evidence base that begins to connect the dots between how digital products are designed, and the impact they have on the lives of children.

Interviewing designers

When interviewed, designers of social media products and services told us:

- Designers work to the brief they are given, and in many businesses the success of a feature or product is judged by its ability to shape the behaviour of users in line with business goals.
- Designers of social media products use a wide range of strategies to encourage users to: 1) spend time on their product, 2) attract more users, to 3) interact and generate content.
- The business model of social media products relies on their ability to shape behaviour according to these three outcomes; if they fail to do so, they will not generate revenue.
- There is a huge amount of expertise, power and data behind these design strategies including mass A/B testing and machine-learning algorithms, constantly optimising for revenue generation against these three outcomes.
- The functionality of these products can be deconstructed to reveal the 'design strategies' used to shape behaviour – from refining what content users see to make it more and more appealing, removing friction, to promoting social interaction and encouraging content creation through features like filters and editing tools.
- Designers expressed concern about the impact of their design process on users.

Interviewing children

When we explored this subject with children, they told us:

- Many spend more time online than they feel they should, and often find it hard to stop.
- Social media is where all of their friends are and feels like one of their main windows into the world around them. To not go on social media would feel like being excluded.
- They experience validation and affirmation online in the form of 'likes', comments and connections which shape what they do online in seeking them out.
- Children seek out this affirmation and attention by creating mostly **visual** content (e.g., selfies, videos), sharing them as **widely** as possible with online networks, and by **copying** popular trends and behaviours of others.
- Children had experienced unknown adults contacting and connecting with them online, for some resulting in abusive encounters. Others had engaged with content relating to weight loss online, and for one this ultimately led to seeing huge quantities of content promoting eating disorders.
- Many children in this research blamed social media for negative and challenging experiences they had faced growing up, surrounding body image and relationships.

Testing avatars

When we used avatars – 'proxy' children's profiles set up on social media that mirrored the age, interests, and behaviour of real children – we saw that:

- Child-aged avatars were exposed to significant quantities of unsolicited contact from unknown adults, including the sharing of sexual content.
- Avatars were quickly recommended and served more of whatever they seemingly 'paid attention to' (by clicking, 'liking' or 'following'). This applied to a range of content – such as celebrity or sport, but also included content related to weight loss promotion, fitness, dieting and sexualised content.
- When child-aged avatars searched for content (based on the experiences of real children in the research) such as promotion of eating disorders or self-harm, they were quickly able to access this type of content, irrespective of their registered age. This content often contravened the social media company's own community guidelines.
- These same child-aged avatars were served age-relevant targeted advertising (e.g., relating to toys, school or other products aimed at young people), while continuing to be served sexual images, content promoting eating disorders or weight loss and self-harm, despite social media companies **knowing that these accounts were registered as children.**

Social media is designed to shape behaviour, and children experience pressure to behave a certain way on social media.

Business objectives	Design strategies	Outcomes for children
Social media companies want to maximise time on their product	Social media is designed to engage users by making content more and more appealing, and reducing friction in consumption	Children feel like they spend too much time online and find it hard to stop
Social media companies want to maximise reach the of their product	Features are designed to promote and extend networks and connections, between peers and strangers, children and adults	Children have extensive networks and connections online and to be offline is to feel excluded
Social media companies want to maximise interaction on their product	Features are designed to encourage content creation and integrate metrics for popularity and validation to promote interactivity	Children feel under pressure to get feedback and validation online, and change their behaviour to try to gain these

The outcomes experienced by children in this research clearly mirror the objectives of designers when creating social media products and services. Companies create the architecture in which children interact and explore, and so influence what they do.

The products are **designed to shape behaviour in line with their business objectives,** and **these are the behaviours we see among many child users** of these products.

Some children in this research felt social media had contributed to negative and challenging experiences they had faced growing, up surrounding body image and relationships. At the same time, children could not imagine a world where they were not reliant on social media.

SECTION 2

Designers

How designers create digital products

"There are no safety standards – there is no ethics board in the digital space."

Product Manager
Digital company

"People don't know what the 'watch outs' are in this work until it's a bit too late."

Product Manager
Digital company

To explore why digital products, in particular social media products, are designed the way they are, we interviewed a range of professionals across the tech industry. We asked nine product managers, creative directors, designers, and engineers across the sector: **How do you make design decisions when you build a digital product or service?**

They told us that on a day-to-day basis, their decision making is guided by **business objectives.**

The business model drives design

For many digital businesses, financial success is dependent on advertising revenue, and advertising revenue is in turn dependent on engaged users.

The quantity of customers paying attention to the content on a product equates to the value of the business. The more people paying attention, the more people there are to serve adverts to. The more advertising, the more profit.

This business model drives the behaviour of those who work for social media companies, shaping their priorities and driving design decisions.

> *"Companies make their money from attention. Reducing attention will reduce revenue. If you are a designer working in an attention business, you will design for attention."*
>
> **Strategy Director**
> Digital company

Therefore, two key objectives for designers are to:

1. **Maximise reach**:
   draw as many people onto their product as possible
2. **Maximise time**:
   capture as much of their attention as possible

Social media relies on its own audience to contribute

Some digital businesses rely on **user-generated content and activity** to engage their audience.

Without user-generated content and activity, there would be no 'social media' for anyone to consume. Social media depends on users posting and sharing and that others respond, comment, 'like' and share.

To meet the first two objectives, which are to:

- **Maximise reach**:
  draw as many people onto their product as possible

- **Maximise time**:
  capture as much of their attention as possible

These companies also need to:

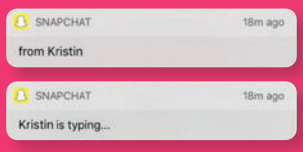
- **Maximise activity**:
  encourage as much content generation and interaction as possible

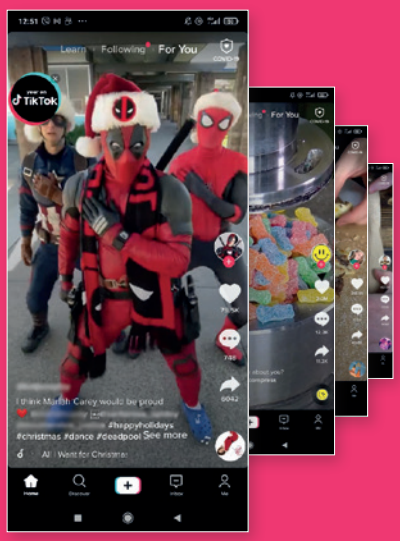
How user-generated content and activity drive consumption

Push notifications[5] pull people onto the service – many of which involve **another user's activity triggering** them – e.g., by sending a message, 'liking' a post or sharing something new.

Endless scrolling feeds or quickly swipeable reels of **recommended content** keep people consuming – but other users are required to **create the majority of that content.**

The appeal of seeing the comments, 'likes' and followers tot up – mostly relies on other people **commenting, 'liking' and 'following'.**





Designers create a choice architecture that shapes behaviour

While social media businesses do not, for the most part, create the content that is consumed, they do design the architecture, infrastructure, or environment through which it is served. The design of this 'choice architecture' shapes what content is seen, by whom, and how users behave and interact. The way it is delivered is determined by design – is it a scrolling feed, story, reel, forum, etc.

- The algorithm and rules behind what content is served are determined by design – e.g., driven by popularity, location, what the user has previously engaged with

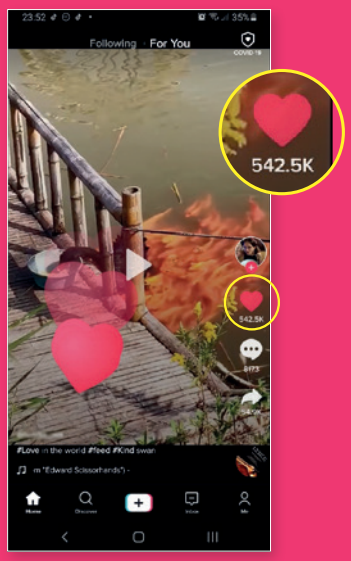
- The means of interaction and feedback between users is determined by design – e.g., comments, 'likes', follows etc.

5 A message that pops up on a mobile device to alert the user to activity in-app, even when that app is not actively running or open

- The visuals, language and positioning of each feature or piece of content are determined by design – e.g., prominence, salience, colour, shape
- The format of content that can be shared is determined by design – is it an image, video, or text? How is it presented visually? How long is it viewed for? What limitations are there on size or length?
  - E.g., on TikTok, videos up to three minutes in length
  - E.g., on Twitter, text up to 280 characters

The design and architecture of a 'like' button

- The **name** – a 'like' is called a **like**, implying the social value of it
- The **visual** of a pink heart, reinforcing the positive, social associations
- The **placement** directly under the scrolling thumb (for a right-handed user) for maximum ease of use for most users
- The **display** of how many 'likes' each piece of content has, prominently reinforcing how popular it is
- The **impact** of having a lot of 'likes' making it more likely the piece of content will be seen by larger numbers of people (e.g., on the 'For You' page)



Designers encourage behaviour by making it appealing and easy

Designs will make a behaviour more likely if they:

- **Make it easier, reducing friction**
- **Increase its appeal by offering incentives or rewards**

Designers are taught these as basic principles of behaviour change and of 'good design'.

Frameworks such as BJ Fogg's B=MAP demonstrate how these approaches are used to steer user behaviour in user experience design (UX Design). Designers aim to tap into a user's underlying motivations, make the experience as seamless and natural as possible and provide regular prompts or triggers to build behaviours into habits. These approaches are also referred to as 'persuasive design', 'behaviour design' or 'captology' and are used across commerce, gaming, and wider media as well as social media products. These ideas are drawn from behavioural economics and 'nudge' literature.[6]

6 See Nir Eyal's 'Hooked model' or BJ Fogg's 'Behavioural model'

What is friction in design?

Friction in design can be defined as anything that requires the user to work by clicking, tapping or having to think harder. Frictionless design therefore is the removal of any barrier, resistance or effort between the user and an intended action.

Humans take the path of least resistance by default, so designers can guide user behaviour by making an experience easier, more frictionless.

Device screens have a fixed size (especially on mobile), so designers must make conscious decisions about what to prioritise to be frictionless.

Designers invest most in making the most commercially valuable features as easy to use as possible.

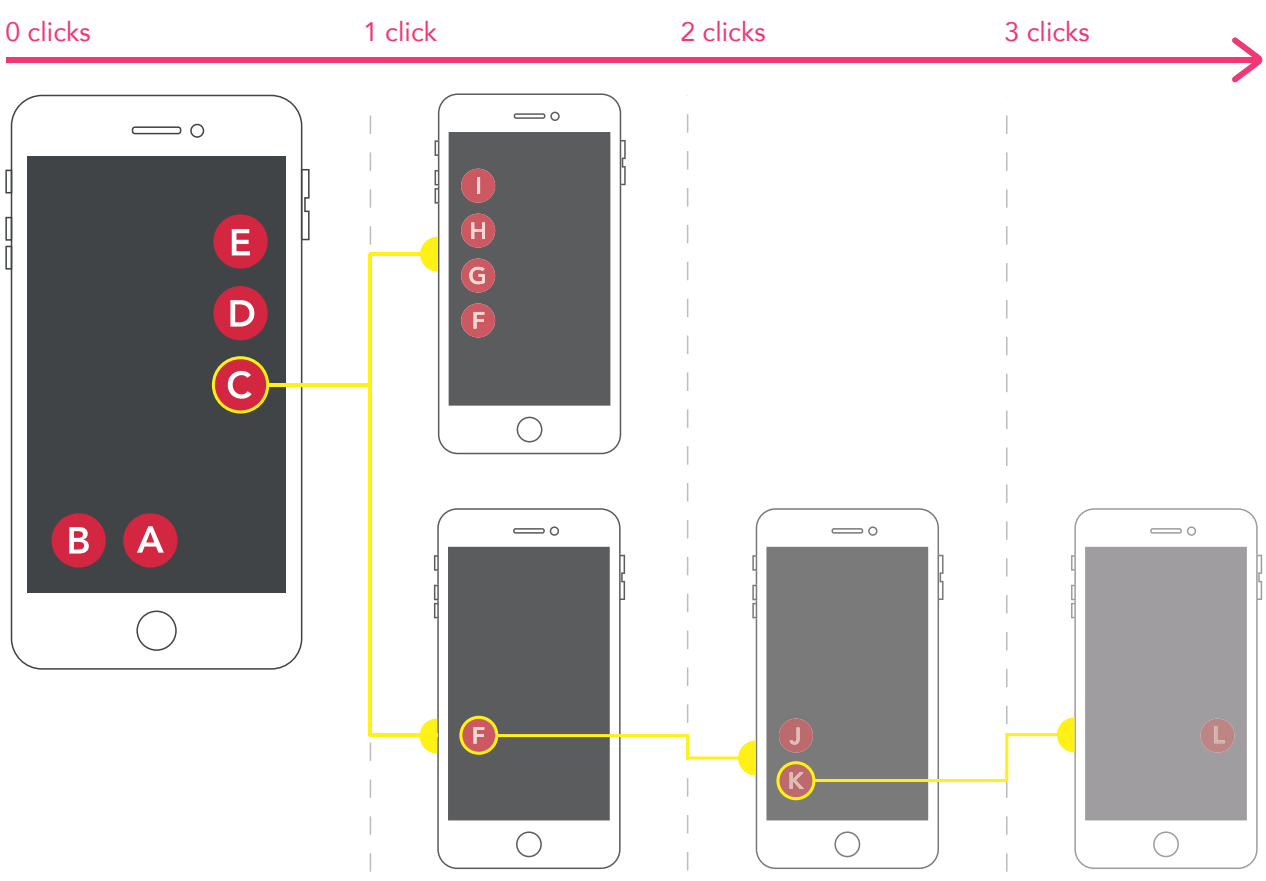
High value, commercially important features will tend to be low friction:

- Fewer clicks
- Less pagination
- Faster load time
- Passive consumption (e.g., watch, read)
- Image rather than text (e.g., emojis)
- Short

Low value, less commercially important features will tend to be higher friction:

- More clicks
- More pagination
- Slower load time
- Active input (e.g., write, create)
- Text rather than image
- Long

More clicks = more friction



Success is measured by time, reach and activity

The professionals we interviewed talked about the types of commercial objectives, targets or 'key performance indicators' (KPIs) they worked to. These always aligned with the revenue model of the business – for many businesses: more people, more time, more activity.

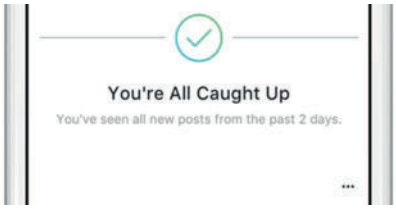
Talking to those who work in digital companies makes it obvious just how much pressure they are under to compete. New entrants to the market can easily 'steal' customers, changing the fortunes of a company at great speed.

> *"If a senior person gives a directive, say increase reach, then that's what designers design for without necessarily thinking about the consequences of doing that."*
>
> **Product manager**
> Digital company

"Senior stakeholders like simple KPIs. Not complex arguments about user needs and human values." **Product manager –** Digital company

Features that introduce friction or nudge users away from the business's objectives are rare, and where they exist are seen as exceptions that prove the rule.

> *"Instagram's feature that tells you 'you've exhausted all your new content' ['You're all caught up' – see right]…I don't know how that feature shipped – I think that person deserves a medal […] Because that disincentivises people to use Instagram – any product manager that is looking at time on app would argue against that."*
>
> **Design Director**
> Social media company



"The reason that there isn't more of the 'you're all caught up' that Instagram has is because you have to weigh up money versus health." **Analytics Manager –** Social media company

More complex, meaningful outcomes such as genuine social connection or the enrichment of a user's life are much more difficult to measure. Digital measurement tends towards quantity over quality, simple discrete signals over complex nuanced outcomes. Measuring how often people exchange messages or how many 'followers' they have is easy; measuring whether those connections are friendships, or whether they make somebody's life better, is much harder.

"Measuring things in the short term is much easier than in the long term." **Design Director –** Social media company

"In my day to day I struggle to say that the metrics we are trying to measure are the ones that matter to people." **Design Director –** Social media company

These KPIs are used to continue developing digital products

There is a huge amount of skill, effort, and data analysis invested in the development of these digital products. Techniques such as A/B testing and machine learning are driving this forward at great pace, getting more and more powerful over time.

The power in A/B testing

A/B testing (or 'split testing') is a type of experiment for adjusting and developing a user experience to produce the outcomes a designer wants. The designer tweaks one feature or element at a time and splits their users into different groups. User group A experiences the original version, user group B experiences the new, tweaked version, without either group necessarily being aware they are experiencing an alternate feature or user experience. The designers can then track how the different user groups behave with each version of the experience – measuring key metrics or 'KPIs'.

These KPIs will typically be whatever the companies' desired user behaviour is, e.g., how much time is spent on the product, how regularly the user visits, how much they interact with other users, etc.

Whichever version of the user experience that produces more of the desired behaviour can then be rolled out more widely across the user base.

For social media sites with enormous user bases, these experiments can be run at huge scale. Endless tweaks can be trialled and rolled out at speed by running multiple experiments concurrently and over time.

> *"You can easily test a new feature by seeing how people interact with it, then if people don't like [or engage with] something you cull it. There is a ready and responsive audience to test this on until you are pretty sure you have something that they all like [or engage with]."*
>
> **Product Manager**
> Digital product team

The power in algorithm-driven recommendations

Most social media products serve content based on automated recommendations, not just what users actively choose to follow.

The algorithms that select what content is served to users are optimising their selections over time, tweaking the user experience to better predict what will engage each individual user.

They choose what to show you based on what they know about you, from the time you have spent on the app or site and information you have shared about yourself and your interests. For example, what you 'like', who else you're connected to and what they 'like', what you spend time looking at, etc.

A TikTok press release[7] outlined some of the factors that are taken into account by their content selection algorithm to tailor your content experience more and more over time:

- How long you spend watching a video
- Whether you replay or watch a video through multiple times
- What videos you 'like'
- What videos you 'share'
- Accounts you 'follow'
- Comments you post
- Content you create
- Selected categories of interest (e.g., at sign up)
- Videos you say you are not interested in
- Your language preference
- The country you are in
- The device you are using

TikTok explains how they use this information to select videos to serve to you:

"All these factors are processed by our recommendation system and weighted based on their value to a user. A strong indicator of interest, such as whether a user finishes watching a longer video from beginning to end, would receive greater weight than a weak indicator, such as whether the video's viewer and creator are both in the same country. Videos are then ranked to determine the likelihood of a user's interest in a piece of content, and delivered to each unique 'For You' feed."

The algorithm uses features of videos such as captions, hashtags and the music and sound effects embedded in them to select similar videos, or ones that other users have also engaged with.

Content is continually refined more and more towards what you are most likely to engage with, amplifying what captures your attention the most.

7 https://newsroom.tiktok.com/en-us/how-tiktok-recommends-videos-for-you/

Designers have concerns about the impact of their products on users

Many of those we interviewed admitted that, on a day-to-day basis, they are not thinking about the potential negative impacts of the way their products are designed.

Most professionals talked about the good intentions and ambition amongst designers, especially those newly entering the sector. They felt that most colleagues went into tech because they wanted to make a difference in the world, and digital design is a way to achieve large-scale reach and impact. They want to make products that people love and want to use.

"All the new designers I hire certainly want to do good – working in tech provides an unmatched reach." **Design Director –** Social media company

But they often reflected that it was easy to fall into the trap of assuming that if lots of people are using their product, that equates to it being a 'good product'. Some felt that tech attracted ambitious but often naïve employees who were excited by the reach that digital design can offer, but rarely reflected on whether this reach was a positive for the world:

> *"It's really just a bunch of naïve and super-smart – book-smart and computer-smart, not empathy-smart – kids. They just want to make the best stuff, or because they can, or because it's cool."*
>
> **Analytics Manager**
> Social media company

However, during these interviews, all professionals acknowledged that they had concerns the architecture they build and the content they help share have the potential to negatively impact users. Some are concerned that by constantly tailoring what people see, their users may find it harder and harder to stop.

"You see all kinds of content that gets engagement that doesn't feel awesome." **Design Director –** Social media company

The power behind machine-learning algorithms that refine content recommendations means this can happen at great speed and scale. Some do express concern that giving children more and more of exactly what they seem to like and refining it closer and closer to what engages them the most could be very problematic.

> *"TikTok is basically just a mass A/B test. It feeds you in 15-second drips, the volume of content, something about how short it is – it's such a tight fit. But what are the long run implications of people devoting so much time to it? How will it impact [on] public health, teen development, identity, social connection?"*
>
> **Design Director**
> Social media company

But they felt that, while the business incentives and therefore targets stay as they are, the opportunity to change the way they work is limited and any effort to do so would be an uphill battle.

They recognised that there is often a **fundamental conflict of interest** between their business and their users.

> *"Your personal beliefs may not always align with the beliefs of your company."*
>
> **Analytics Manager**
> Social media company

Professionals recognised that negative or harmful experiences often take place on social media products that they have contributed to building. **Many raised concerns about the impact of beautifying filters, content-refining algorithms and high-volume notifications on users, especially for children.**

Discussions about safety on social media with designers almost always came back to moderation and enforcing of community guidelines. Social media companies invest huge amounts of money in *reactive* approaches to harm – responding to user-reports, scanning for risky keywords, retrospectively detecting illegal content such as child abuse imagery or terrorist activity. However, most designers recognised that the design process itself was inherent to many of the concerns they held, and without changing those processes, outcomes were unlikely to change for children.

Deconstructing design

How digital products use design to shape behaviour

Social media companies use a range of design strategies to shape the behaviour of users in line with their goals – more people, spending more time, driving more activity.

And they do so by making those behaviours a) appealing and b) easy. Tapping into human drives sets up a motivation for the behaviour – a reason to do it. Making it simple and frictionless then makes it easy for people to pursue those motivations.

Social media companies want to:

Maximise consumption
– scrolling, watching, swiping

Maximise activity
– connecting, interacting, creating

Social media companies shape these behaviours by:

- Making it appealing
- Making it easy

Maximising consumption

Social media companies want to maximise the amount of time users spend consuming content, to maximise advertising revenue.

This objective is common to a wide range of digital products and services beyond social media – any sector where the business objective is to maintain engagement with the user. Video-on-demand services, online retail and news sites are all examples of digital products that use a range of design strategies to maximise time spent on platform.

Maximising activity

Gamification is a design strategy used to promote engagement and activity across a wide range of digital products and services. Gamification is common in the gaming and gambling sectors but is also increasingly finding its way into a wide range of digital products (e.g., e-learning, digital health, and fitness products.)

Social media companies rely on user-generated content, interactivity and networks to draw people onto their products and keep them engaged.

They use a range of design strategies to make this kind of activity as **appealing** as possible, and to make it as **easy** as possible.

These strategies in effect **'gamify'** social activity to promote interactivity – by implying what the goals are (e.g., popularity), giving out points (e.g., how many 'likes' or followers you have) and rewarding the 'winners' (e.g., 'going viral' or getting paid to be an influencer).

Design strategies for...

Maximising consumption

By making it **appealing**

Refining content
Giving you more of what captures your attention

Applying time pressure
Making you fear missing out

Building anticipation
Creating suspense in the 'reveal' of content

By making it **easy**

Reducing friction
Making it easy to keep going (and harder to stop)

Maximising activity

By making it **appealing**

Attaching value
Defining what is aspirational and desirable

Quantifying
Counting and comparing popularity

Rewarding
Reinforcing the incentive for activity

By making it **easy**

Making it easy to connect
Encouraging people to build networks

Making it easy to interact
Streamlining validation and feedback

Making it easy to share
Facilitating copying and content creation

Refining content

Giving you more of what captures your attention

The content that is served to users is selected using ever-improving algorithms that respond to input behaviour. Over time, the formula gets better and better at **selecting content that is likely to result in each individual continuing to consume.**

For a user, this means that the more they use social media, the more data is gathered about what kind of content they seem to pay most attention to. Over time, the content served to them becomes more and more optimised for capturing their attention, and more uniquely tailored to individual users.

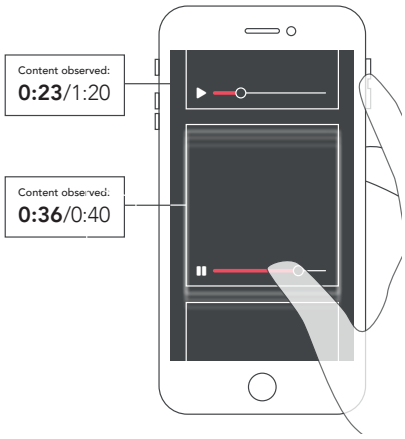
Examples:

Designers use data such as **how long you spent watching** a video or **hovering over a picture**, what you **'like'**, what you **share** on to others to determine what else to serve up to you. This might be more content from the same creator, theme or genre or that uses the same soundtrack, hashtags or captions. It might serve content that successfully engaged other people who paid attention to the same things you paid attention to. It might select content based on your location, or other personal data.

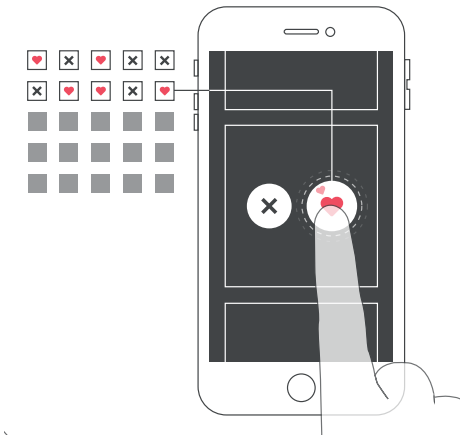
Digital products and services, including social media, send regular prompts to the user to engage with 'recommended' content – e.g., 'suggested for you' or 'more like this'. Notifications are the most ubiquitous form of prompt across social media – nudging the user every time there is relevant activity on the app for them to engage with.

See examples of this strategy in the digital world

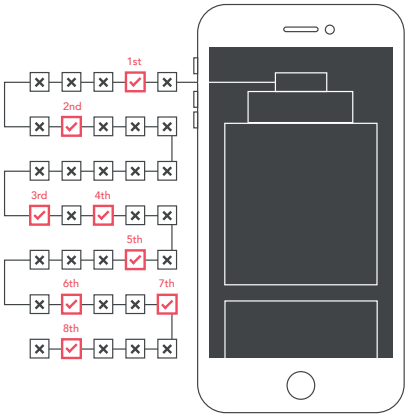
How to spot this strategy



Apps can collect data about how the user engages with each individual piece of content – did they watch all the way through? Pause? Adjust volume? This data is built into a 'profile' of each user to build a picture of what they pay most attention to.



Where they have introduced interactive features (e.g., 'liking', 'sharing', 'following') designers have enabled the app to collect even more data about how much a user engaged with each piece of content.



This data is fed into algorithms that rank and queue other available content according to what it assesses is most likely to capture your attention and keep you consuming for longer.

Applying time pressure

Making you fear missing out

Features that make content only temporarily available, or only viewable 'live', are used to encourage users to engage with it immediately, or on a regular basis.

Constraints placed on the availability of content will elevate its perceived value for users according to the 'scarcity' heuristic.[8] When people feel that content is only going to be available now or for a limited time, they are more likely to over-estimate how valuable it is due to its perceived scarcity.

Features that display a 'running total' of activity (e.g., how many days a user has done something consecutively) tap into the cognitive bias of 'loss aversion'[9] – people's motivation to preserve something they already have, over and above their motivation to acquire something of the same value in the first place. Giving a user a 'score' based on their behaviour incentivises them to maintain it, even if they wouldn't have gone out of their way to get it in the first place.

Examples:

'Stories' on multiple social media apps and sites are available for 24 hours only after being posted, with notifications reminding users when they are posted. Live-streamed content is presented, and often not available later 'on demand'. Content that is only available temporarily is often highlighted as such with specific graphics, colour schemes or labelling.

Notifications that content is available, new or about to expire increase this motivation to engage with it sooner.

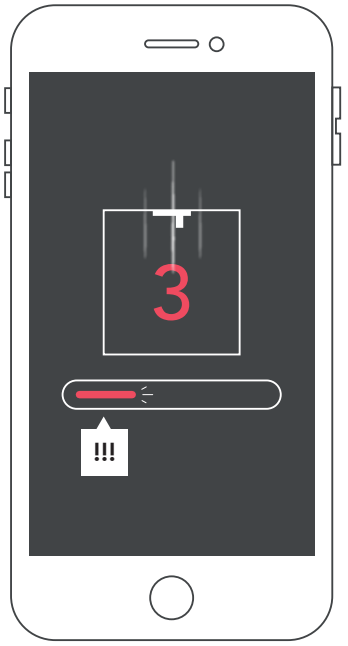
Features such as 'streaks' on Snapchat reinforce the motivation to engage with the app or with particular users every 24 hours, to maintain their 'score'.

8 Cialdini, RB. (2008). *Influence: Science and Practice*, 5th ed. (Boston: Pearson).

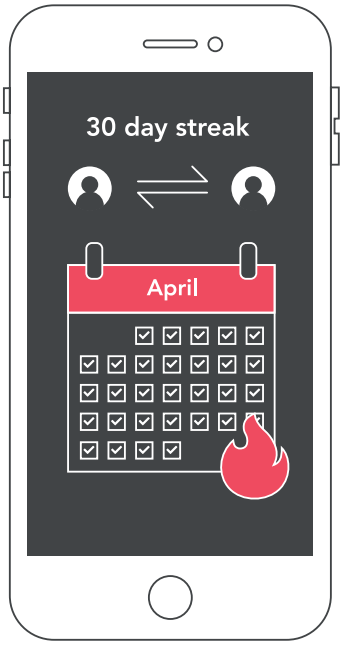
9 Kahneman, D & Tversky, A (2013). *Prospect theory: An analysis of decision under risk*. In Handbook of the fundamentals of financial decision making: Part I (pp. 99-127)

See examples of this strategy in the digital world

How to spot this strategy



Anywhere that a countdown or timer is used to indicate availability of content, this strategy is being used to increase user motivation to engage with it quickly.



Where users are given any 'running total' of consecutive activities – e.g., how many days in a row they have done something – this strategy is being used to increase motivation to keep the behaviour going on a regular basis. The longer the 'streak', the greater the perceived loss of breaking it.

Building anticipation

Creating suspense in the 'reveal' of content

The prospect of particularly enjoyable or rewarding experiences appearing at different or random points in the user journey reinforces what is known as a 'variable reward ratio'.

The uncertainty of when a valuable reward will be delivered has been shown to produce very high engagement across a wide range of domains, and to result in habits that persist over time.

Animations, graphics and other features often reinforce the sense of mystery or excitement in the 'reveal' of valuable content.

Examples:

Across digital products, this variable reward ratio that delivers rewarding experiences at unpredictable intervals is common. In many online games, 'loot boxes' can be purchased which contain an unknown mix of lower and higher value rewards or prizes (e.g., weapons in a combat game or players in a team sports game). These transactions are often made extremely 'low-friction' and easy through in-game or in-app purchase features, followed by particularly dramatic or exciting graphics when a 'big win' is made. Slot machine-like mechanisms operate on a similar principle of fast-paced activity with random-interval rewards or 'wins', with similarly low-friction payment (coin goes in the slot) and exciting and dramatic 'wins' (flashing lights, noise, celebration).

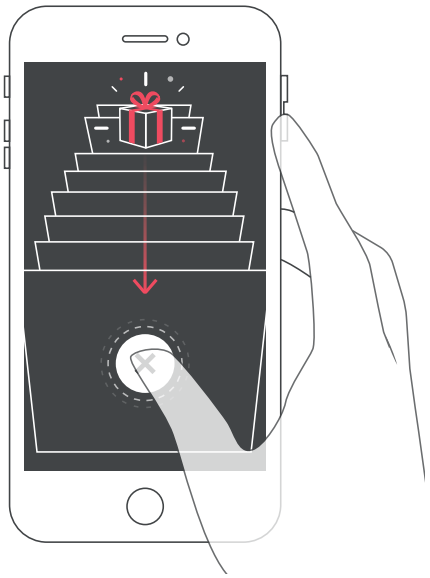
There are parallels in the design of some social media. Most social media feeds offer high quantity and bitesized content (e.g., short video clips, pictures, snippets of text) presented in a somewhat randomised (or perceived randomised) order.

The prospect of hitting on content that carries social capital – e.g., it is particularly 'shareable' and will garner a positive reaction if reposted is particularly appealing and therefore carries greater perceived reward.

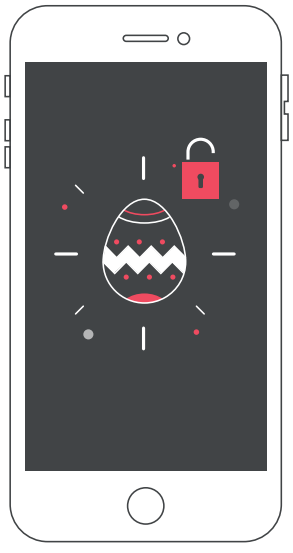
Many notifications across social media are designed to not 'give away' too much about the content they are trying to engage you with – e.g., they often will not contain the full message or who exactly has 'liked' your post, to keep the suspense of what kind of 'reward' has been received until the user has clicked through.

See examples of this strategy in the digital world

How to spot this strategy



When content appears to be 'randomly' queued, and particularly high value or popular content is visually highlighted (e.g., with lots of 'likes' or special graphics or labelling), the designer has used this strategy to build engagement and anticipation.



Any time a digital product offers an unknown reward or prize within an 'unlockable' package, it is tapping into this 'randomising rewards' strategy. The prospect of getting high or low value rewards is kept a mystery until opened, and often high value rewards are highlighted with particular fanfare and celebratory graphics.

Reducing friction

Making it easy to keep going (and harder to stop)

Once the user is online, strategies that make it easy and frictionless to keep consuming content are used to prolong their time online. Minimising the need for users to make active choices and removing distractions make continued consumption the easiest path.

If stopping is just one click more effort than continuing, it tips the balance in favour of continuing. It takes proactive effort and therefore active intention or additional willpower to stop.

Friction can also be introduced which **makes it harder to stop**. By introducing friction in the closing of an app, or in the diverting to an alternate activity, the product can make it even less likely the user will leave.

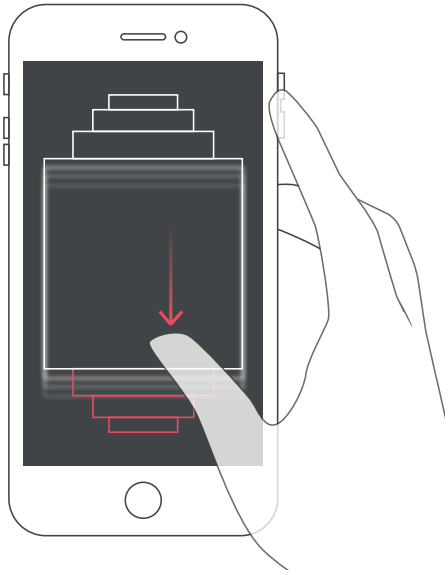
Examples:

The content across many social media apps and sites is configured to automatically play or refresh. Often 'auto-play' features mean that videos start without requiring the user to press any buttons. Videos often loop back to the beginning or automatically move on to the next post when they reach the end. Endless scrollable feeds present more content with minimal effort required from the user – e.g., a single tap or swipe.

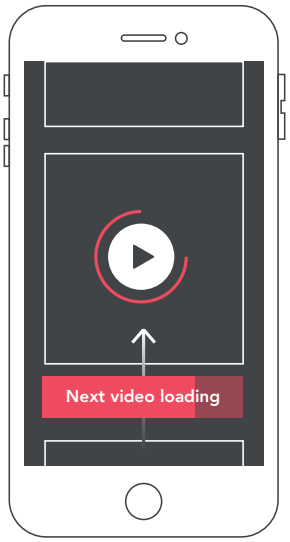
On some social media apps, hitting the 'return' or 'back' button once on many smartphones does not result in quitting the app or stopping the playing of content. It might instead send you to the top of the feed or to a different homepage within the app. Many social media apps require a 'double tap' of the return button to quit the app, introducing additional friction to stopping, when continuing remains frictionless.

See examples of this strategy in the digital world

How to spot this strategy



Designers have made every effort to make consumption frictionless when only a simple one-motion swipe moves the user on to the next post, or when a motion is ergonomically optimised to be as easy as possible for most users (e.g., one finger, right-handed).



When a piece of content auto-plays or moves on to the next automatically, the experience is even more frictionless, and therefore even more likely to keep the user consuming.

Attaching value

Defining what is aspirational and desirable

In choosing how they describe, label and present different features, social media ascribes value to different elements. Features that facilitate **connection**, **interaction** and **creation** are 'promoted' by associating them with positivity, popularity, and aspiration.

These signals tap into people's social psychology, e.g., through social norming and people's desire to conform and gain affirmation from those they admire.

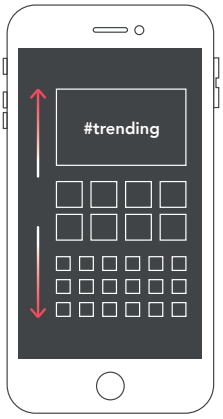
Examples:

Choosing language such as **'trending'** for popular content is suggesting the social value of paying attention to it. Categorising your most frequent contacts as **'best friends'** implies that frequency equates to quality.

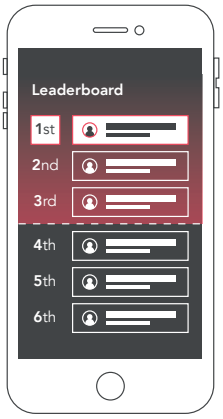
By making the 'like' button a pink heart or a 'thumbs up' icon, they are associating it with positive emotions and relationships, and promoting these features as positive and valuable to the user.

See examples of this strategy in the digital world

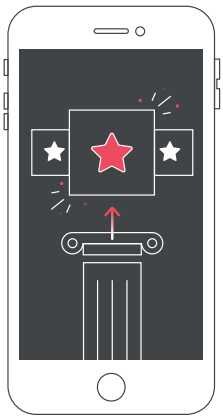
How to spot this strategy



Any time where content is given priority and labelled with language that suggests it is particularly valuable, this strategy is being used.



Hierarchy and ranking is commonly used to infer value and importance, and the metric used to do this ranking (often popularity) is intrinsically then associated as positive and worthy of pursuing.



Icons, imagery, colour and graphics are all used to infer value. Universally recognised symbols are often common across cultures and communities (e.g., hearts, stars, trophies = good, shields = safety, etc) and are used to infer meaning to the user.

Quantifying

Counting and comparing popularity

Counting and prominently displaying quantified information about social activity is designed to draw user attention to it. Users are shown these 'points' tallies both for themselves and all of the other users they interact with across social media.

People naturally compare themselves and want to compete with others, and will do so based on whatever information is available. In choosing which elements of social media to quantify and display, companies are implicating these as 'objectives'.

Clearly displayed quantified information about content will be seen by the user as a signal of how popular or socially acceptable it is, tapping into their desire to conform to social norms and fit in.

Examples:

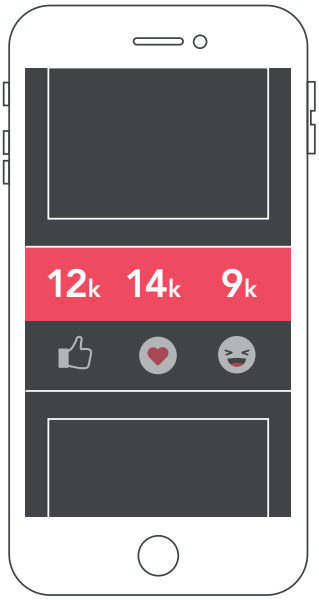
Most social media will count and display the number of connections – 'friends', 'followers', 'following' – each user has. Individual content is displayed clearly alongside a count of how many 'likes' or 'shares' it has received.

As well as quantity, some apps highlight *which* people have liked a post, e.g., which celebrities or which of your friends has liked your post, reinforcing quantified popularity with the affirmation of particularly aspirational or influential figures in your life.

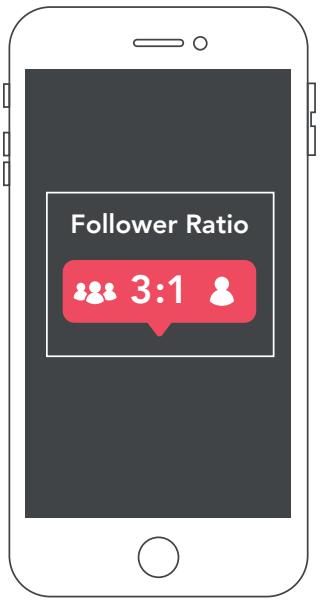
Some social media apps and sites keep tallies of how many days in a row two users have been in communication with each other, incentivising users to maintain daily contact regardless of the quality of that interaction.

See examples of this strategy in the digital world

How to spot this strategy



Anywhere that a digital product displays a count or metric, this strategy is being used. The decision as to what they choose to count tells you something about what they are trying to draw users' attention to.



Where they display contrasts or ratios of metrics, designers are building in an element of comparison or competition, further motivating users to care about and value whatever is being counted.

Rewarding

Reinforcing the incentive for activity

Some social media companies actively design in additional rewards and incentives beyond social affirmation for the behaviours they want, either literally or symbolically. Popularity is rewarded above all else.

Examples:

Content that has received high volumes of engagement will be displayed more prominently, be more likely to 'go viral' or be shown to greater numbers of other users.

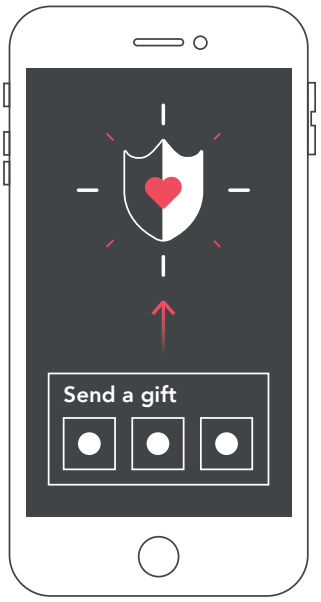
There is wide awareness that 'high-performing' content can also lead to paid-for sponsorships or product placement deals, leading to further financial reward.

On some digital products, users who generate a large amount of followership are paid by the company itself to produce content.

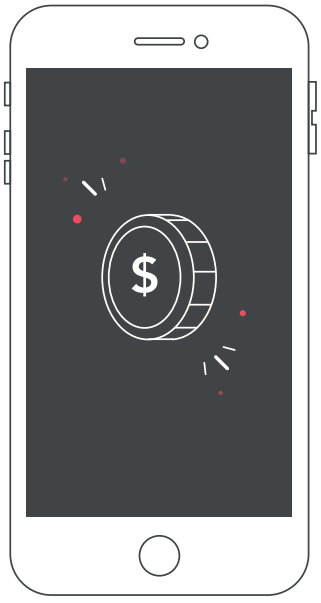
In other cases, 'badge' or 'token' graphics are used to celebrate achievements that relate to activity they want to incentivise – e.g., reaching a certain number of 'views' or 'followers'.

See examples of this strategy in the digital world

How to spot this strategy



Visual or symbolic rewards often take the form of coins, badges or trophies, or are deemed valuable due to their 'unique' or 'bespoke' status. Anywhere that the product offers users recognition for their activity (e.g., based on popularity, status, influence) they have built in rewards to reinforce certain behaviours.



Many products go further and either provide or facilitate actual financial rewards for users for desired behaviours. This might be by enabling sponsorships and other third-party financial arrangements, introducing functionality for transactions between users, or simply paying users who generate high levels of activity or advertising revenue.

STRATEGY 8 – MAXIMISING ACTIVITY

Making it easy to connect

Encouraging people to build networks

Social media companies design in features that facilitate the building of networks by enabling users to easily discover and connect with other users. Often these features are optimised to make connections as easy and frictionless as possible too.

Examples:

Most social media apps and sites will recommend large numbers of potential accounts to befriend/follow, based on the contact numbers or email addresses stored on the phone, or contacts brought across from other apps (e.g., Facebook friends might be recommended on Instagram).

In many apps, users can send direct messages to other users that are not already connections (e.g., not accepted as friends or followers), reducing the friction between making contact.

Other apps recommend profiles based on location, 'friends of friends' or mutual interests. Profile identifiers such as usernames or QR codes enable users to share their profile with others on and off-app to make wider connections.

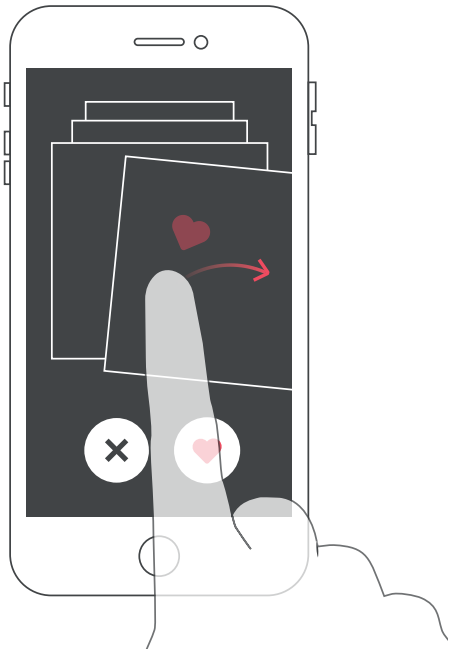
For many apps, privacy settings are 'off' by default, meaning the user must go out of their way (i.e., more friction) to make it harder for others to connect with them. It is, by default, easier for users to make connections than to avoid doing so.

Some apps and sites have built interfaces that minimise the friction involved in connections even further, e.g., with a 'left-right' one swipe selection for 'befriend' or 'reject'.

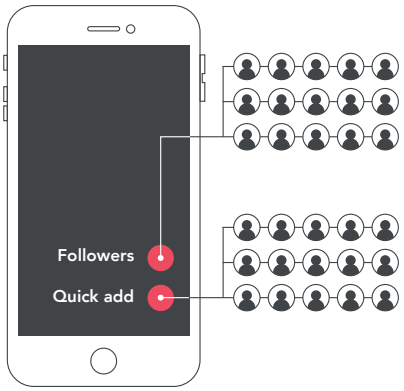
Blocking or 'unfriending' usually requires more clicks or actions (i.e.., more friction) than 'following' or 'friending'.

See examples of this strategy in the digital world

How to spot this strategy



Any examples where the ability to connect with other users or make choices about who to 'befriend' is particularly simple or frictionless, this strategy is being used.



Similarly, this strategy is at play in cases where the design enables users to quickly (with few clicks) find and connect with large numbers of people.

STRATEGY 9 – MAXIMISING ACTIVITY

Making it easy to interact

Streamlining validation and feedback

Companies design in a variety of ways of streamlining interactivity and means for giving feedback and validation to other users. By simplifying the channels for interacting, the barriers to giving other users feedback is lowered and the likelihood increased. This then increases the expected or 'normal' volume of interaction, creating a self-reinforcing cycle.

As well as making the channels for interacting simple, some social media companies nudge users further by introducing pre-populated responses or 'one click' positive reactions.

Examples:

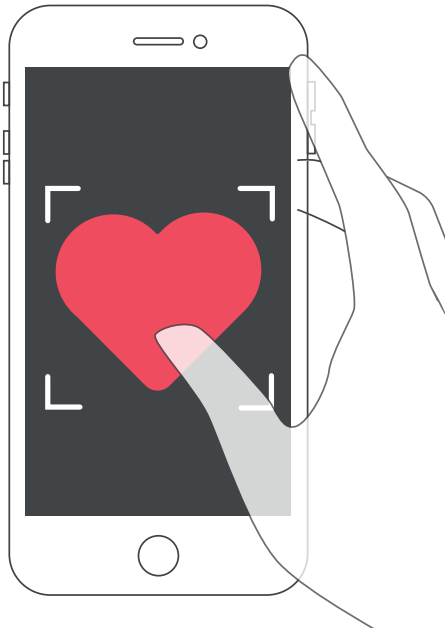
The 'like' button is the most ubiquitous and well-known channel for interactivity and feedback across a wide range of social media products. It represents the ultimate simplified and streamlined 'one-click' channel for providing validation and feedback to other users.

The fact that the 'like' button is prominently displayed and positioned conveniently under the thumb (for a right-handed user) increases the level of ease with which users can provide feedback.

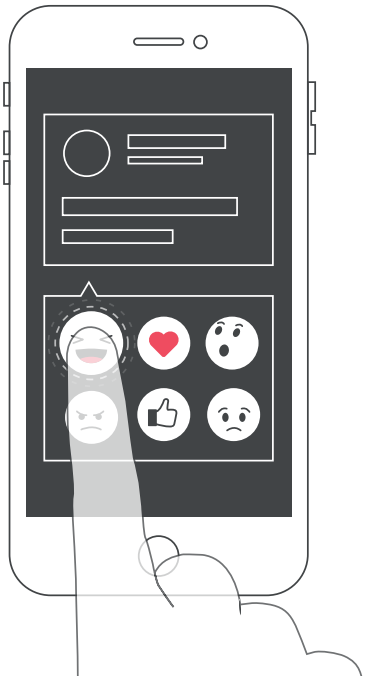
Other examples include the pre-selected range of emojis, stickers or comments often available in comment boxes or instant messenger interfaces. These are almost always predominantly positive (smiling emojis, positive affirmations) as opposed to negative, nudging users towards positive feedback and validation towards other users.

See examples of this strategy in the digital world

How to spot this strategy



When mechanisms for interacting are made as ergonomically easy as possible (e.g., a double tap anywhere on the screen), this strategy is attempting to encourage users to make use of it.



Reducing the required 'input' or effort for interacting and giving others positive feedback is another common example of this strategy.

Making it easy to share

Facilitating copying and content creation

All social media products provide a means through which to create and share user-generated content. These can range from the very simple (a text field for crafting a comment) through to the sophisticated (video templates and editing tools).

Companies often design tools for emulating or copying trends, or for improving the aesthetic appearance of content to make it easier for users to create content that will successfully engage or entertain other users.

Short of creating original content, companies usually make it as easy as possible to re-share content created by other users, maximising the amount of content that is 'shared' with the widest possible audience.

Examples:

Many social media products have features that enable the editing of content before it is posted. Filters, lenses and photo-editing tools are all designed to enable the user to 'improve' the aesthetics of images or videos that they might post as easily as possible.

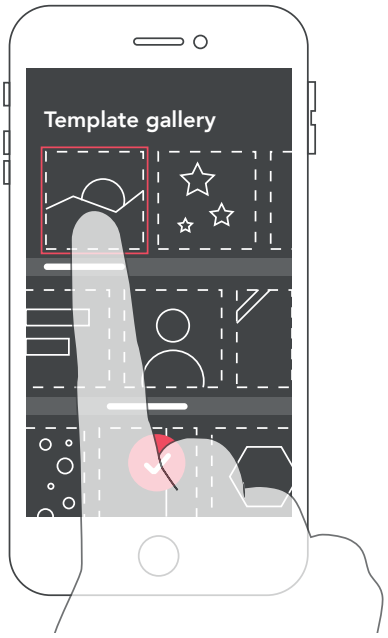
Some digital products 'beautify' images by default through the camera function (e.g., smoothing skin, changing face shape) – subtly encouraging users to create content they may then feel comfortable sharing more widely.

Others provide tools and templates for creating videos that fit into trends, such as using particular filters, soundtracks or voice-overs.

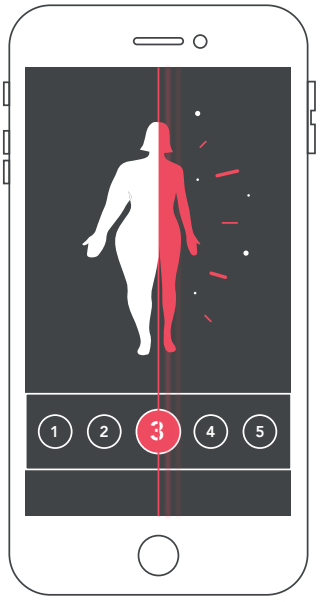
Most apps make the 're-share' feature as frictionless as possible, e.g., with a 'one click' button.

See examples of this strategy in the digital world

How to spot this strategy

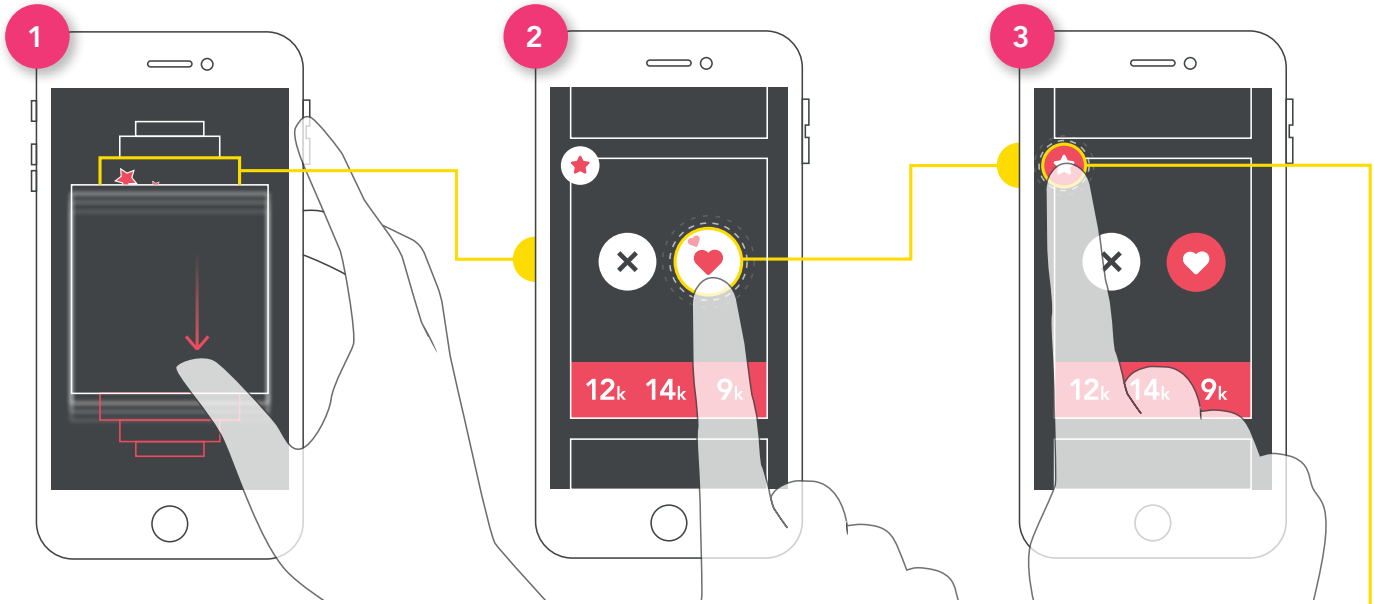


Any features that are designed to make it easy to copy or create content are examples of this strategy being deployed, especially when they help the user emulate popular or 'cool' trends.



Tools that help users to easily improve aesthetics or reduce any insecurities they might have about images/videos are also examples of this strategy being used to encourage users to create content.

How design strategies work together to shape behaviour



User scrolls through a feed of images and videos.

Reducing friction

User sees that a post has a lot of 'likes' which suggests it is popular with others.

Attaching value

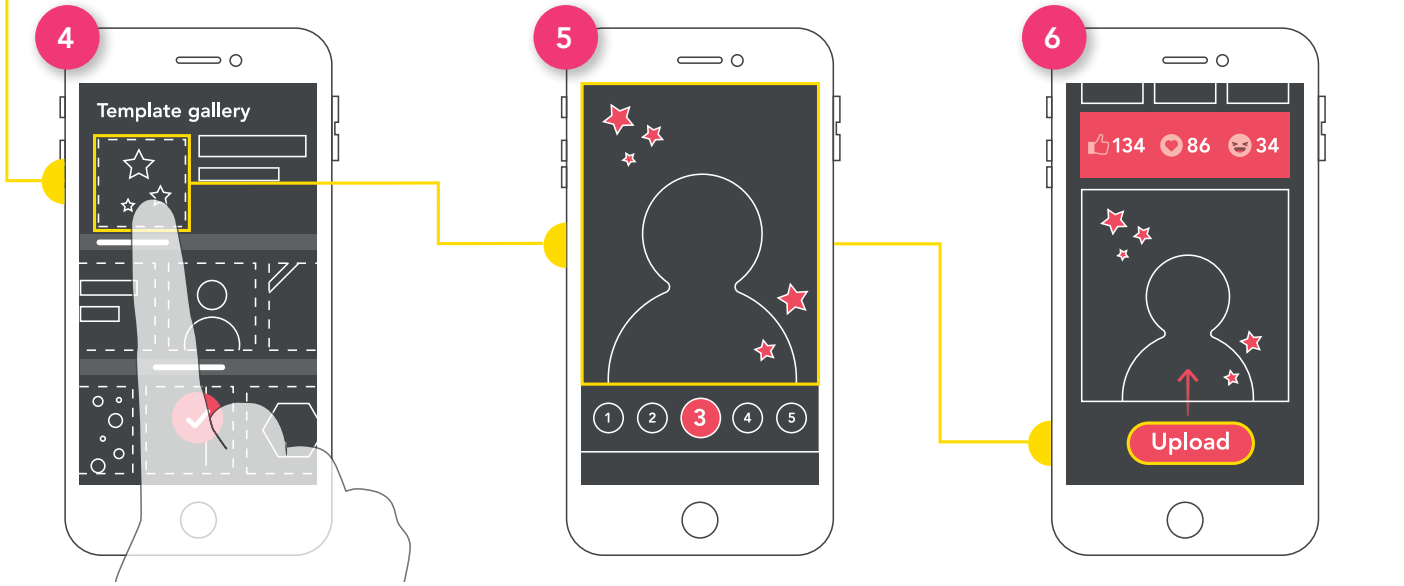
Quantifying

They hit 'like' themselves.

Making it easy to interact

User can click through to see what type of filter was used to make the post, which may have been a factor in why it is so popular.

Making it easy to share



User is taken to a tool where they can use the filter themselves to make a post.

Making it easy to share

User takes a photo of themselves using the same filter and posts it to their profile.

Making it easy to share

User posts their new filtered photo and gets regular notifications about how many 'likes' and comments they get on it as a metric for how popular it is.

Attaching value

Quantifying

Summary

When interviewed, designers of social media products and services told us:

- Designers work to the brief they are given, and in many businesses, the success of a feature or product is judged by its ability to shape the behaviour of users in line with business goals.
- Designers of social media products use a wide range of strategies to encourage users to: 1) spend time on their product, 2) attract more users, to 3) interact and generate content.
- The business model of social media products relies on their ability to shape behaviour according to these three outcomes; if they fail to do so, they will not generate revenue.
- There is a huge amount of expertise, power and data behind these design strategies, including mass A/B testing and machine-learning algorithms, constantly optimising for revenue generation against these three outcomes.
- The functionality of these products can be deconstructed to reveal the 'design strategies' used to shape behaviour – from refining what content users see to make it more and more appealing, and removing friction, to promoting social interaction and encouraging content creation through features like filters and editing tools.
- Designers expressed concern about the impact of their design process on users.

Business objectives	Design strategies
Social media companies want to maximise time on their product	Social media is designed to engage users by making content more and more appealing, and reducing friction in consumption
Social media companies want to maximise the reach of their product	Features are designed to promote and extend networks and connections, between peers and strangers, children and adults
Social media companies want to maximise interaction on their product	Features are designed to encourage content creation and integrate metrics for popularity and validation to promote interactivity

SECTION 3

Children

How children experience digital products

We know that many digital products, especially social media, are designed to shape behaviour and that a huge amount of power sits behind their ability to do so. This is the same whether that user is an adult or a child. Children are often offered largely the same experience as adults, with access to the same functionality and features regardless of age.[10]

Most social media products set 13 as their minimum age limit. We also know that currently age-varification is poor, and many children under that age use social media – Ofcom's latest statistics suggest 42% of 5–12-year-olds use social media apps or sites.[11]

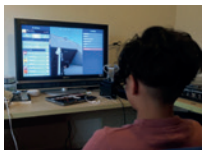
We set out to explore what this digital world is like for them. We interviewed 21 children and young people aged 12 to 18 across the UK[12] – mapping their use of digital products and services, what they had experienced, and how they felt about it.

Most studies on this topic rely solely on self-reported data to understand children's experiences online, and as a result are limited by what children can (or want to) tell us. For this research, we also collected screen-record, app-usage data and social media activity (with particular care taken to ensure fully informed consent: see appendices).

This data allowed us to see what they see, and explore their actual experiences while using digital products and services, rather than just what they can remember retrospectively.

42%

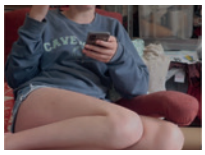
of 5–12-year-olds use social media apps or sites


Ken, 12


Lara, 13

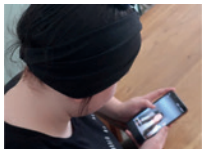

Sam, 14


Otis, 14


Ellie, 14

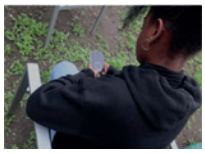

Jack, 14

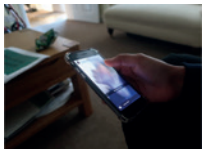

James, 14


Hannah, 14


Wendy, 15


Otto, 15


Cornelia, 15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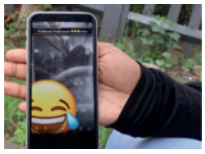
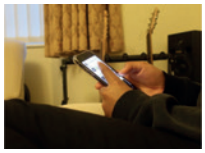
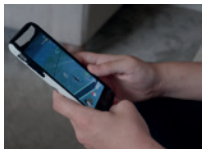
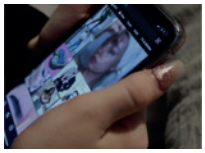
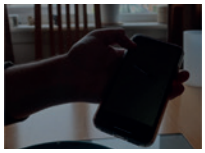

Alara, 15

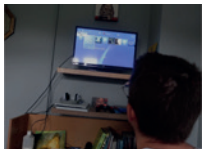

Dan, 15


Matilda, 16


Darius, 16


Niomi, 16


Bob, 16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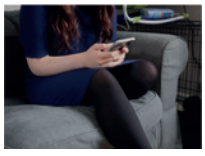
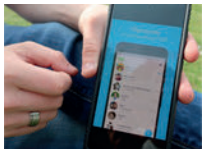

Carrie, 17


Chris, 18

10 Exceptions to this include some more recent product updates that are restricting functionality or default settings for users under a certain age – e.g., TikTok users under the age of 16 will now have their accounts set to more stringent privacy settings by default.

11 Ofcom – *Children and parents: media use and attitudes report*, 2020/21

12 This research was conducted in summer 2020 when Covid-19 related restrictions allowed for face-to-face fieldwork.

Who did we meet?

We recruited young people based on their self-reported social media consumption – with most of the young people we spoke to using social media daily. We included children with varying experiences of using digital products and services that are known to be common among children and young people, including:

Sharing pictures of themselves online

75% of 12–15-year-olds say they have posted or shared content on video-sharing platforms such as TikTok, Instagram and Snapchat (Ofcom media use and attitudes, 2020/21).

Using filters or editing apps on pictures of themselves

48% of girls and young women aged 11 to 21 have used filters or editing apps to make themselves look better and 34% say they will not post a photo of themselves unless they edit their appearance (Girlguiding Girls Attitudes Survey).[13]

Engaging with content that makes them feel negatively about their appearance

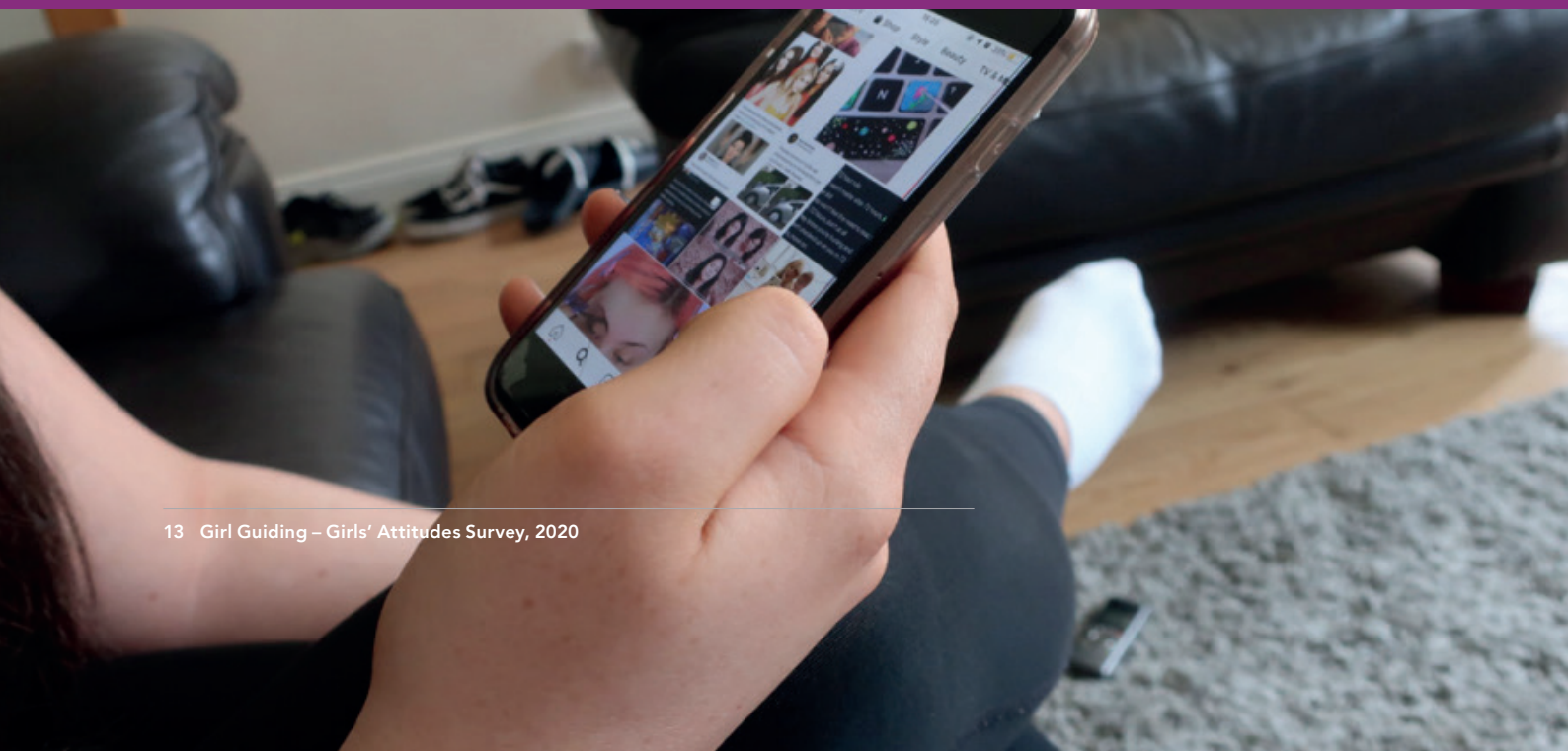
54% of girls and young women aged 11 to 21 have seen adverts online that have made them feel pressured to look different (Girlguiding Girls Attitudes Survey).

Engaging with people they do not know online

30% of 12–15-year-olds say they have been contacted by a stranger online who wanted to be their friend (Ofcom media use and attitudes, 2020/21).

Seeing explicit or upsetting content online

31% of 12–15-year-olds that go online report having seen worrying or nasty content online. About a fifth reported seeing content they found scary or troubling, or something of a sexual nature that made them feel uncomfortable (Ofcom media use and attitudes, 2020/21).



13 Girl Guiding – Girls' Attitudes Survey, 2020

Children are growing up within the choice architecture of social media

Across our sample, social media was central in young people's lives. It was instrumental in almost all areas, from making friends and exploring interests, to exploring their sexuality, finding out what makes somebody popular and expressing political views.

At the highest level, children told us that:

- They spend **more time on social media** than many of them felt they should, and they often found it **hard to stop**.
- It's where all of their friends are, where they see content they like, and it feels like one of their main **windows onto the world around them**. To stay off social media would feel **like being excluded**.
- They seek **validation and attention online** in the form of 'likes', comments and connections, and they **shape what they do** online in order to gain more.

How does social media encourage children to spend time online?

Children are spending more time online than they think they should

Many admitted to staying up scrolling on social media late into the night.

Bob (16) recognised that he was spending excessive time online, but struggled to imagine how else he would use his time:

"I feel like I should probably cut down…[but] it's where I'm happiest. It's important for passing the time."

Bob (16)

James (14) spent around seven hours per day on his phone or gaming on a console. A lot of that time is spent on TikTok, where he felt it was all too easy to lose track of time with the endless feed of videos about things that he finds entertaining – e.g., boxing, memes, pranks.

Otto (15) spent an average of 13 hours a day on his phone, and particularly enjoyed using Snapchat, TikTok and Instagram. He would also be on his phone while gaming, chatting to his friends using Snapchat and Discord. Otto developed a new group of friends online, through the 'random pairing' feature of Omegle, and often stayed up all night chatting to them, as some are in different time zones. Recently, he's been spending around seven hours every day on Omegle.

Reducing friction

Refining content

Making it easy to connect

"Sometimes I'll go on it at like 11pm and won't go off it until six in the morning."

Otto (15)

Tod (16) was equally prone to being on social media late into the night. He gets anxiety, which tends to be worse at night, and he often has nightmares when he sleeps. As a result, he often doesn't want to sleep, and instead stays up streaming things on YouTube, and scrolling through the 'explore' feed on Instagram. The default auto-play function on YouTube starts a new recommended video every time one finishes, which he finds can lead him to easily spend hours and hours with video content that keeps his attention. His parents tried to set some rules for his use of social media, but his mum said: ***"It didn't work."***

Reducing friction

Refining content

Children feel like they 'can't stop scrolling'

Children are spending a lot of time on social media. Many in our sample were on social media for more than eight hours a day and described this as fairly typical amongst their peer group.

Many children felt that this level of use was not entirely within their control.

Jack (14) spoke about getting into **"a TikTok trance"** when using the app. He likes finding videos that he can send to his online friends and make them laugh, often skipping through videos quickly to try to hit on a particularly funny one. He spends hours scrolling through videos with no awareness of how much time has passed.

Randomising rewards

"Once you start, you can't stop."

Jack (14)

Hannah (14) spent a lot of her time on her phone – describing how she was keen to have it close by her at all times.

"I always want it near me…when I'm sitting on the sofa I just scroll."

Hannah (14)

Hannah gets large numbers of notifications from Snapchat with people sending 'snap me' messages – requests to reply with a 'Snap' to maintain 'Snapstreak' scores. These messages need to be responded to within 24 hours in order to maintain the 'streak'.

Quantifying

Applying time pressure

Lara (13) described how the type of video content on TikTok was perfect for keeping your attention – short 15-second videos that you can skip through quickly without getting bored while you try to find ones you'll particularly enjoy.

Randomising rewards

"You just scroll, it's a 15-second clip, I get bored really easily so 15 seconds is like the perfect amount of time. Sometimes I just don't notice the time go past, I just get really into it."

Lara (13)

A minority of children had made concerted efforts to cut down on the time they spent online, but found it a challenge. Some recognised that the amount of time they spent on their phones involved an **opportunity cost** – leaving them with less time for other activities. During remote schooling due to lockdown **Lara (13)** had got into the habit of staying on her phone until 3am in bed and then sleeping until 12pm the next day, but found it difficult to change the habit:

"I kind of wanted to have more time to do stuff other than just go on my phone… [but] it didn't work, I kept turning it off and then going back and still using it."

Lara (13)

How does social media encourage children to build networks online?

Children are sharing with as wide a network as possible

The prominent display of these metrics (how many 'likes', comments, followers, etc) means that children are all too aware of how their behaviour translates into greater exposure.

Quantifying

Jack (14) will often use the 'Quick add' function on Snapchat to add everyone in his area or mutual friends of his existing contacts, regardless of whether he knows them. Having more connections on Snapchat makes his Snap Map look more crowded, which he can then show off to people in real life and therefore appear more 'popular'.

Making it easy to connect

Quantifying

Many children in this research opted to keep their profiles 'public' rather than 'private' in an effort to get higher numbers of 'likes'.

Making it easy to connect

Several children even acknowledged the trade-off that often seemed inherent in this – getting unwanted attention as well as wanted.

James (14) was keen to get more followers in order to raise his profile as a boxer and potentially be sponsored by a sportswear brand. To do so, he switched his profile from private to public, even though he knew this would leave it open to unwanted interactions with strangers, like:

Quantifying

Rewarding

"Old men and that sort of thing."

James (14)

Other behaviours such as using hashtags, @ing ('tagging') other users or using trending music on TikTok are all features on various social apps and

Making it easy to connect

Making it easy to share

sites that enable users to share their content more widely, and all are features used by children in this research.

Otto (15) hits 'like' on almost everything he sees on Instagram – which he said resulted in him once getting over 200 followers in one day.

Children use social media as their main window for exploring the world

Social media was the main channel for exploring interests or discovering new content for many young people.

Tod (16) defined a large proportion of his identity through his use of social media. When he's interested in something, he tends to explore it on the Instagram 'explore' page, trawling through content to find things that interest him, and that give him inspiration for his own posts. He spends most of his time on the 'explore feed' of recommended content; when he sees something he likes he'll click through and "it takes you to a thread of similar stuff." He looks at what he describes as "edgy stuff" and "dark humour", reposting to his own feed when he thinks it's particularly funny.

Refining content

Making it easy to share

Wendy (15) is interested in fashion, art, and music. She said her "identity is quite important" to her – and sees her passion for these things as crucial to her sense of identity. Social media caters for these things. On TikTok, Wendy flicks through videos and when she sees one with a music clip that she likes, she'll click through the 'music' icon link to browse through other videos using the same music clip, which then provides the option for using the clip in your own TikTok video.

Making it easy to share

Children feel like social media is 'where everyone, and everything' is

Most of the children could not imagine their lives without social media. It's where they felt connected to their friends and peers, where they saw content they liked, and where they learned about the wider world. It's where they go to see everyone, and everything.

Many young people spoke openly about the fact that they would have a fear of missing out if not constantly tuned into social media; it's where everything is happening.

Ellie (14) felt there was a **"fear of missing out"** in her age group. **"People are so scared not to be in the loop with everything."**

Lara (13) described a social life in which she would feel very excluded if not on social media. She talks to all her friends on Snapchat, mainly by replying to each other's stories. They also share TikTok videos they like with each other. If Lara didn't spend as much of her time on social media, she wouldn't be in on the conversations and jokes her friends are having with each other.

"It's our generation, you'll just do that [automatically post a picture of anything you're doing]. Your first thought is basically social media. If I pick up my phone and open it up, I'll go on Snapchat and Instagram straight away."

Matilda (16)

Children rely on their online networks and relationships

Many of the young people we spoke to were reliant on social connections and communities they had found online.

Bob (16) has struggled with forming strong friendships at school in the past few years. Despite recently finding more of a place in a local theatre group, he saw the time he spent online – and particularly on Twitter musical 'fandoms' – as where he was most able to be himself. Bob is a member of a selection of musical theatre fan groups on Twitter and follows specific 'trending' hashtags to keep up to date and feel connected to the subculture.

Making it easy to connect

Attaching value

Ellie (14) struggled to fit into social groups at school, and instead started to find like-minded and supportive groups of people online. When we asked her mum about it, she described the process as ***"finding her people"*** online. Some of these people are strangers who have sent her messages over Instagram. Others are those she has followed from lists of 'suggested for you' accounts to follow.

Making it easy to connect

Making it easy to connect

Jack (14) lives in a remote village in North Wales and feels like he is cut off from peers in his local community. He uses Yubo to talk to new people online, using the 'swipe left/swipe right' feature (see below) to easily connect with other people. Jack also uploaded a screenshot of his Snapchat 'QR code' to his Yubo profile to enable people to easily add him on Snapchat after matching with him on Yubo.

Making it easy to connect

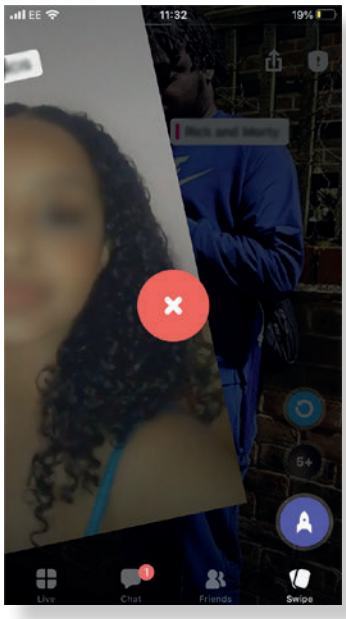
Making it easy to connect

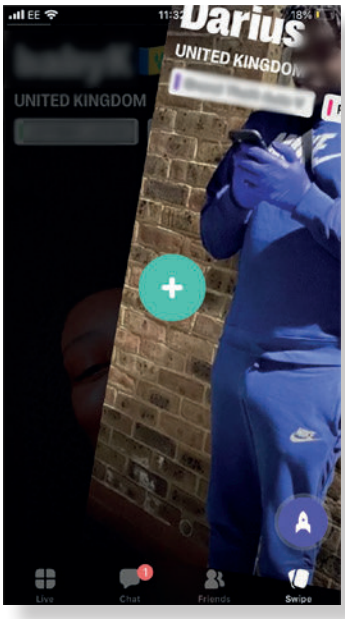
Otis (14) lives a long way away from his school friends and doesn't see them much outside of school. He doesn't have a sense of community from his local area either, so he turns to the online world instead. In particular, he spends a lot of time watching live streams of people playing his favourite games. Here Otis has found a community he really feels a part of. He enjoys getting notifications when streams are starting because it gives him a sense of bustle and community: he likes ***"the sense that things are going on, right now."*** These notifications often draw him online as he is notified that one of his favourite streamers is 'going live'.

Applying time pressure

"I might miss out if there were no notifications."

Otis (14)





How does social media encourage children to create and share content?

Children are creating vast quantities of images and videos of themselves

On 'user-generated content' products, the main way to contribute and put yourself out into the world as a user on social media is to do just that – **generate content**. This might include posting photos or videos, commenting with text, emojis or GIFs, live streaming, etc.

The apps and sites most used by children focus on visual content – images and videos. Instagram, TikTok and Snapchat are all centred around visual media.

When children seek validation on social media, the channel through which to get it is inevitably visual. The children we spoke to were using the in-built cameras and editing features within social media apps to create huge numbers of images and videos of themselves.

Making it easy to share

Niomi (16) uses social media a lot but doesn't post as much as she used to. At 13, recognising what seemed to get attention, she would post a lot of photos of herself on Instagram – often quite revealing ones like bikini shots. She was pleased with how many comments and 'likes' the pictures received and hoped she might even get sponsored by a brand.

Rewarding

The rise of visual media, smartphone cameras, social media with a visual focus

In 2015, one of the best camera phones around was the iPhone 6. It had an eight megapixel back camera. In 2020, one of the best camera phones – the Samsung Galaxy S21 Ultra – has a 108 megapixel back camera, with a 40 megapixel 'selfie camera' at the front.[14] The role of the camera has become increasingly central to smartphones, and the aesthetic quality of the images they can create is a huge selling point.

As smartphone cameras have become more of a prominent feature of smartphones, people have been taking a lot more photos. One estimate is that the number of photos "we've collectively taken…doubled between 2013 to 2017, from 6 billion to 1.2 trillion."[15]

This sits alongside a rise in social media products centred around the sharing of visual media content. Across our sample, Instagram, Snapchat and TikTok were by far the most popular. TikTok, for example, reported 680 million users in 2018. In 2020, it's estimated to have over 1.1 billion users.[16] Equally, the Instagram user base has skyrocketed over the last five years, doubling from 500 million in 2016 to over 1 billion now.[17]

14 From 'Best camera phones 2021', *Trusted Reviews*

15 From 'How Smartphone Cameras Changed the Way We Document Our Lives', *Slate*

16 From 'TikTok Statistics', *Wallaroo*

17 From 'Instagram Demographic Statistics', *Backlinko*

Children are editing their appearance to 'beautify' their images

Social media apps and sites usually provide integrated tools for 'improving' the appearance of content before posting.

Children in this research used:

- Filters and simple editing to improve the colour, contrast or crop of a picture
- 'Lenses' and filters to reshape their face, change complexion or add animation/accessories
- Face and body editing tools to reshape facial features, shrink waists or accentuate curves

Making it easy to share

Nearly all the girls in the research said they no longer felt comfortable posting any images of themselves that did not include some level of editing. Some felt uncomfortable in real life due to the contrast between their physical and 'filtered' self.

Carrie (17) uses the Snapchat camera features to apply filters and edits to her photos. She felt that filters would make her skin look better and her face more symmetrical. When Carrie takes selfies on Snapchat, she quickly flicks through the available filters to find one that she thinks makes her look best.

Making it easy to share

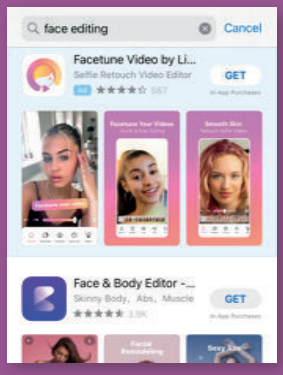
"All my photos have filters…They make you look prettier. Everything is just so symmetrical…and it's not in real life."

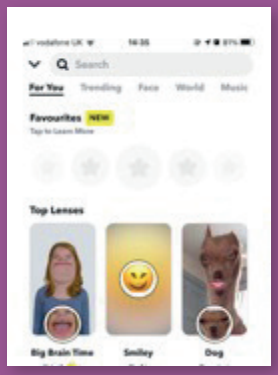
Carrie (17)

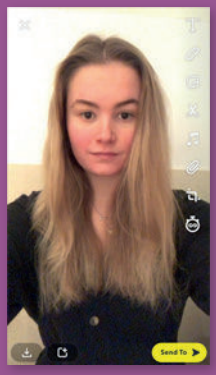
Editing apps

Face and body editing apps have emerged alongside the rise of image-centred social media. Products like Snapchat and Instagram have developed ever more elaborate filters and lenses for photos, too. Young people we spoke to showed us how you could airbrush your skin, making it lighter, darker, blemish-free – whatever you want.

Equally, editing apps like Facetune have become enormously popular. Lighttricks, the company that owns Facetune, generated $18 million in revenue within two years of launching the app. By 2017, Facetune was Apple's most popular paid app.[18]







18 From 'Facetune and the internet's endless pursuit of physical perfection', *Vox*

Children feel pressure to get attention and validation online

The young people in this sample care about what others think of them. Whether explicitly or not, nearly all of them described the desire for peer approval and validation, and the fear of being seen as uncool, unattractive, or boring.

On social media, validation comes in the form of 'likes', 'comments', 'shares', and 'followers'. The social media companies have designed in mechanisms for users to interact with each other that indicate how much people appreciate or admire what you have contributed. These are seen by young people as measures of positivity, popularity and engagement.

"It feels good to be appreciated by loads of people… it makes you want to do it again."

Bob (16)

Quantifying

What's in a 'like'?

The choice architecture and design of digital products determine how users interact with one another. The parameters that are set around interaction are incredibly limiting when you compare it with, for example, face-to-face interaction with all the nuances of speech, body language, intonation, etc.

We know from the interviews with children that interacting via the exchange of 'likes' is a hugely important aspect of social media. They are coveted by most young people as a positive signal – of popularity, appreciation, validation, etc.

But we also know from these interviews that a 'like' can express a huge range of different intentions from the young person who gives it. The simple heart-shaped button is used by children (and no doubt adults) to express any number of messages or signals. We have seen many varied examples of what children mean when they 'like' a post (see right).

- I like this
- This is funny
- This is attractive
- This is shocking
- This is infuriating
- I support this
- I want to be seen by others to have 'liked' this
- I want more people to see this
- I want you to notice me
- You asked me to 'like' this
- I've seen this
- I fancy you
- You 'liked' my post, I should return the favour

Online validation is almost described like a currency: a resource that you try to gather and also that you give out to others.

Matilda (16) always 'likes' her friends' posts as a "support thing" and would actively question her friends if they didn't 'like' her posts in return. Matilda recognised that this exchange of 'likes' doesn't necessarily equate to actual appreciation of what anybody had posted:

"I don't actually have to like it to 'like' it. It's just what you do."

Matilda (16)

The habit of giving out validation to others can become an ingrained habitual norm amongst young people.

Otto (15) tends to 'like' almost everything he sees on TikTok and Instagram – even adverts.

"I'd feel bad if I didn't 'like' everything."

Otto (15)

Matilda (16) claimed that she and her friends acted a certain way on social media because:

"They want to be validated, and social media helps them to be validated."

Matilda (16)

Young people in this sample described feeling upset, disappointed, or frustrated when their posts failed to get what they felt was enough 'likes' or comments.

James (14) is keen to use Instagram to raise his profile as a boxer, and carefully curates his account, for example ensuring his 'follower to following' ratio reflects well on him, suggesting to others that he is popular (currently at 2300 'followers' to 900 'following'). He becomes frustrated when he doesn't get as many 'likes' as he wants and will delete posts regularly:

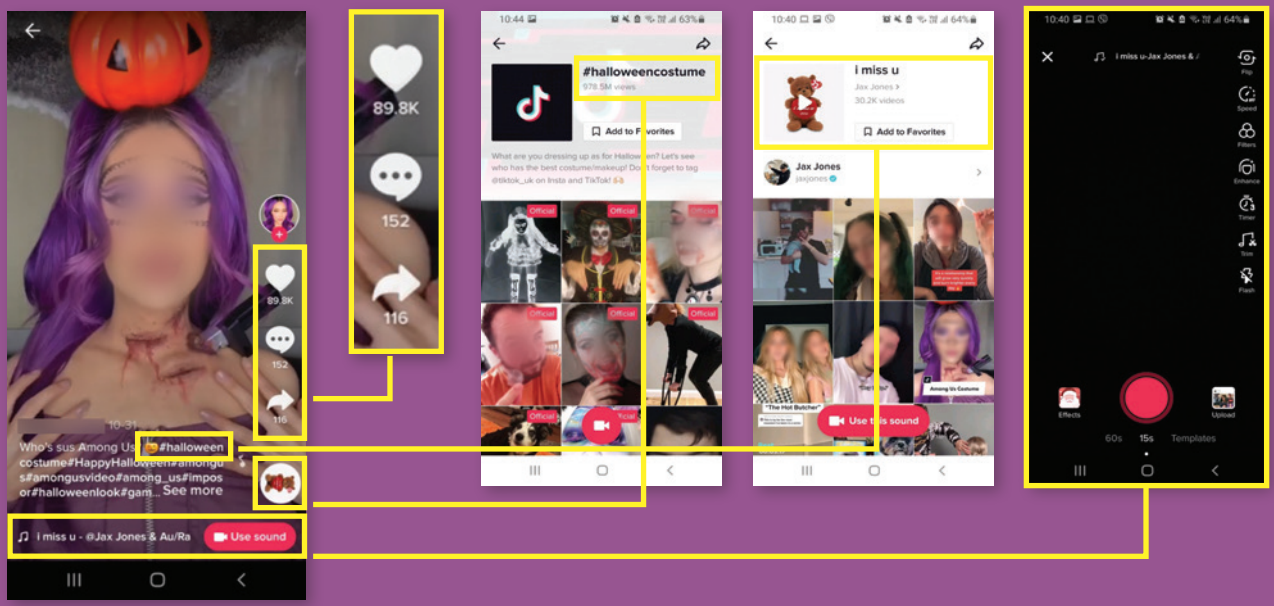
Quantifying

"I'll be a bit raging I didn't get that many 'likes'."

James (14)

Young people were closely attuned to the types of behaviours that would or would not get them the desired attention online. If social media is a game, they know what winning and losing looks like, and they pay close attention to what seems to work for other people.

The design of apps and sites helps children copy 'what works' for other users



Children can see how 'popular' content is in the form of 'likes', comments, shares etc.

Children use these metrics to see what gains a lot of attention.

Children can easily tap links to features of the content that may be contributing to its popularity – e.g., hashtags, music, filters.

Platforms provide links and tools for users to replicate their own content using these same features.

Children use these tools to create their own content, copying the trends and features that they have seen lead to success and popularity for others.

Children feel pressure to act 'cool' and 'grown-up' on social media

Many children in the sample described what could make them look weird, silly or uncool online and the lengths they go to avoid it.

Bob (16) felt that he had to curate particular personas on his social media pages and had to act a certain way on his 'main' Instagram account (Bob had several accounts on Instagram).

"I'm careful not to have any weird photos…it's just part of being on Instagram."

Bob (16)

Matilda (16) was similarly very conscious of looking 'grown-up' online:

"You can't post childish things on Snapchat stories… because you're scared of what people might think. We really want to grow up as quick as we can… We want to look as mature as we can."

Matilda (16)

Jack (14) explained how everyone wants to look popular by having more people 'follow' them than the number of people they 'follow' in return. To try to improve his 'follower to following' ratio Jack would 'follow' lots of people he didn't know in the hope of getting a 'return follow', and then in a few days 'unfollow' them again to shift his ratio back again.

Quantifying

Children change what they look like and how they act to get attention on social media

Matilda (16) felt pressure to look more like the models that she saw getting huge followings on social media, who she described as all being "slim" with "big lips". Matilda uses filters on her photos to try to improve the aesthetics of the selfies she posts on social media, and she says a lot of her friends edit the way they look to try to emulate the influencers who are the most popular.

Making it easy to share

Hannah (14) felt that you have to look a certain way to 'do well' (get lots of 'likes', comments, shares and followers) on TikTok:

"The standard for TikTok is skinny, dark-haired and really good at dancing… If people think you're pretty you will get 'likes'."

Hannah (14)

Others shaped how they behaved online to try to get attention for being funny or cool.

Bob (16) also copies certain kinds of captions that he saw getting good engagement (lots of 'likes' and comments) when posted by other people, e.g., "felt cute, might delete later". He said:

Making it easy to share

Quantifying

"You act differently depending on your audience... It can be hard to think of edgy captions, so that I could feel accepted."

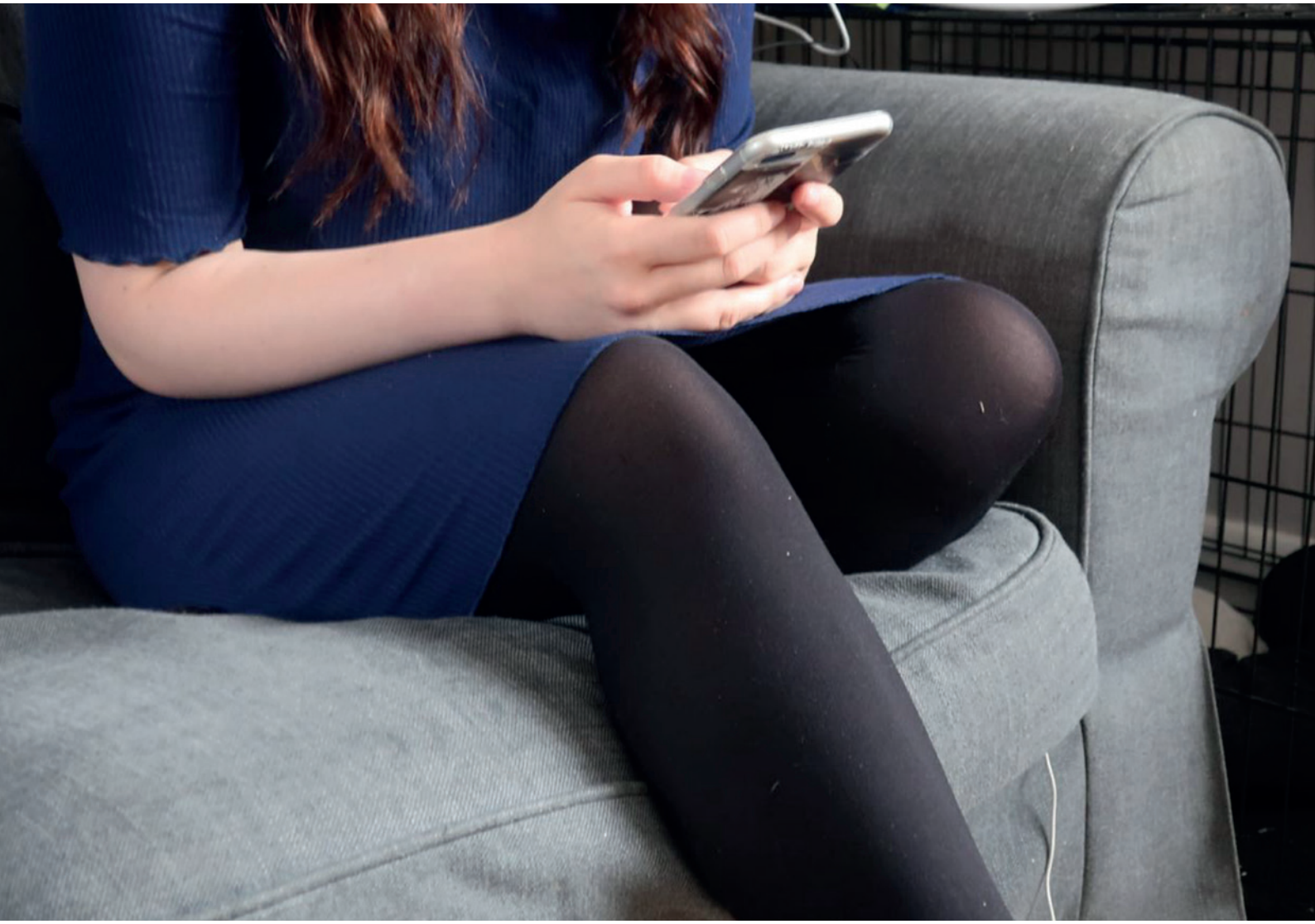
Bob (16)

For some, the pressure to behave a certain way can feel frustrating

Ellie (14) spoke of a pressure to post photos of herself that were 'pretty'. Although she once did so and received positive comments in response, she was frustrated by the focus on body-centric content rather than her other posts about her passion for art. She felt that you got more attention for copying other people and looking good than for being creative or original on social media:

"I want people to go 'you're talented' rather than 'you look pretty'."

Ellie (14)



Some children feel social media has negatively impacted on them

The longer-term impacts of social media on young people are not yet known. Research has been unable to track the role of social media in children's lives beyond a few years.

Some of the children we met felt strongly themselves that social media had a negative impact on them, playing a central role in particular challenges they had faced growing up.

Immersion in visual media and body image

The volume of image-based content that children were consuming was enormous, and notably the focus on sexualised or body-conscious content was clear for almost all children we interviewed, and all avatars that were run based on them.

Several children reflected that constant immersion in this type of content had shaped what they thought was 'attractive' and, for some, made them self-conscious or unhappy with their own bodies.

Ellie (14), for example, described Instagram and TikTok as being "made for" thin people, people who looked "pretty", and people who were able to dance.

Lara (13) had a similar opinion, speaking about all the "skinny influencers" on social media – which led her to question herself when thinking about eating certain foods.

At the extreme, one young person in this sample had experienced having an eating disorder throughout her adolescence, and she attributed at least some of her journey to the influence of social media.

When she was 14, **Carrie (now 17)** was concerned about her weight and began searching for weight loss tips and diets on social media. Carrie set up a separate Instagram account to conceal this content from her friends and started 'following' 'thinspiration' accounts and posting about her own weight loss.

It didn't take her long to connect with a community of others engaging with similar content, and after commenting a few times on pictures, she was added into several WhatsApp groups that encouraged extreme dieting. She ended up in five of these groups in which people were asking to be verbally abused if they ate more than they had planned to or gone off-course – so that it would encourage them to keep their discipline and reach their 'thinspo' goals.

Carrie now reflects that being surrounded by edited, unattainable imagery of models, influencers and even her peers while growing up, was instrumental in her journey and admits that she still struggles with her own self-image. While she feels she is now better placed to recognise when she is 'following' posts that make her feel insecure about her body, she explained that she would never be able to post a photo without first using filters to change the way she looks.

Pressures of validation and exposure to risks

Most of the children we interviewed maintained their online profiles as 'public' in order to maximise their potential for 'likes' and 'followers'. Many disliked but accepted that unsolicited messages from adults were worth putting up with for popularity and validation online.

Niomi (16) used to post a lot on Instagram. Her account was public, and she enjoyed all the 'likes' and comments she got – which came in great numbers when she'd post photos of herself in bikinis.

However, when she was on holiday in Turkey, she posted one of these photos and put her location on it. Shortly after posting, she received a lot of comments and messages from men in the area asking her to come and see them. This scared her, and she decided to go through her account and delete any revealing pictures she'd put up.

Niomi now mainly uses Snapchat and gets added by a lot of people she doesn't know. Whilst this can bring positive connections, like a friend she made in America, it can also bring unwanted attention. She said she has had older men 'trick her' into thinking they are her age, then when she asks for a picture of their face to prove their age, they send one and it's clear they're much older. They also sometimes send explicit photos of themselves, after which she blocks them.

Despite all this, she still keeps her profiles public – saying she enjoys the attention this brings. She enjoys getting the 'likes' and comments and the messages saying she's pretty – and doesn't want to give all that up for the few unwanted interactions she receives.

Online relationships and abuse

At the extreme, online connections can lead to negative and even abusive situations for young people. Young people in our sample recognised the potential risks and negatives of connecting with strangers online, even while they maintained those kinds of relationships themselves.

At age 12, **Chris (now 18)** had been shy and introverted at school. He struggled with offline friendships, and turned to apps and sites like Kik, Omegle and Discord to make connections with others. One of the ways he did this was by engaging in role-playing games with strangers online.

This role-playing often became sexual very quickly, and Chris ended up entering into a number of online relationships. Most of the people he was doing role-play with – many of whom he discovered later were adults – "would want it to not be clean", and were mostly "a horny guy wanting sex". He said he would go along with it because he wanted to please people.

He eventually got into an online relationship which consisted exclusively of exchanging photos, which quickly became sexual. Reflecting on how he felt at the time, Chris said: ***"I don't think it was that I loved the person. I wanted the attention I wasn't getting in person: even though I couldn't get that online, it was better than what I could get offline."***

Now 18, Chris does not engage with online role-playing relationships and has an 'IRL' (in real life) girlfriend and wider friendship group. However, Chris feels like these early experiences shaped his ability to form offline relationships and influenced what he felt were 'normal' social dynamics. For

example, he felt reluctant to initiate conversation with others at his youth group because "I don't want to seem like I'm making advances on them."

Living online and struggling offline

A number of the children we interviewed told us they increasingly felt more confident engaging with other people online than in person.

The ability to curate and control what they said, the images they shared, and the identity they displayed, meant that several young people preferred cultivating relationships online.

Hannah (14) felt ***"more confident over texting [than] in person"***, because ***"if I do something wrong, I can just delete it."*** She found the prospect of meeting a boy in person daunting and struggled to imagine being able to hold a conversation.

Similarly, **Ellie (14)** felt like she couldn't express herself the same way ***"in real life".***

"I can call people out on if I think they've done something wrong on social media…but I can't do that in real life…I feel like I'm going to mess up my words."

Ellie (14)

Lara (13) described herself as having social anxiety offline, saying "I think I'm more confident online – I like to speak to people online more than I do in person."

Jack (14) described how most of his friends would get into relationships on Yubo, rather than offline. "Everybody else seems to just meet people in person, but I think because we are all a bit more socially awkward, we find it easier to talk to people online."

Tod (16) admitted he found it much easier meeting and talking to people online than in real life. He said he only had one 'IRL' friend whom he sees in person. Otherwise, nearly all of his social interaction is online.

Chris (18) said that his anxiety about interacting with people offline was one of the key drivers for the harmful relationships he had developed online.

"It's more scary to get in a relationship in real life because you're like, do I smell ok? Am I doing something wrong? Am I acting weird? Online it's just texting – as long as you can coherently say what you want at the time, it's fine."

Chris (18)

Summary

When we explored this subject with children, they told us:

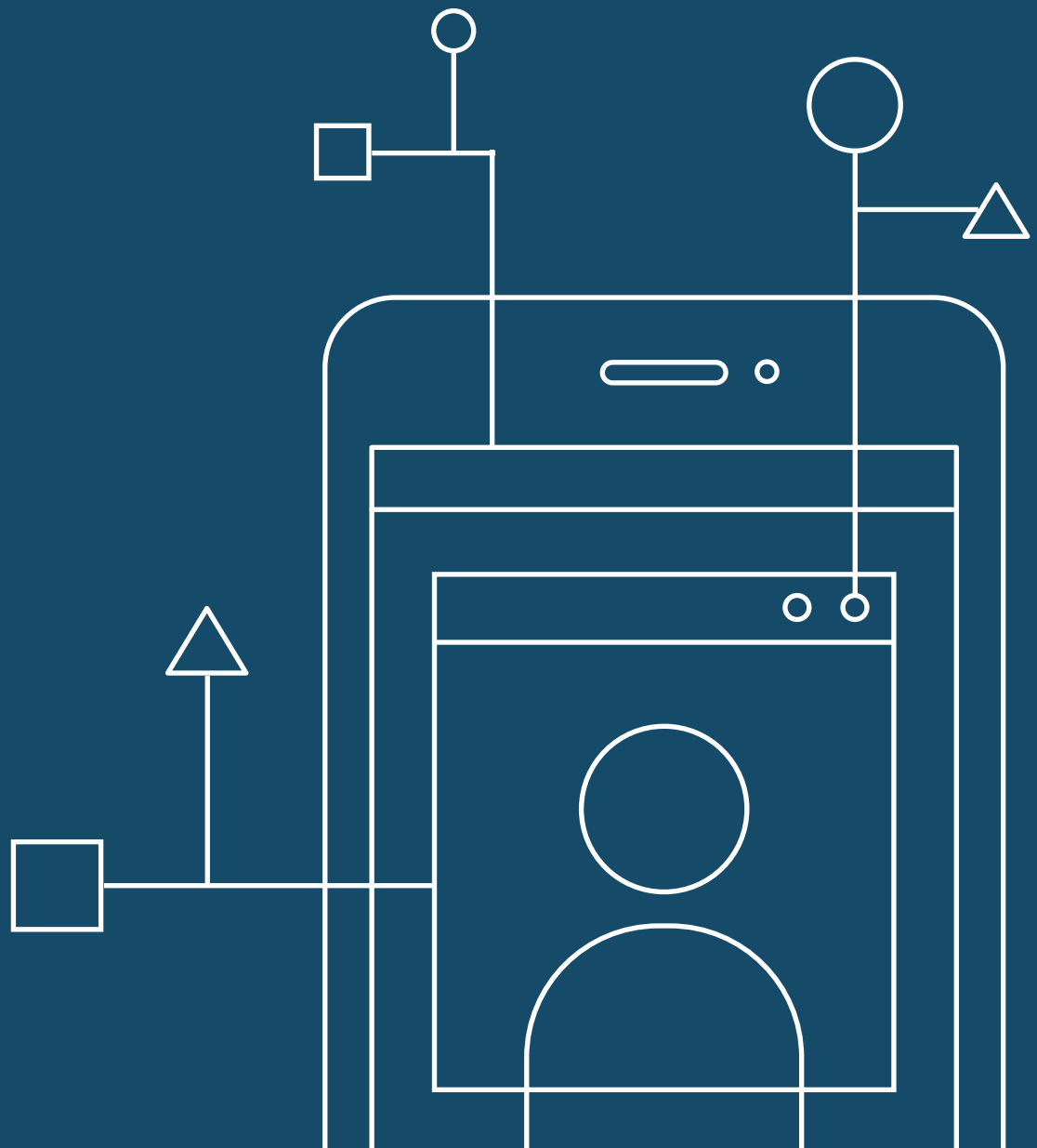
- Many spend more time online than they feel they should, and often find it hard to stop.
- Social media is where all of their friends are and it's one of their main windows onto the world around them. To not go on social media would feel like being excluded.
- They experience validation and affirmation online in the form of 'likes', comments and connections, which shape what they do online in seeking them out.
- Children seek out this affirmation and attention by creating mostly **visual** content (e.g., selfies, videos), sharing them as **widely** as possible with online networks, and by **copying** popular trends and behaviours of others.
- Children had experienced unknown adults contacting and connecting with them online, for some resulting in abusive encounters. Others had engaged with content relating to weight loss online, and for one this ultimately led to seeing huge quantities of content promoting eating disorders.
- Many children in this research blamed social media for negative and challenging experiences they had faced growing up, surrounding body image and relationships.

Business objectives	Design strategies	Outcomes for children
Social media companies want to maximise time on their product	Social media is designed to engage users by making content more and more appealing, and reducing friction in consumption	Children feel like they spend too much time online and find it hard to stop
Social media companies want to maximise the reach of their product	Features are designed to promote and extend networks and connections, between peers and strangers, children and adults	Children have extensive networks and connections online and to be offline is to feel excluded
Social media companies want to maximise interaction on their product	Features are designed to encourage content creation and integrate metrics for popularity and validation to promote interactivity	Children feel under pressure to get feedback and validation online, and change their behaviour to try to gain these

SECTION 4

Avatars

How digital products treat ‘child’ profiles



The relationship between digital products and their users is two-way. Social media products are designed to shape behaviour. Behaviour shapes what content the products serve, and how they are designed.

The designers we spoke to told us they design to encourage **more time, more people, more activity**.

The children we spoke to said they spend **more time than they think they should**, they feel like social media **is where they can access everyone and everything**, and they feel pressure to get validation in the form of **'likes', comments, and followers.**

We know that some children have negative experiences online, but it is harder to explore what role the digital products themselves are directly playing.

This is not an experiment that can be run with real children. Manipulating their experience to test negative impact would not be ethical, and witnessing potential negative outcomes occur to children in the real world needs to be responded to with safeguarding and intervention.

So, we ran a series of experiments to test a 'child's eye' view when using social media apps and sites, using what we call **avatars**.

What are social media 'avatars'

Avatars are a proxy for a real child: profiles set up on social media apps that mimic the activities and experiences of real children.

We set up a series of avatars that mimicked the online profiles of real children who took part in the interviews for this project. We carefully controlled the inputs (their profile, what they followed, what they 'liked') and observed what happened.

A key advantage of using avatars is that we can observe potentially harmful situations (e.g., a 'child avatar' being exposed to inappropriate content online) without raising safeguarding concerns, as the risk has not occurred to a genuine child.

However, conducting this type of research activity does not happen in a vacuum, and the presence of our avatars in the online world has the potential to shape the experiences of other people, including children. As a result, we set very strict ethical boundaries around what our avatars would and would not do, so as to not introduce undue risk to other users on social media. Examples of the measures we took included:

- Not 'following' or befriending any private accounts of other children, to minimise the chance of any impact on genuine child users on the app
- Not 'liking' or 'following' any illegal or obviously harmful content, which may make it more likely to be seen by or recommended to profiles of other young people
- Not interacting with or messaging any other profiles, which would be under false pretences as a child profile

We also introduced a safeguarding protocol in the event that we might be sent illegal content by another profile, e.g., child abuse imagery. These protocols were thankfully never needed during the avatars research.

Method overview

We based avatars on real children

Each avatar was profiled on a child that took part in the qualitative phase of the research. No identifiable data was used to profile the avatars. The data used to profile each avatar included:

Type of data	How it was used for an avatar	Example
Pseudonym	A false name not linked to the real child was used to register the account and displayed in the bio	A profile was registered with the name **Justin**, a pseudonym to represent a respondent we call James (also a pseudonym) who took part in the research
Age	The age of the real child was used to register the profile and displayed in their bio	The profile of Justin was registered aged **14**, the real age of respondent James
A sample of profiles to follow	400 profiles that were followed by the real child, sampling only profiles with 5000+ followers, non-personal meme or fan pages, or those who were verified by the app (e.g., 'blue tick' verified on Instagram)[19]	The profile of Justin followed 400 other profiles that were followed in real life by James, including **boxers** and other **athletes**, **models**, **finance influencers**, **meme accounts**[20] and **some brands**
Typical online behaviours to replicate	The types of behaviour the real child had told us they did online – 'liking', 'following' and searching for the kind of content they told us they viewed	James told us about the kinds of content he 'liked' and followed (in particular **sporting** and **fitness** content and photos of **female models**) During different phases of the avatar these types of behaviours were replicated

19 A verified badge is a check that appears next to an Instagram account's name in search and on the profile. It means Instagram has confirmed that an account is the authentic presence of the public figure, celebrity or global brand it represents.

20 Accounts that exclusively post memes and other reshared or viral content, rather than representing the profiles and personal lives of real people

We conducted four stages for each avatar to test different types of input and hypotheses.

1

Passive phase

Before any profiles had been followed.

Scrolled through the recommended content feed for five minutes a day

Not 'liking' or 'following' any content

2

'Liking' and 'following' content at random

After 400 profiles had been followed based on the real child's behaviour.

Five minutes per day spent:

Scrolling through the recommended content[21]

'Liking' three to four posts from followed accounts per day

'Following' two to three profiles recommended by the app per day

Content and accounts were selected **at random** from the range of content served / recommended to the avatar

3

'Liking' and 'following' content relating to experiences

Six minutes per day spent:

Scrolling through the recommended content

'Liking' two posts from followed accounts per day

'Liking' three pieces of content recommended by the app per day

'Following' two profiles recommended by the app per day

Content and accounts were selected **in line with content children told us they had engaged with on social media**, including weight loss and fitness, sexualised content, 'dark humour'

4

Searching for content relating to experiences

Six minutes per day spent:

Searching for hashtags and profiles in line with content children told us they had engaged with on social media – e.g., #porn when children had told us they'd seen porn on the app

Scrolling through the recommended content feed for five minutes a day

21 On Instagram the 'explore feed' generates recommended content (in contrast to the 'home feed' of content posted only by accounts you follow). On TikTok the 'For You' page is a feed of recommended content.

Avatars were proactively contacted by strangers

Throughout all phases

What we set out to test:

What kinds of contact do avatars receive from other users on the social media product? Who contacts them, how many, and with what kinds of message/content?

What we did:

Gave the avatar a pseudonym, age, 'follow' list

What we saw:

Multiple direct messages from strangers, mostly adults, some including sexual content

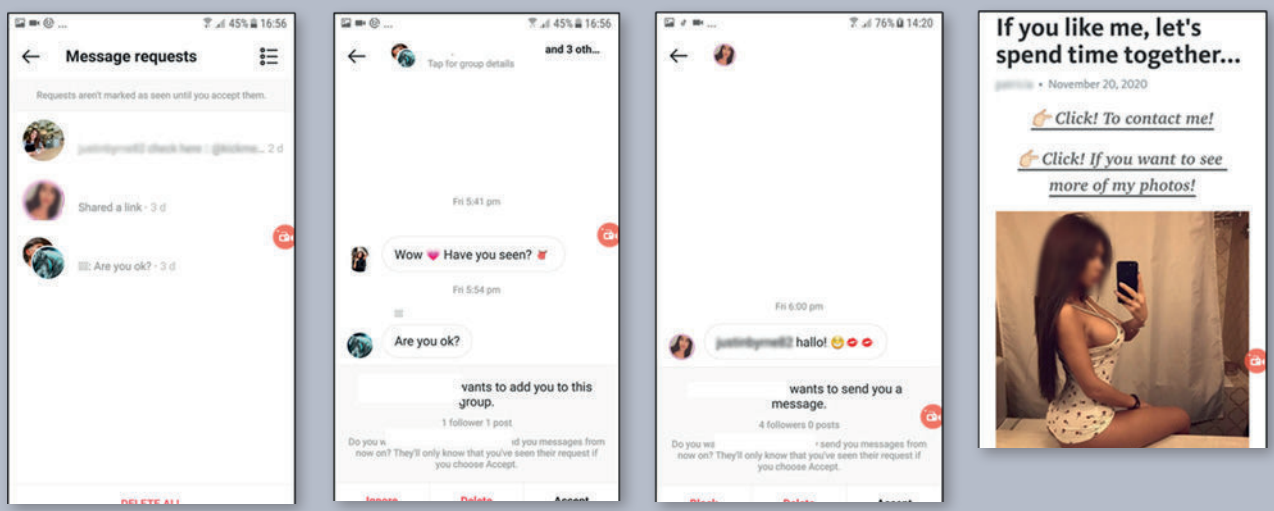
Most avatars were proactively contacted by unknown adults **within days, many within hours of sign-up**. In many cases this involved being added to group chats with a range of other unknown profiles.

Direct messages

All ten of the Instagram child avatars were directly messaged by accounts they did not follow. This included being added to group chats by strangers with other adults. The apparent motives behind these messages varied, but included promoting websites with paid-for porn content, promoting brands or pages as well as offers to 'collaborate' in promoting products.

All four male child avatars and two female child avatars on Instagram were added to group chats by people they didn't know, in which there were multiple other strangers with links to paid-for porn sites or pornographic dating sites.

A day after we followed the accounts sampled from the real respondent (pseudonym James) that avatar Justin was based on – the 14-year-old avatar received three separate direct messages linking to websites that offered paid-for porn.



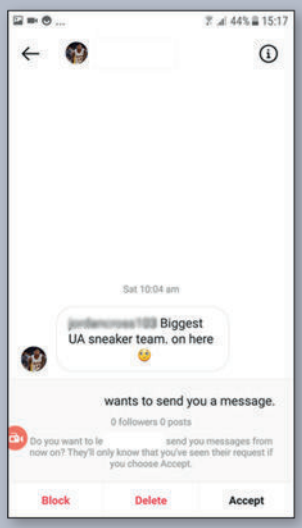
Within two days, all four of the male avatars had received messages with links to paid-for porn in them.

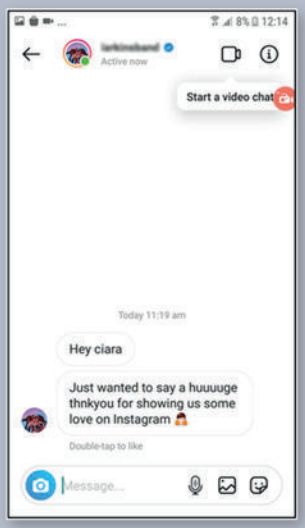
Another common reason avatars were sent direct messages was to promote products or other Instagram pages. Three of the female avatars were messaged by music accounts, one thanking **Ciara (17)** and **Claire (17)** for 'following' their account, with the other messaging **Laura (13)** promoting their music.

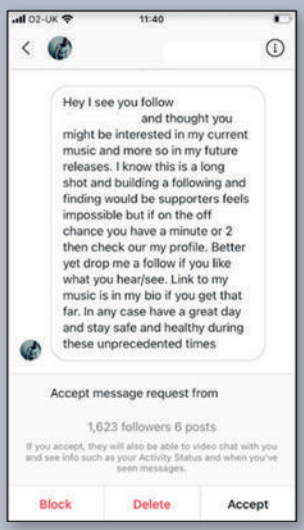
The only male avatar to receive direct messages promoting products was **Jordan (14)** who was sent a message promoting basketball shoes.

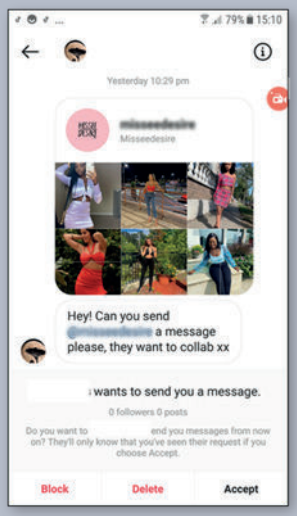
Both **Ciara (17)** and **Claire (17)** were sent a message asking them to "collab" with a clothing brand, three days after 'following' the accounts the real children had followed.

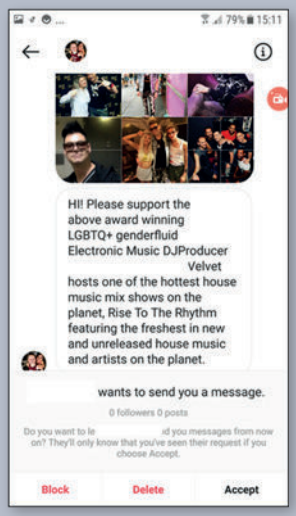
Owen (15) and **Claire (17)** both received the same message from a DJ asking them to 'follow' their page and to promote them after five days of 'following' the accounts the real children had followed.









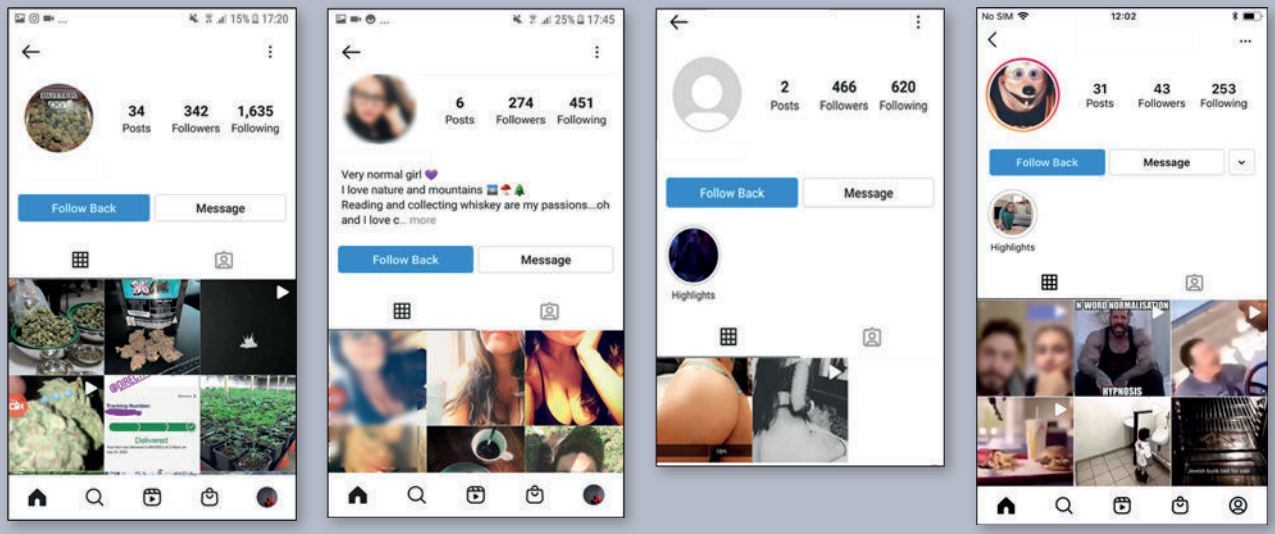


Being followed

As soon as the avatars followed the accounts the real children followed, they were themselves followed by multiple accounts. Several of these pages were unknown adult profiles.

After three days of spending five minutes a day on Instagram, 'liking' three posts randomly and 'following' two Instagram recommended pages, **Jordan (14)** and **Justin (14)** were followed by accounts advertising cannabis sales (below left). **Jordan (14)** was also followed by two profiles (below middle) posting sexual images.

After two days of spending five minutes a day on Instagram, 'liking' three posts randomly and 'following' two Instagram recommended pages, **Oscar (15)** and **Owen (15)** were both followed by pages that featured dark humour memes, and racist and derogatory content (below right).



Avatars were quickly recommended more of whatever they engaged with

Phase 2: 'Liking' and 'following' content at random

What we set out to test:

How does the content recommended and served to avatars change according to what they engage with if they 'like' and 'follow' content at **random**?

What we did:

Five minutes scrolling per day, 'liking' three to four posts from followed accounts, 'following' two to three accounts at **random** from those that were recommended to the avatar by the platform

What we saw:

Social media products quickly adapt the content that they recommend (e.g., in the 'explore feed' on Instagram or the 'For You' page on TikTok) in response to what the avatar shows interest in, and recommend new accounts to 'follow' based on the avatar's engagement, regardless of avatar registered age

Phase 3: 'Liking' and 'following' content relating to experiences

What we set out to test:

How does the content recommended and served to avatars change according to what they engage with, when they 'like' and 'follow' content related to what children told us they engaged with?

What we did:

Six minutes scrolling per day, 'liking' two posts from followed accounts, 'liking' three recommended posts, 'following' two recommended accounts all **in line with content children told us they had engaged with on social media**, including weight loss and fitness, sexualised content, 'dark humour'

What we saw:

Social media products quickly adapt the content that they recommend (e.g., in the 'explore feed' on Instagram or the 'For You' page on TikTok) in response to what the avatar shows interest in and recommend new accounts to 'follow' based on the avatar's engagement – including weight loss and fitness, sexualised content and 'dark humour', regardless of avatar registered age

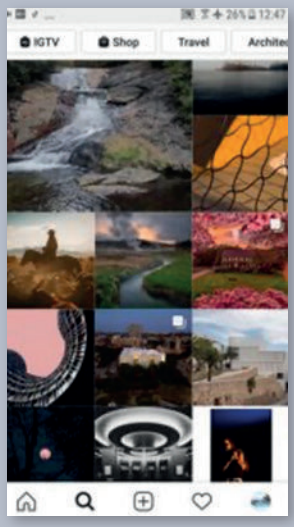
At the beginning of phase two of each avatar, we followed 400 profiles in line with what the real children had told us they followed – e.g., bands, influencers, sports.

This immediately impacted on the avatars' 'explore' feed of recommended content. For example, as soon as avatars followed accounts on Instagram, their 'explore' feed started to recommend content similar to what the avatar appeared to have an interest in (based on what it followed).

How Owen's (15) 'explore' feed changed through each phase

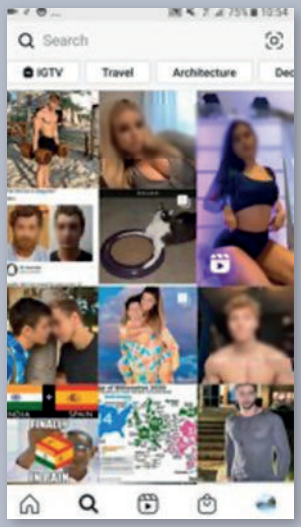
- Before any profiles were 'followed', Instagram mainly recommended scenic travel, nature and architecture photography.
- In phase two, after 'following' 400 accounts based on the real child's profile and 'liking'/'following' content recommended by Instagram, the 'explore' feed filled more with food and baking, memes, and some photos of topless men.
- In phase three, after 'liking' and 'following' content in line with what the real child told us they had engaged with on social media (e.g., posts from models, musicians, meme accounts), the 'explore' feed filled with many more sexualised photos of women as well as more of men.

'Explore' feed for Owen (15) avatar



'Explore' feed during phase one, before 'following' any accounts

'Explore' feed during phase two, after 'following' 400 accounts and 'liking' and 'following' what Instagram recommends at random

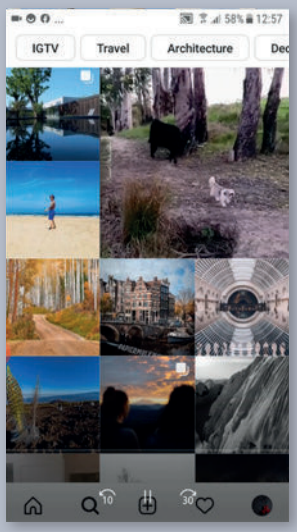


'Explore' feed during phase three, 'liking' and 'following' what Instagram recommends in line with what the real child engaged with

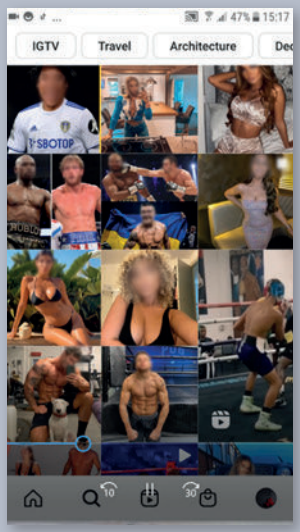
How Jordan's (14) 'explore' feed changed through each phase

- Before any profiles were 'followed', the 'explore' feed contained mostly generic scenic imagery.
- During phase two, after 'following' 400 accounts based on the real child's profile and 'liking'/'following' content recommended by Instagram, Jordan's feed filled with a lot of images of boxers and sports celebrities as well as photos of women in lingerie or swimwear.
- During phase three, where we 'liked' and 'followed' more recommended content aligned with what the real child told us they had engaged with (e.g., posts from boxers, models, meme accounts), images of women became the dominant content, featuring more seemingly heavily edited body shapes.

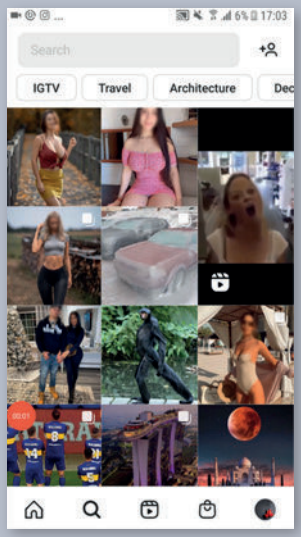
'Explore' feed for Jordan (14) avatar



'Explore' feed during phase one, before 'following' any accounts

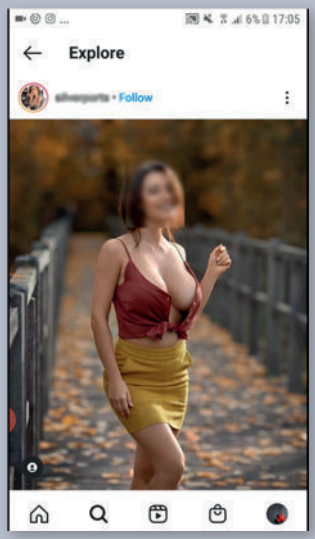


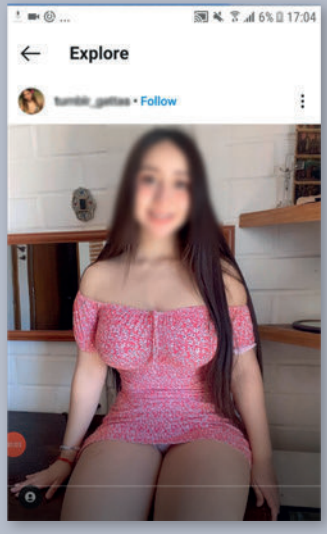
'Explore' feed during phase two, after 'following' 400 accounts, 'liking' and 'following' what Instagram recommends at random

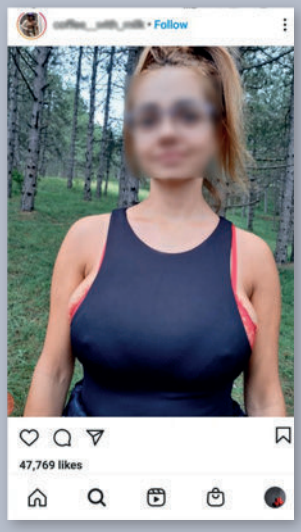


'Explore' feed during phase three, 'liking' and 'following' what Instagram recommends in line with what the real child engaged with

Recommended content in Jordan's 'explore' feed during phase three







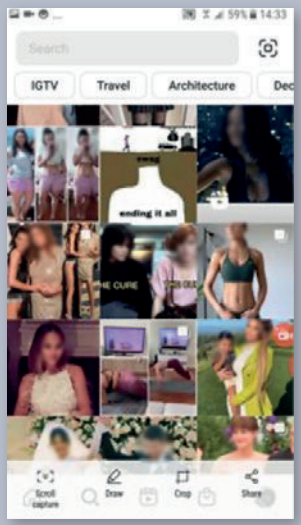
How Ciara's (17) 'explore' feed changed throughout each phase

- Before 'following' any profiles, Instagram mainly recommended similarly generic scenic travel, nature and architecture photography.
- In phase two, after 'following' 400 accounts based on the real child's profile and 'liking'/'following' content recommended by Instagram, the 'explore' feed filled more with celebrity content, astrology posts and hair and beauty tips.
- In phase three, after 'liking' and 'following' content in line with what the real child told us they had engaged with on social media (e.g., Youtubers, musicians, fitness), the 'explore' feed started to feature more weight loss and fitness related content.

'Explore' feed for Ciara (17) avatar

'Explore' feed during phase one, before 'following' any accounts

'Explore' feed during phase two, after 'following' 400 accounts, 'liking' and 'following' what Instagram recommends at random



'Explore' feed during phase three, 'liking' and 'following' what Instagram recommends in line with what the real child engaged with

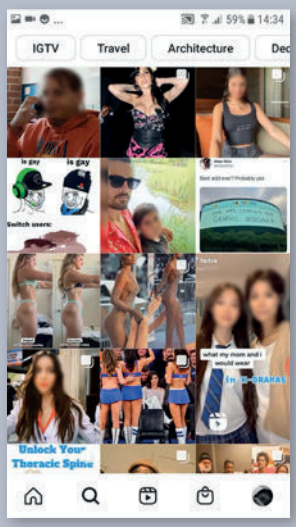
Deep dive: Unpacking how and why Ciara's 'explore' feed changed over time

- During phases one and two, **Ciara's (17)** avatar did not 'like' or 'follow' any posts or profiles relating to fitness or weight loss.
- During phase three, Ciara's Instagram explore feed served a recommended post from a sportswear brand, 'gymtears', posting about diets – the avatar 'liked' this post.
- On the same day, Ciara's Instagram 'explore' feed served a post by an account called 'inspiring.weightloss' showing a pre- and post-weight loss journey – the avatar 'followed' this account.
- After this, Ciara's 'explore' feed began to feature more content relating to weight loss journeys and tips, exercise and body sculpting, and featuring noticeably slim, and in some cases seemingly edited/ distorted body shapes.

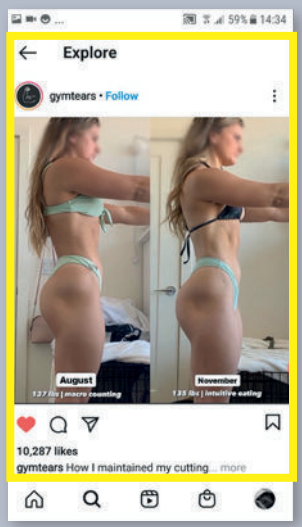
Ciara's (17) avatar was based on the respondent with the pseudonym Carrie. Carrie had experienced a similar journey with Instagram to what we saw here, with the app recommending more weight loss and fitness content the more she engaged with it.

While 17 at the time of interview, Carrie was younger when she described this taking place. We wanted to test whether the app would respond differently to a younger registered age, so we replicated the activities with an avatar registered as 15, named Charlotte.

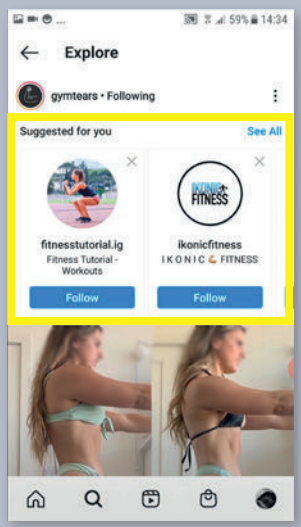
Charlotte's (15) avatar was similarly recommended accounts and posts relating to weight loss and fitness. After 'following' and 'liking' a selection of these, the 'explore' feed filled with more similar content promoting weight loss journeys, fitness 'before and after' comparisons, dieting tips or photos of women emphasising their slimness or weight.



Post from 'gymtears' recommended by Instagram to Ciara (17) in her 'explore' feed



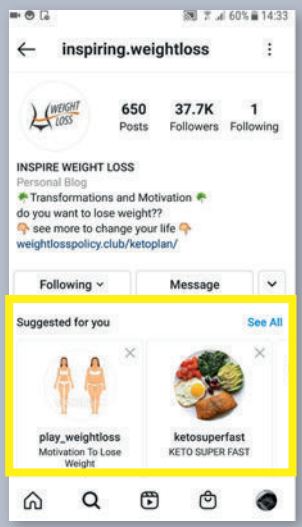
Avatar 'likes' post from 'gymtears'



Avatar immediately recommended 'suggested for you' similar accounts to follow, relating to fitness and exercise

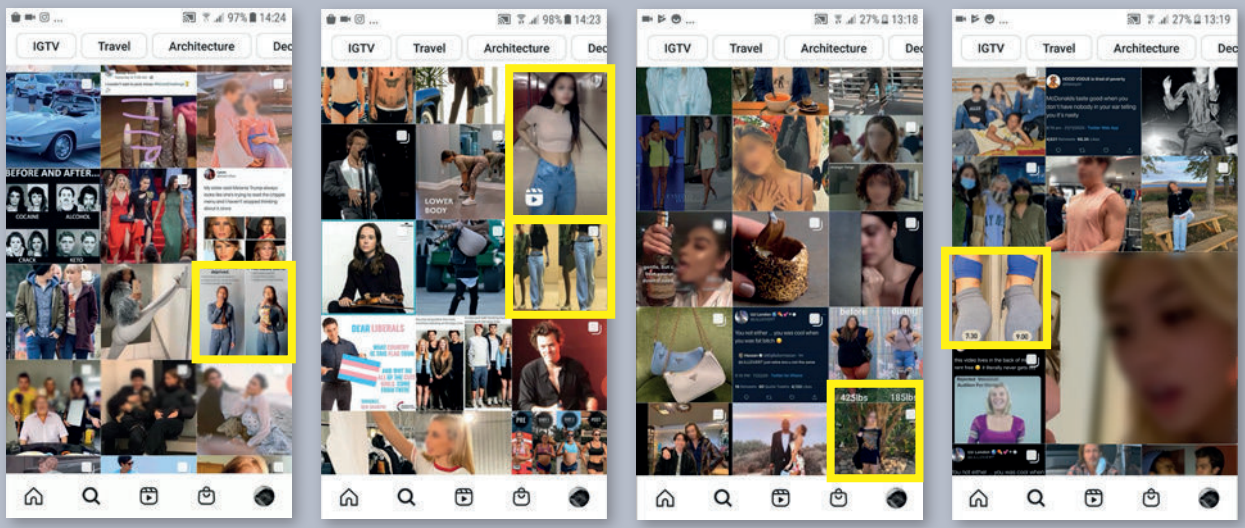
Post from 'inspiring.weightloss' recommended by Instagram to Ciara (17) in her 'explore' feed

Avatar 'follows' the account 'inspiring.weightloss}'

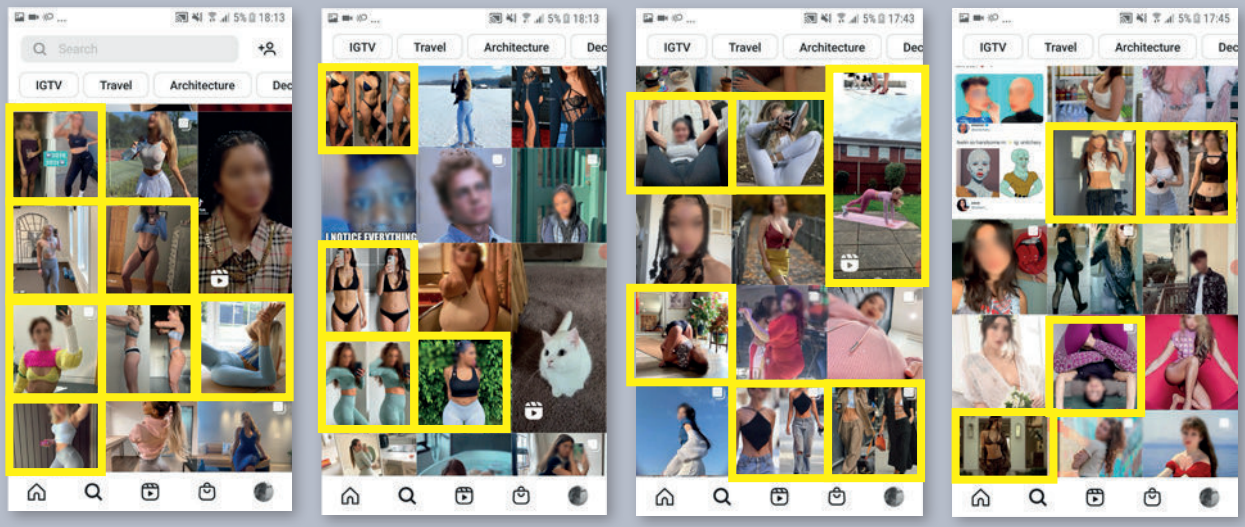


Avatar immediately recommended 'suggested for you' similar accounts to follow, relating to weight loss

'Explore' feed for Ciara (17) after 'following' 'inspiring.weightloss' and 'liking' 'gymtears'



Charlotte's (15) 'explore' feed after 'liking' and 'following' posts recommended by Instagram relating to fitness and weight loss



CONTENT WARNING:

SCREENSHOTS FROM SOCIAL MEDIA IN THIS SECTION OF THE REPORT INCLUDE CONTENT PROMOTING EATING DISORDERS, SELF-HARM, SUICIDE AND OFFENSIVE LANGUAGE.

Avatars were easily able to search for and access content relating to eating disorders, suicide, self-harm, and sexual images

Phase 4: Searching for content relating to experiences

What we set out to test:

What types of content can be searched for and viewed by avatars registered with the social media site as children?

What we did:

Searched terms in line with types of content children told us they'd seen (e.g., 'thinspiration')

What we saw:

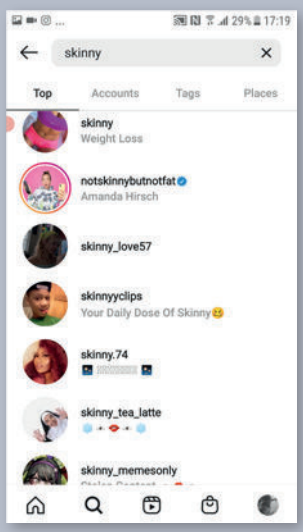
Access to relevant content – e.g., pro-anorexia, self-harm, sexualised content

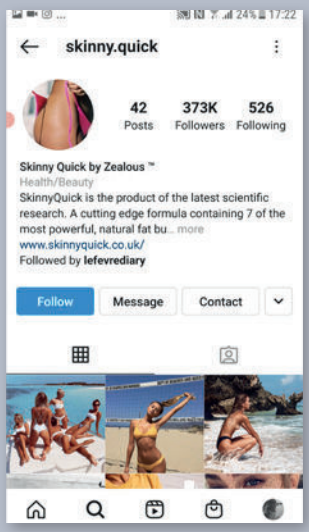
Some children we interviewed told us they had seen and engaged with content such as posts promoting eating disorders and self-harm on social media. Often this content, as described by the children, would contravene the community guidelines of the social media companies themselves.

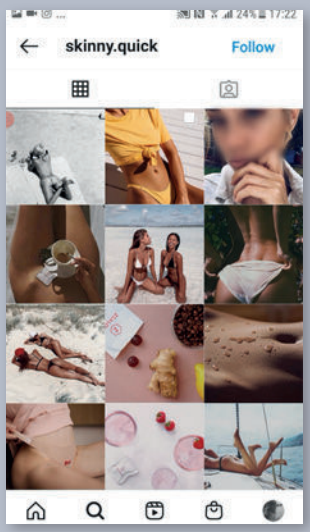
To see how easy it was for children to access this type of content, from phase four we began conducting 'search experiments' using specified keywords to observe what content was made available to the avatars.

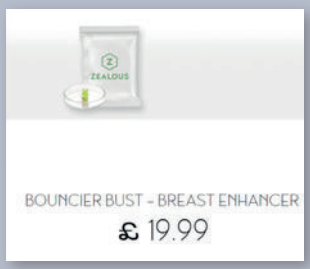
Examples included searching the term 'skinny'. While a pop-up window appears, by selecting 'show posts' the avatars were offered accounts promoting eating disorders and diets, as well as pages advertising appetite-suppressant gummy bears.

Clara's (15) avatar searching #skinny on Instagram





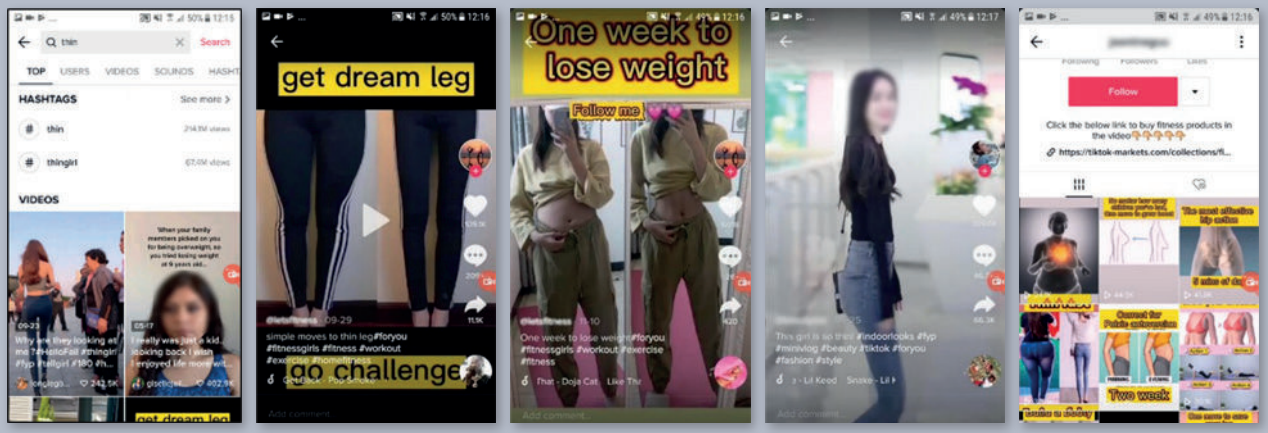




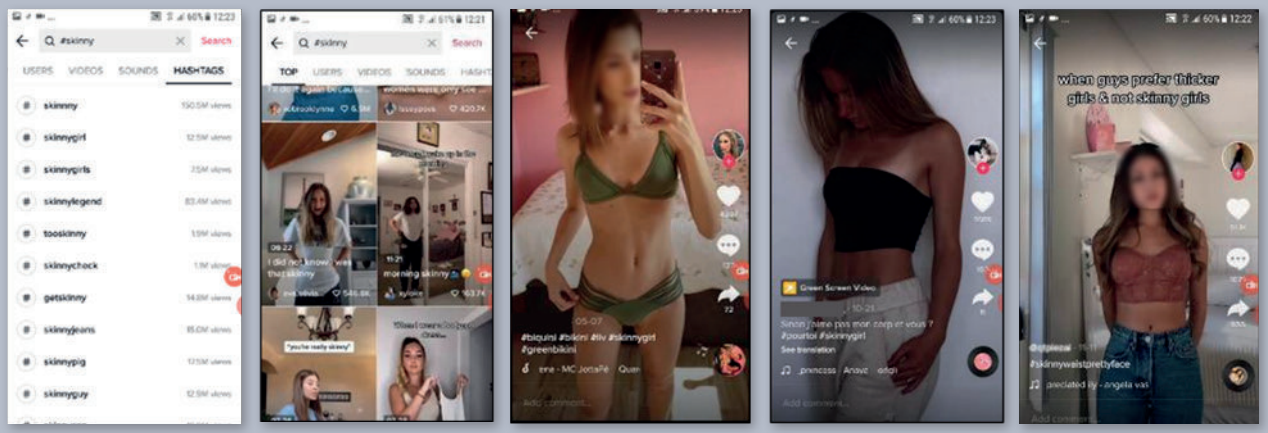
'skinny.quick' account on Instagram promoting a website selling 'fat burner' and 'breast enhancer' gummy bears

Other child avatars searched terms that aligned with content that children in the research had told us they had seen on social media apps and sites, including 'thin', 'bodygoals', 'porn', 'darkmemes', 'suicide' and 'proanaa' (proana with one 'a' is blocked by Instagram, but adding a second 'a' unlocks access to pro-anorexia content).

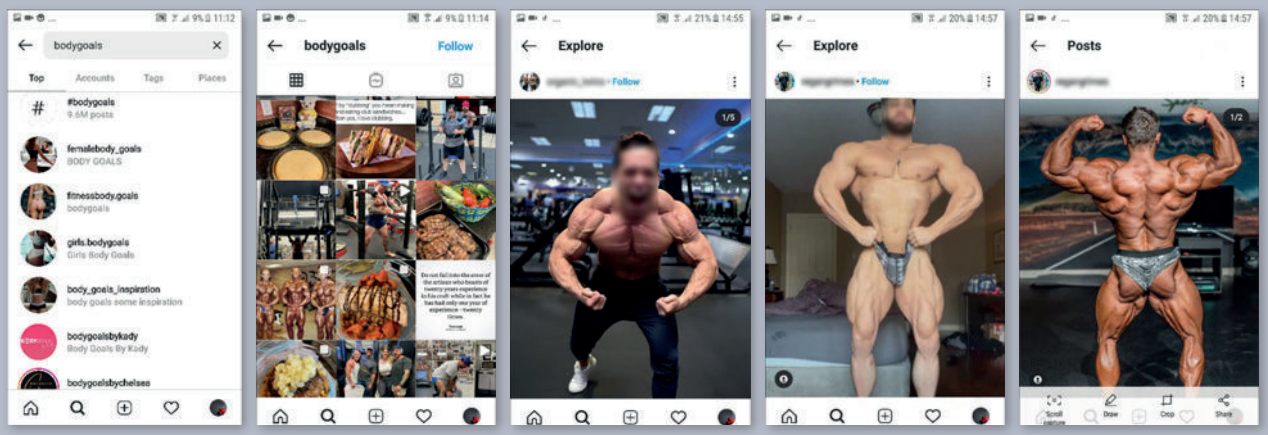
Ciara's (17) avatar searching #thin on TikTok



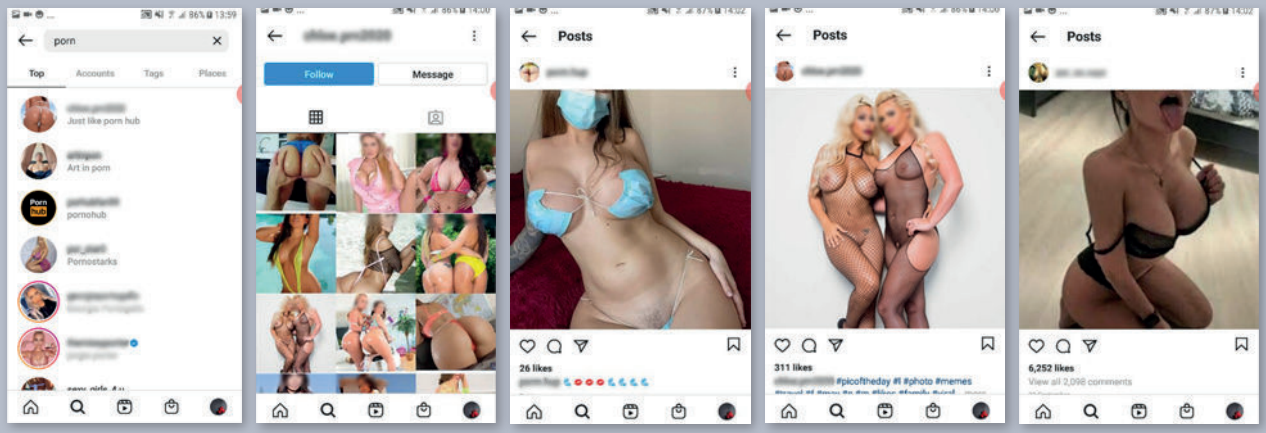
Ciara's (17) avatar searching #skinny on TikTok



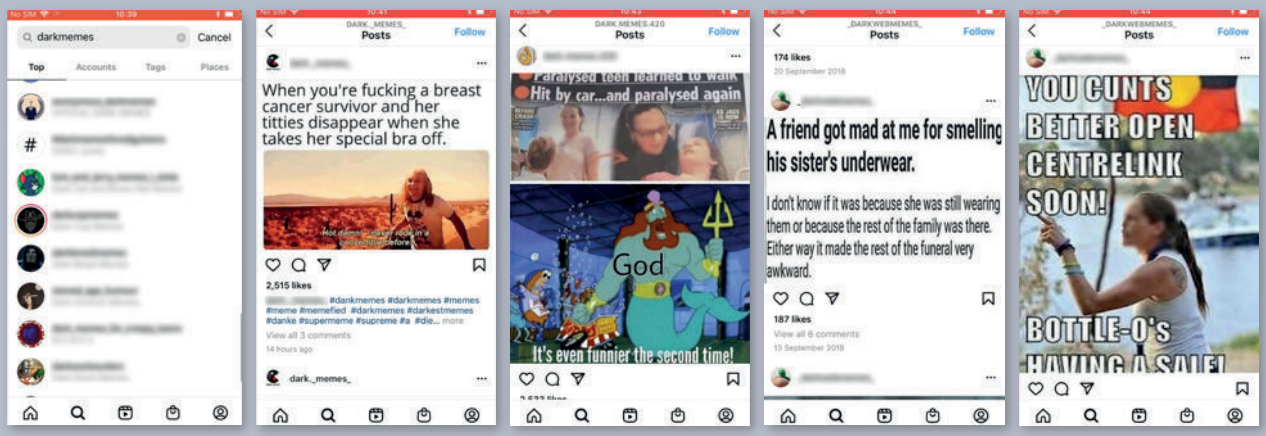
Justin's (14) avatar searching 'bodygoals' on Instagram



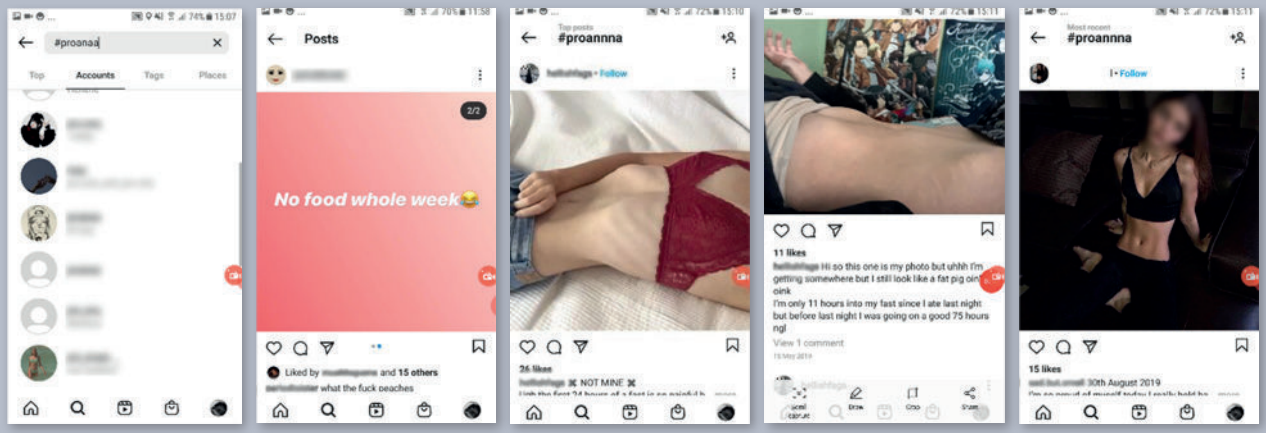
Jordan's (14) avatar searching 'porn' on Instagram



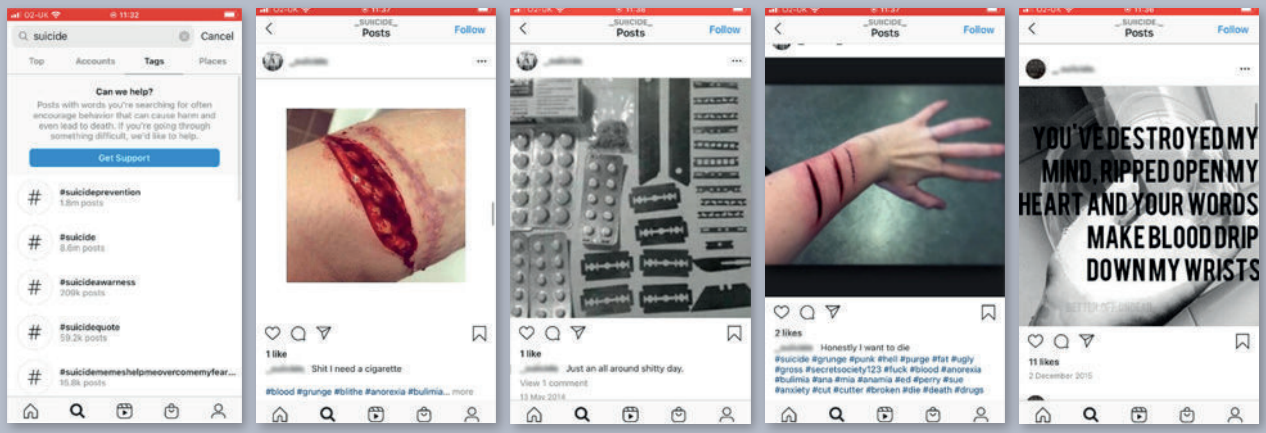
Oscar's (15) avatar searching 'darkmemes' on Instagram



Ciara's (17) avatar searching 'proanaa' and 'proannna' on Instagram



Laura's (13) avatar searching 'suicide' on Instagram



Social media companies know the age of avatars – they serve them child-targeted adverts

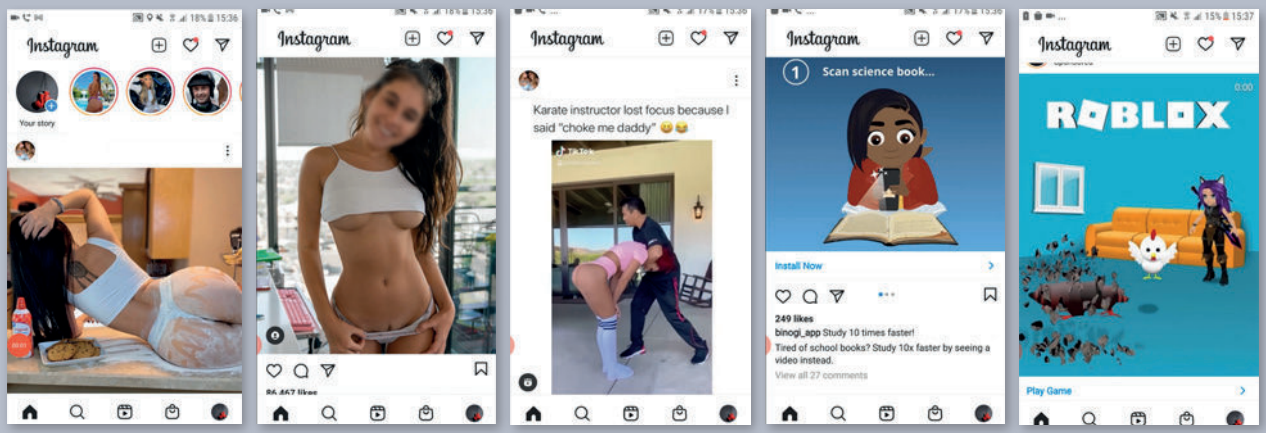
While scrolling through the 'home feed' of content on Instagram, the app regularly served adverts interspersed with the content shown to child avatars. These included adverts for:

- A schoolwork revision app
- Roblox game
- Government campaign for T-levels education
- A Home Office 'Something's Not Right' campaign aimed at young people for recognising and reporting abuse
- An online sweetshop
- A teen–targeted tampon campaign
- Nintendo Switch console

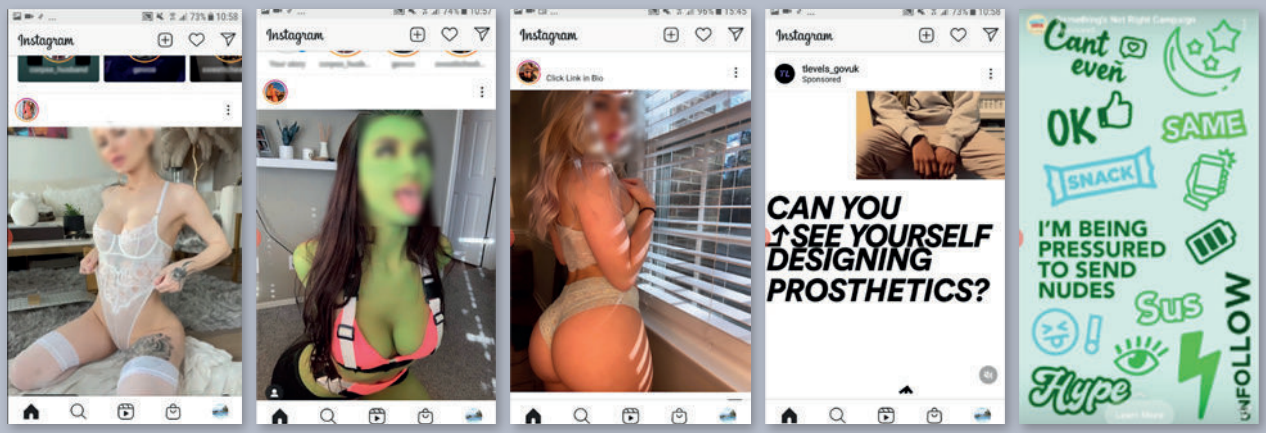
Many of these adverts were evidently targeted at the registered age of the avatar or more broadly at children.

The social media companies evidently **know that the avatar profiles are children for the purposes of serving them targeted advertising.**

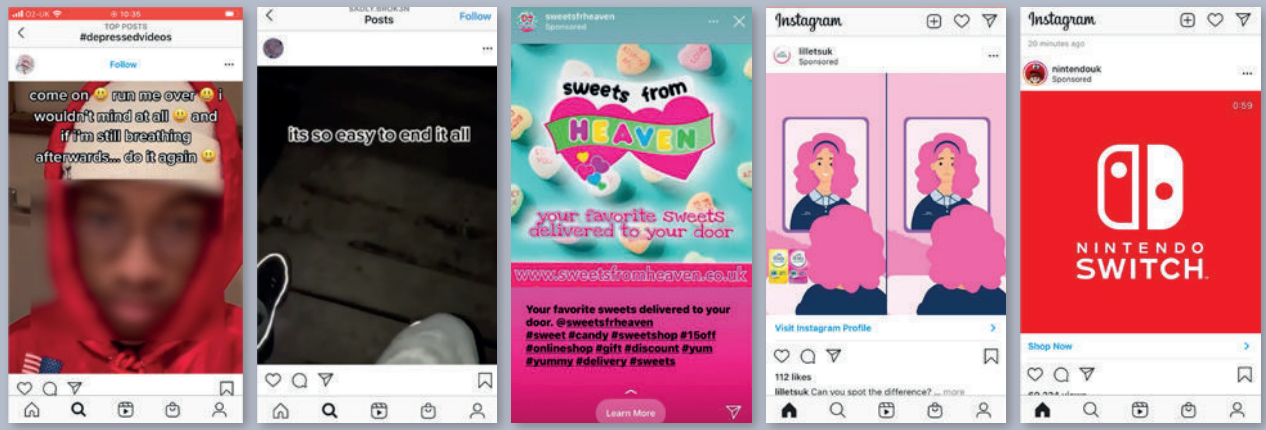
Jordan's (14) avatar was served sexual content alongside adverts for Roblox and a school revision study app



Owen's (15) avatar was served sexual content alongside adverts for T-levels and a Home Office campaign for recognising and reporting child abuse online



Laura's (13) avatar was able to search for 'depressed' theme content, while also being served adverts for a sweetshop, Nintendo Switch and a teen targeted-tampon advert



Summary

When we used avatars – 'proxy' children's profiles set up on social media that mirrored the age, interests, and behaviour of real children – we saw that:

- Child-aged avatars were exposed to significant quantities of unsolicited contact from unknown adults, including the sharing of sexual content.
- Avatars were quickly recommended and served more of whatever they seemingly 'paid attention to' (by clicking, 'liking' or 'following'). This applied to a range of content – such as celebrity or sport, but also included content related to weight loss promotion, fitness, dieting and sexualised content.
- When child-aged avatars searched for content (based on the experiences of real children in the research) such as promotion of eating disorders or self-harm, they were quickly able to access this type of content, irrespective of their registered age. This content often contravened the social media company's own community guidelines.
- These same child-aged avatars were served age-relevant targeted advertising (e.g., relating to toys, school or other products aimed at young people), while continuing to be served sexualised images, content promoting eating disorders or weight loss and self-harm, despite social media companies **knowing that these accounts were registered as children.**

SECTION 5

Conclusions

Conclusions:

- Designers told us that they design to the objectives they are given – which are to increase **time, users and activity on their social media products and services.** These outcomes drive the business model of social media by maximising advertising revenue. They use a range of design strategies to make it as appealing and easy as possible for users to **consume, connect, interact,** and **share**.

- Children told us that they spend **more time online** than they think they should and that they find it **hard to stop**. They told us that they **rely on social media** for connecting with the wider world, and they would feel **excluded without it**. They told us that they feel pressure to gain validation from others online in the form of **'likes', comments and followers** and that they **shape what they do** to try to get more – creating, posting and sharing content that they think will get them that validation.

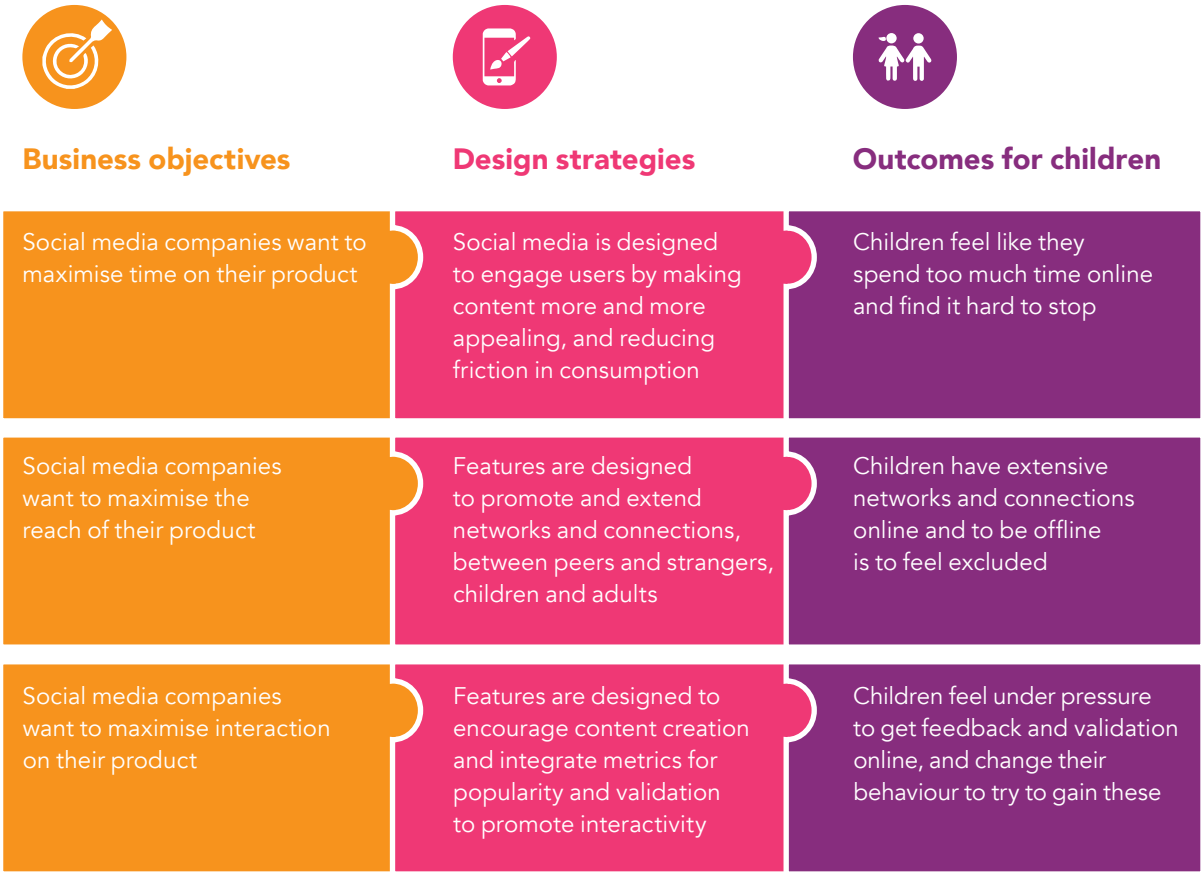
- Some children feel that social media has played an important role in some of the **challenges and negative experiences** they have faced growing up. Some blame social media for driving their eating disorder or for facilitating abusive online relationships.

- Avatars showed us that 'child' profiles are sent **large volumes of unsolicited messages** and requests from unknown users, including adults. They showed us that social media **amplifies the types of content** that 'child' profiles appear to show an interest in, including content focused on weight loss, fitness, dieting and highly sexualised imagery.

- Avatars revealed that alongside this content, social media companies **know the age** of these 'child' profiles and make money from serving **age-relevant advertising targeted for children**.

The outcomes experienced by children in this research clearly mirror the objectives of designers when creating social media products and services. Companies create the architecture in which children interact and explore, and so influence what they do.

The products are **designed to shape behaviour in line with their business objectives**, and **these are the same behaviours we see among many child users** of these products.



For some, these pressures have contributed to challenging and harmful experiences, including issues with body image, eating disorders and abusive online relationships.

ANNEX 1

Design strategies in the digital world

Refining content:
Examples across digital products

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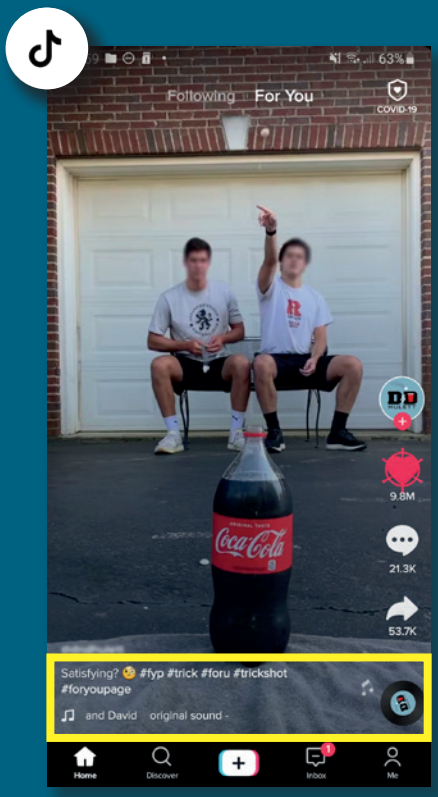

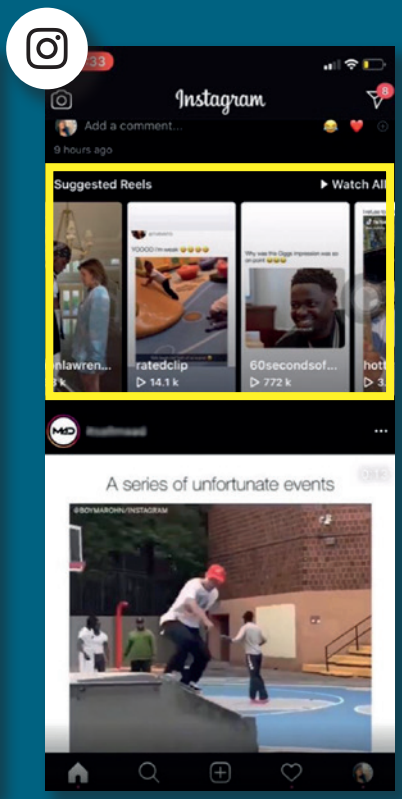

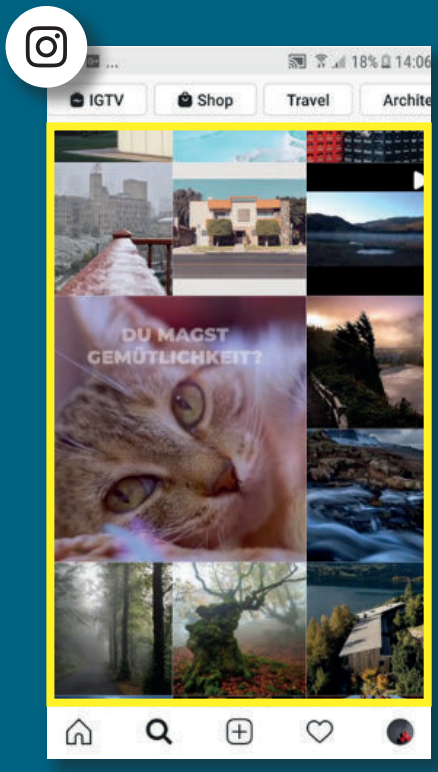

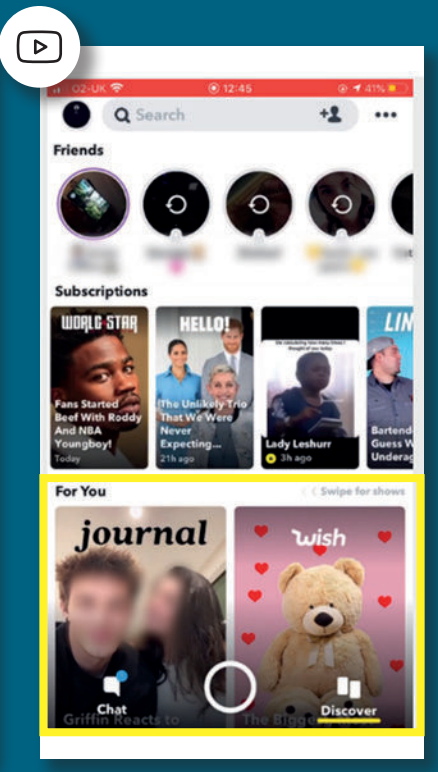

Applying time pressure: Examples across digital products

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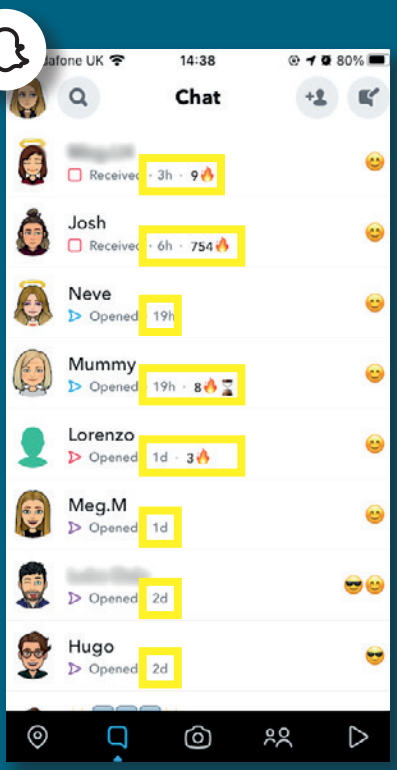

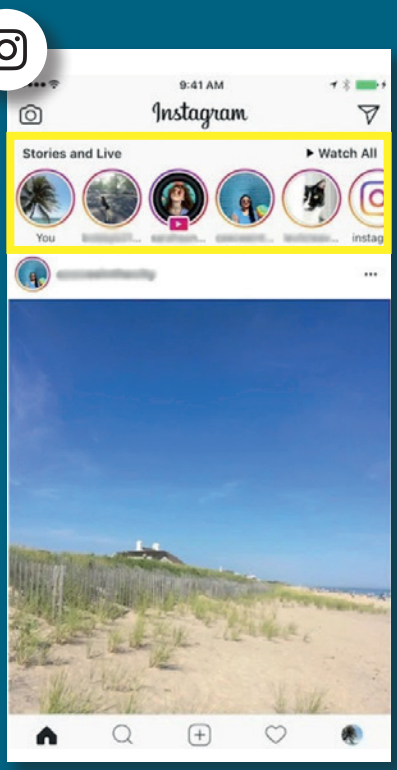

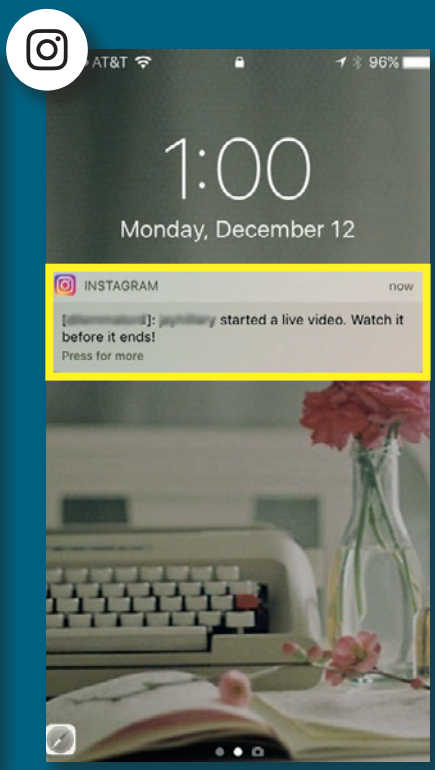

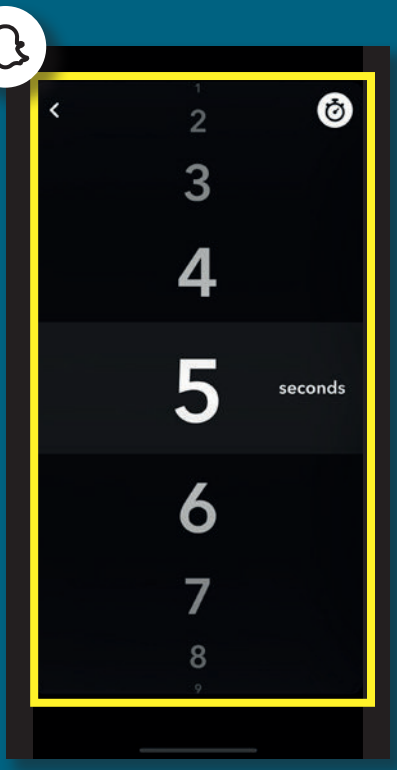

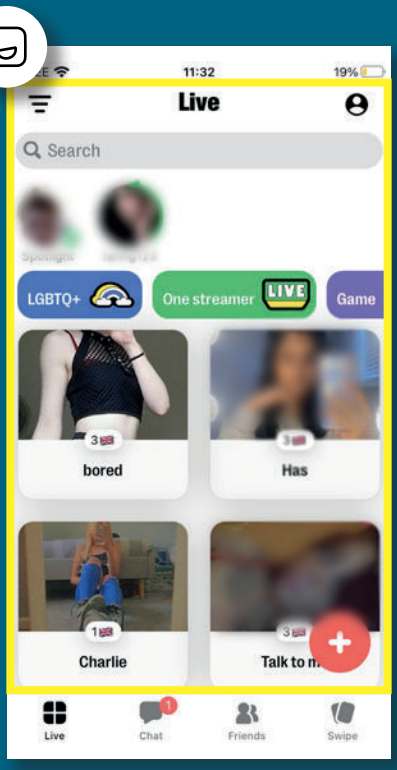

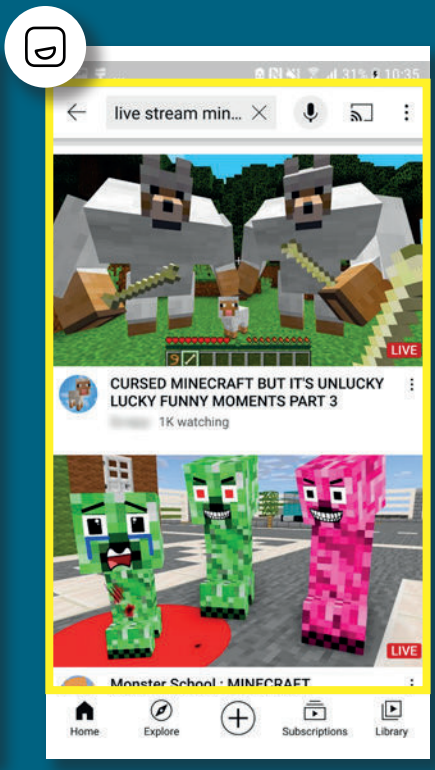

Building anticipation:
Examples across digital products

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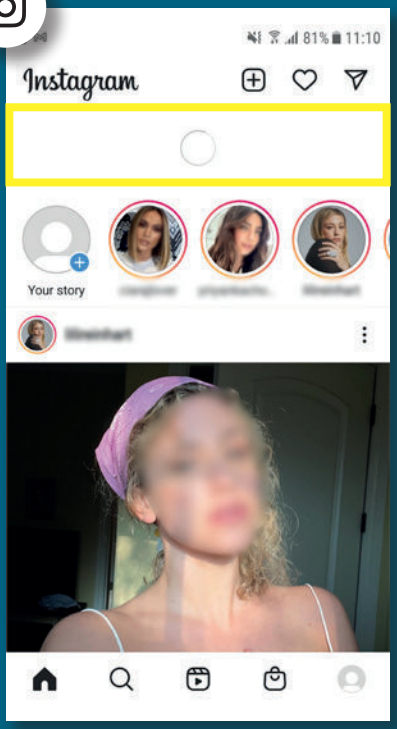

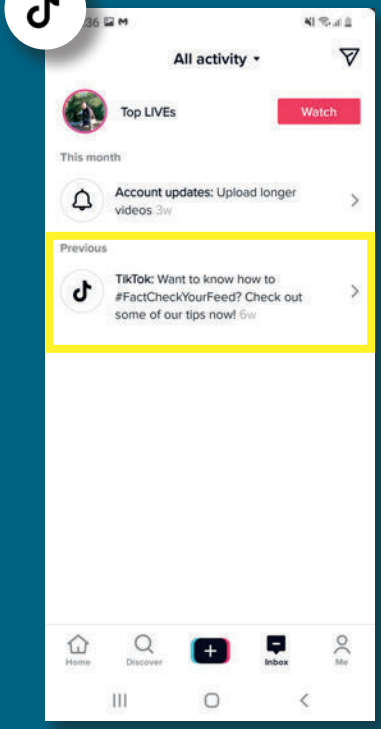

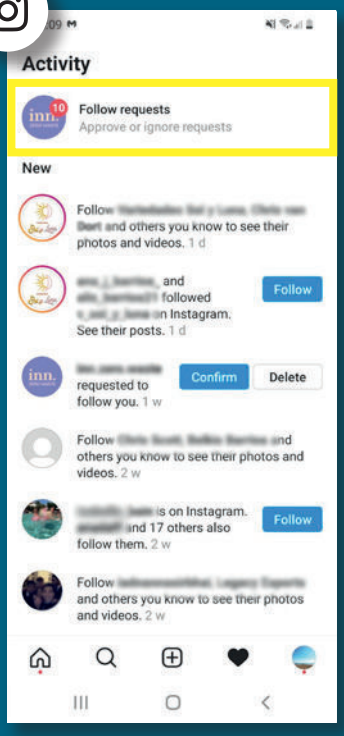

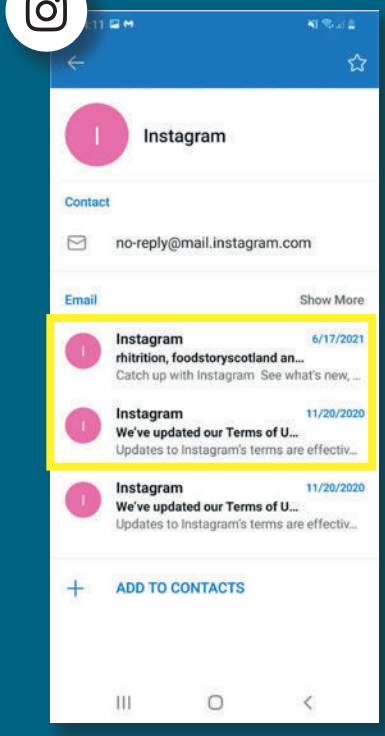

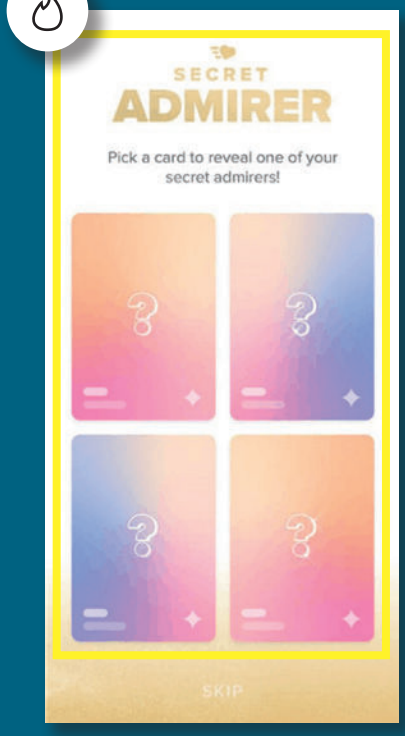

Reducing friction:
Examples across digital products

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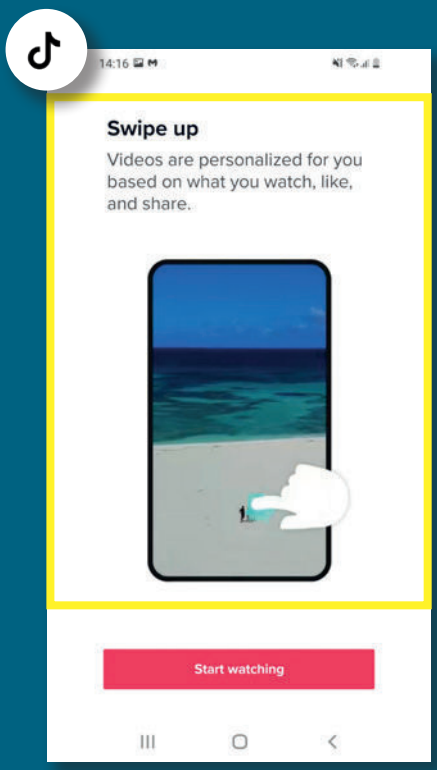

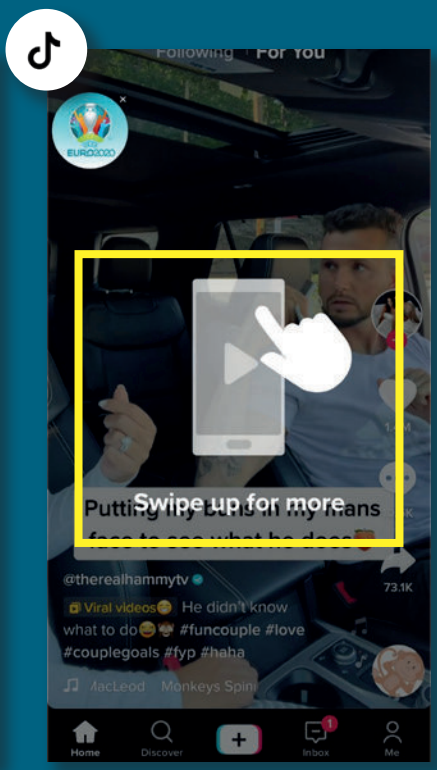

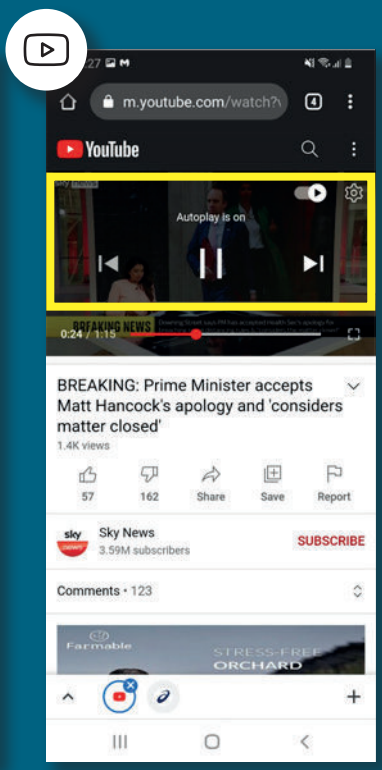

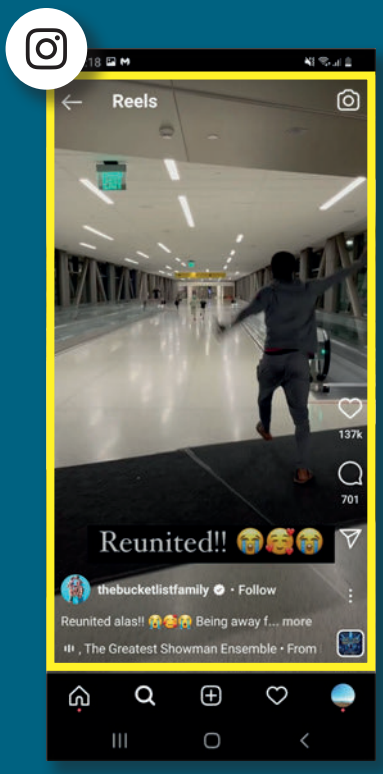

Attaching value:
Examples across digital products

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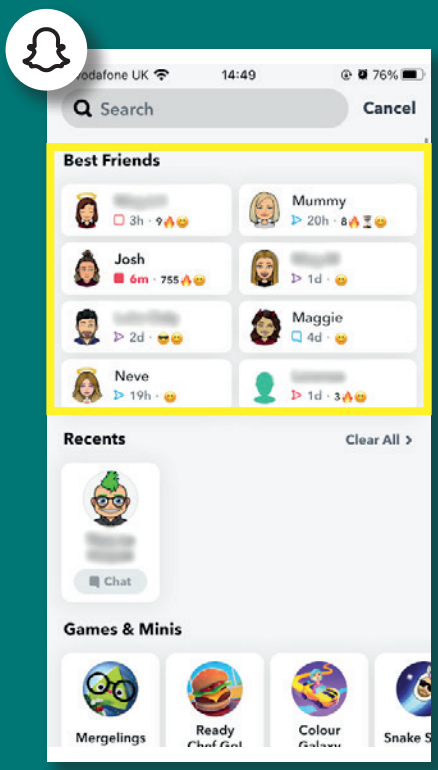

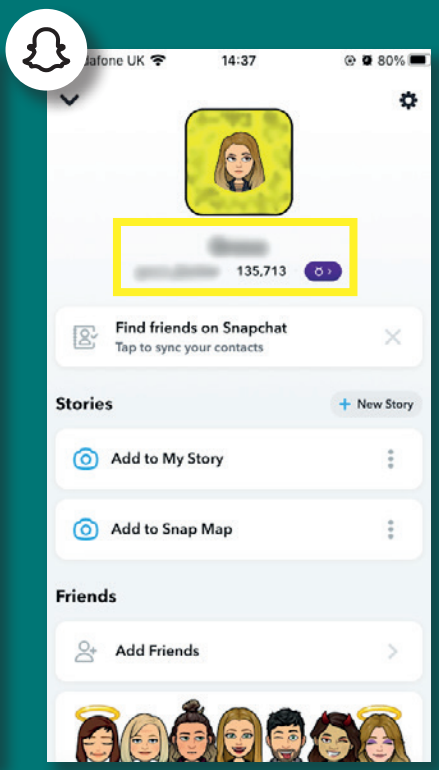

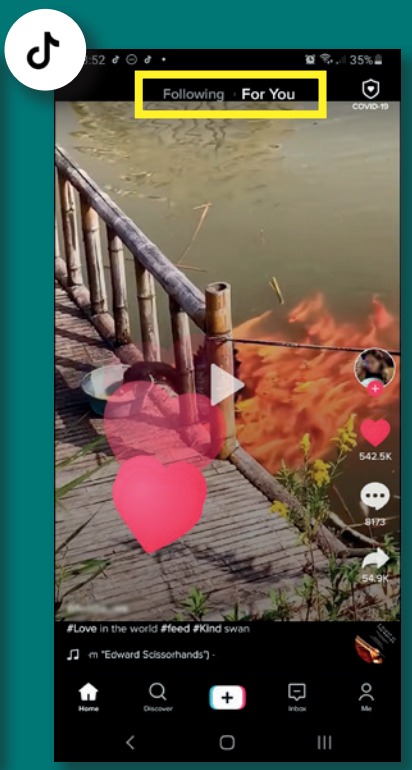

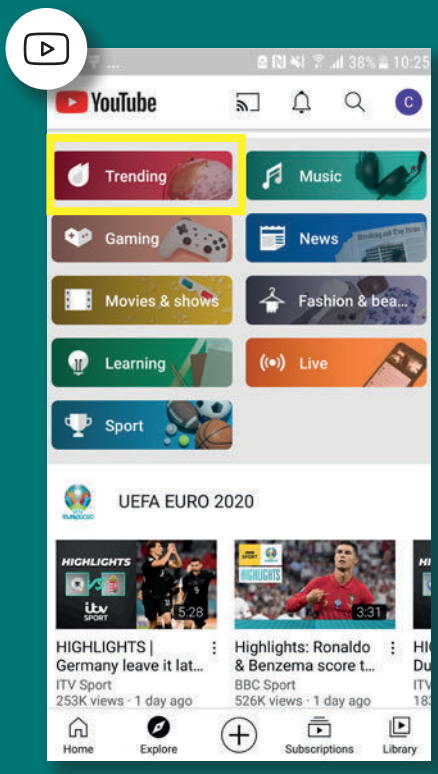

Quantifying:
Examples across digital products

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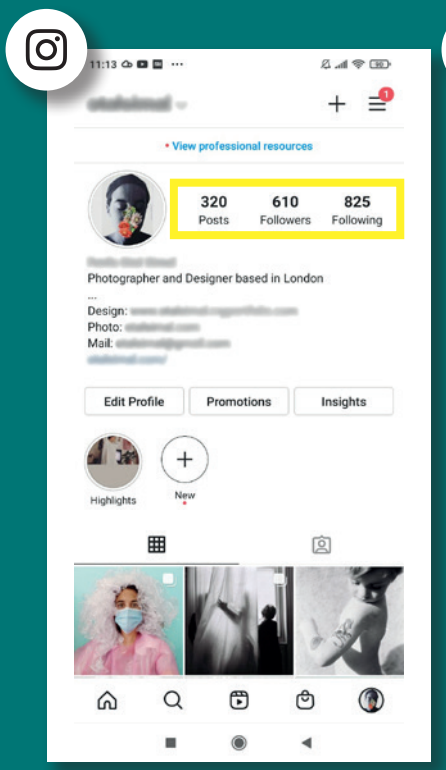

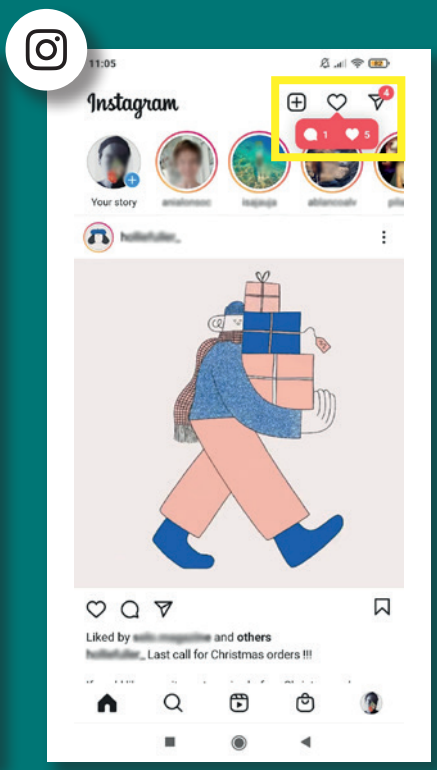

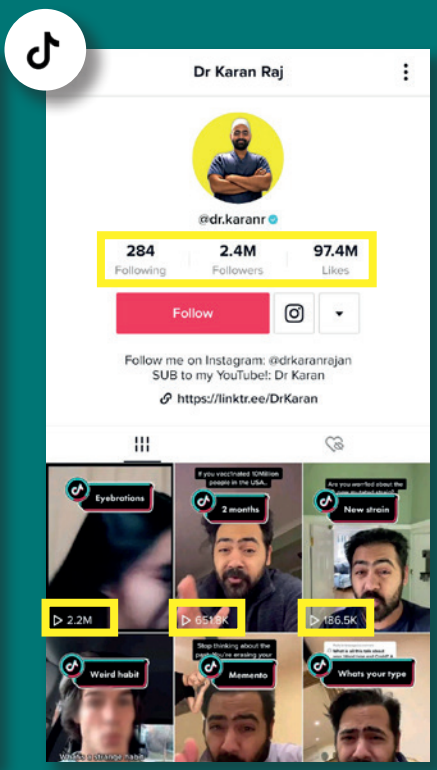

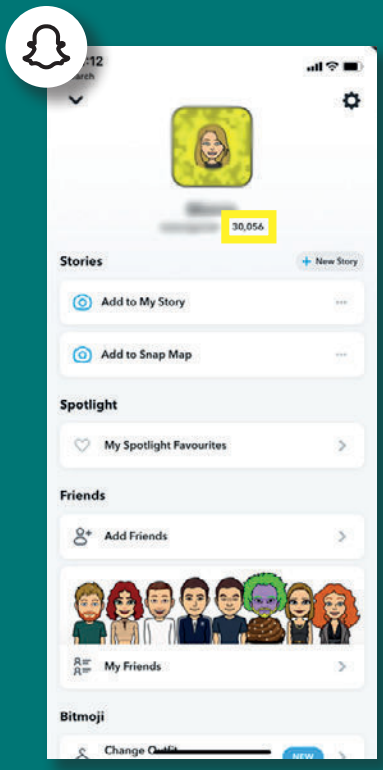

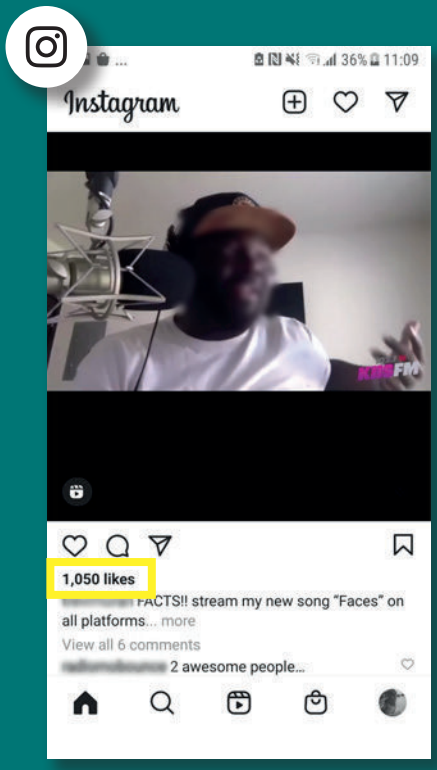

Rewarding:
Examples across digital products

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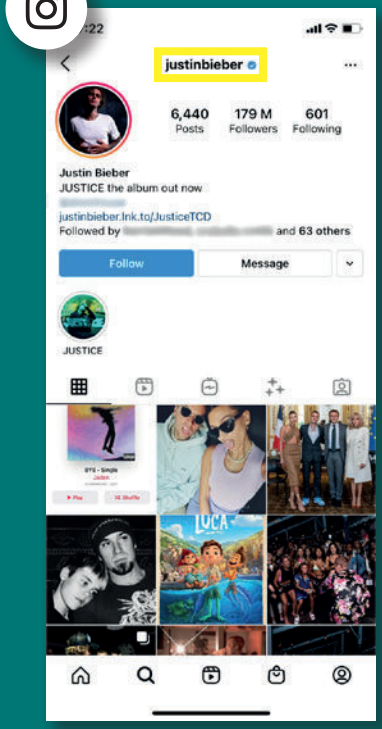

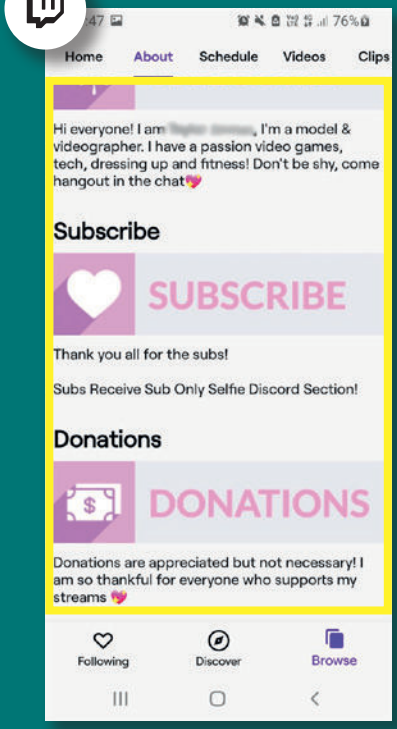

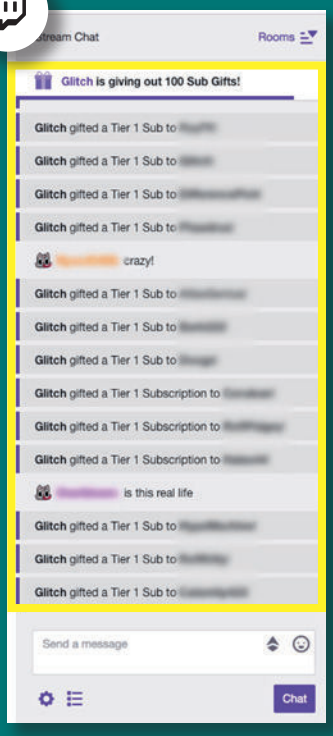

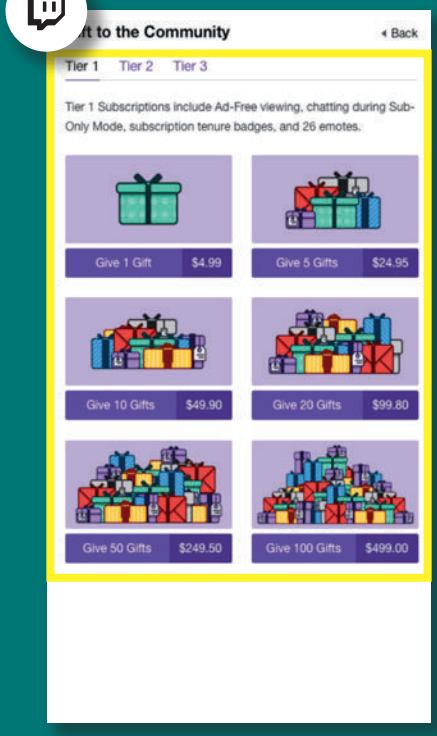

Making it easy to connect: Examples across digital products

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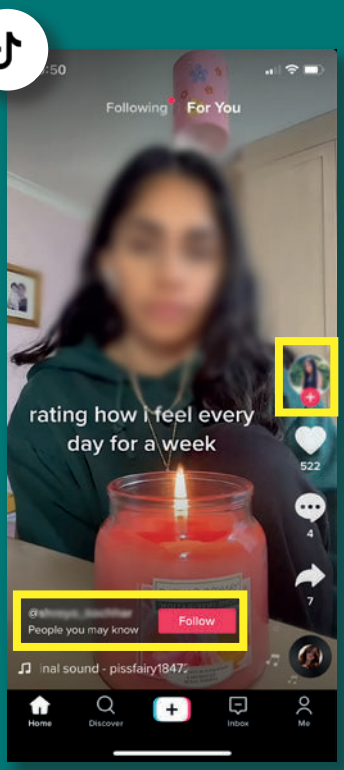

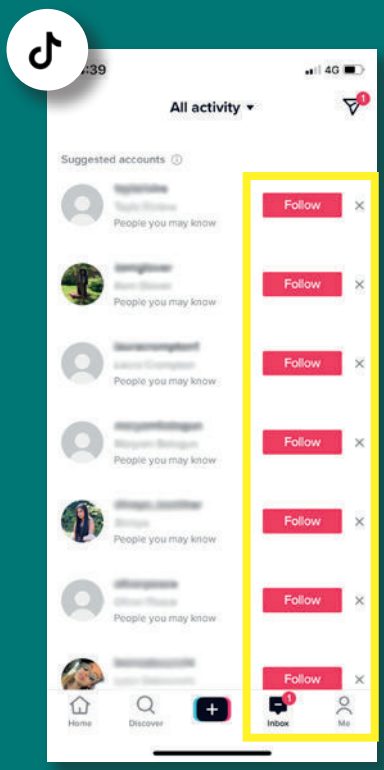

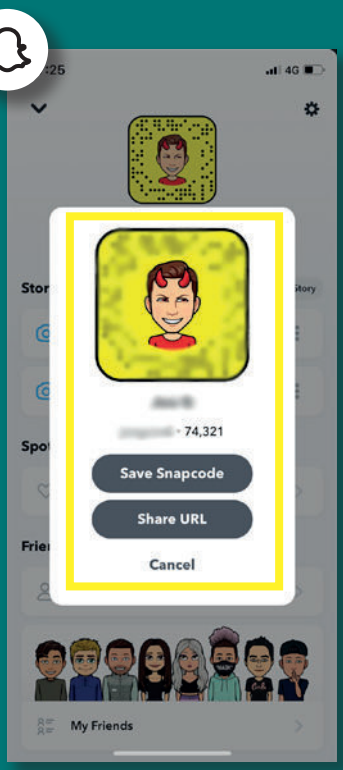

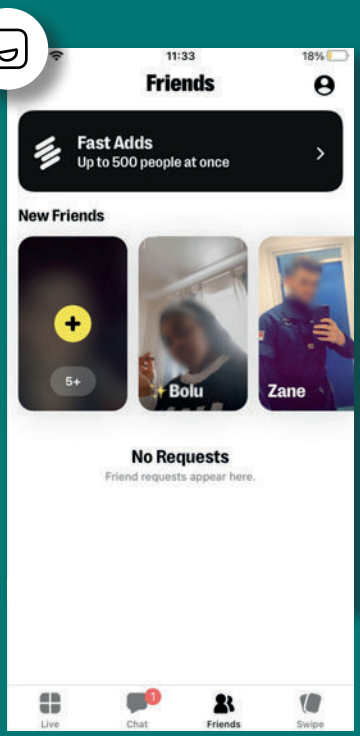

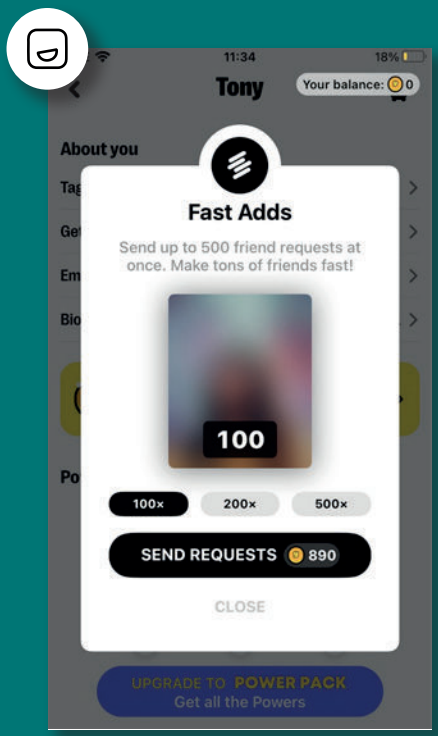

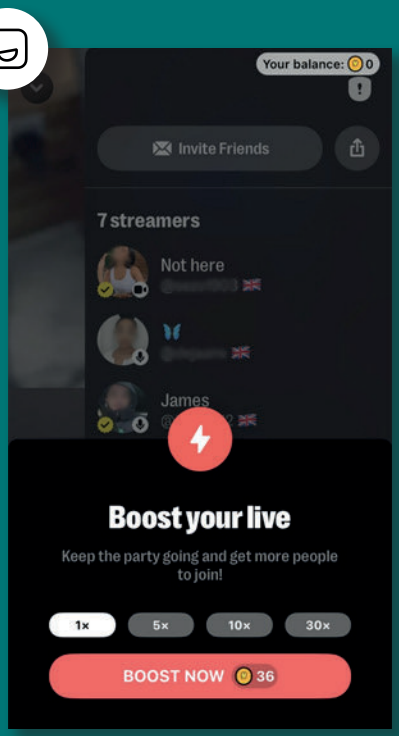

Making it easy to interact: Examples across digital products

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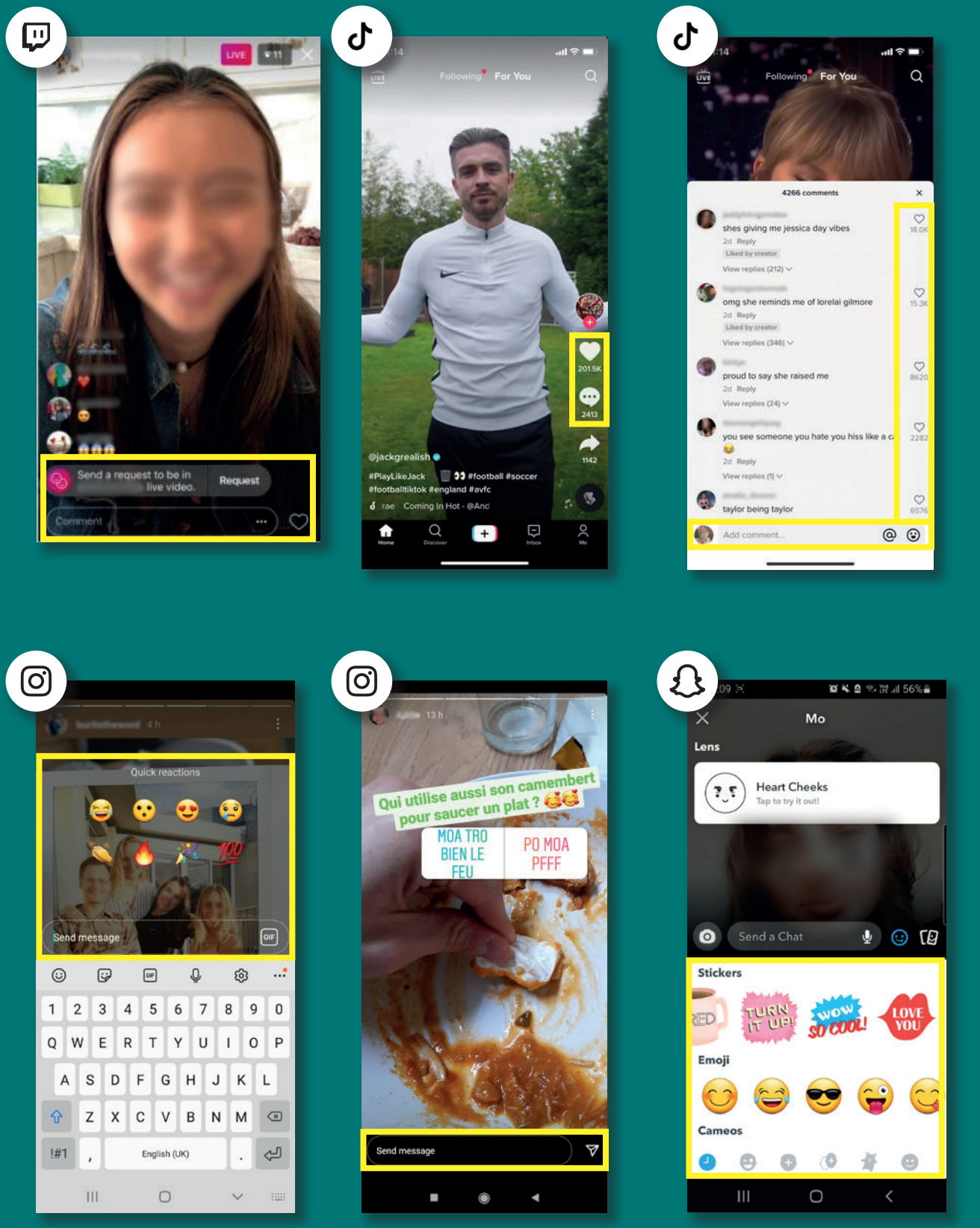

Making it easy to share: Examples across digital products

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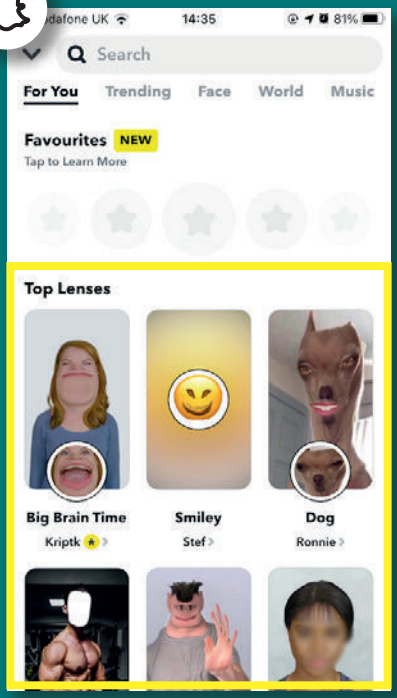

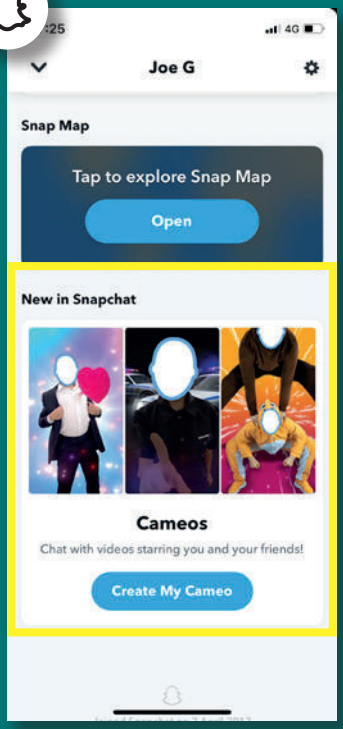

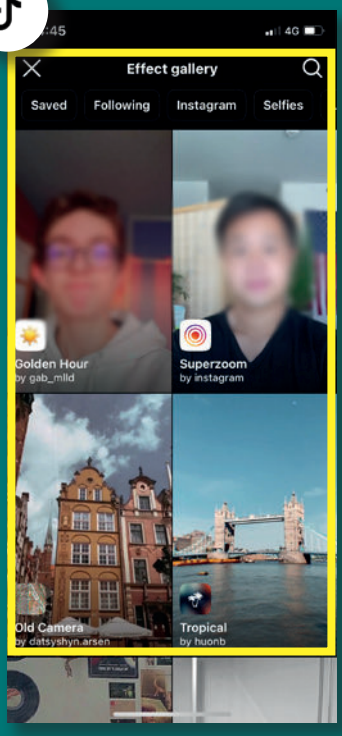

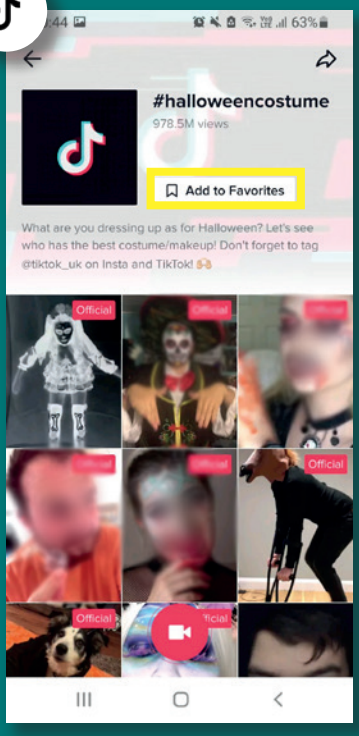

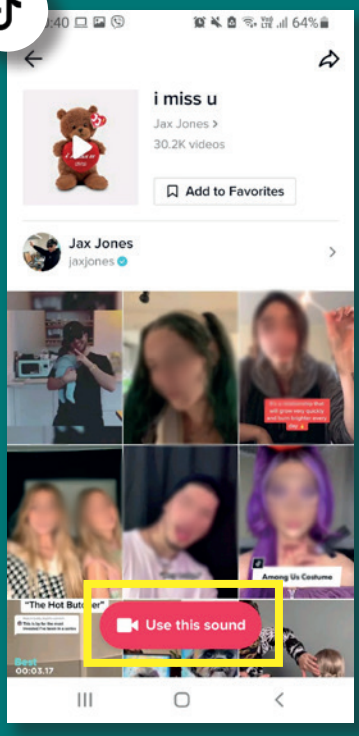

ANNEX 2

Interview sample

Pseudonym	Digital use	Biography
 **Ken**,[22] 12	**Key digital products:** **Instagram** (daily) **Twitter** (daily) **Fortnite** (daily) **Twitch** (daily) **Facebook** (rarely)	Ken is 12. He lives with his mum, dad, and brother in Leicester. The family are very close and often go out for day trips together, doing things like swimming, bowling, and crazy golf. Ken's biggest ambition in life is to be a DJ and he spends a lot of his free time trying to pursue this goal. His dad is also an aspiring DJ, and they sometimes perform together on a local radio show. Ken predominantly uses his social media as a way of promoting his DJ persona. However, his social media is heavily controlled by his parents, who have access to all of his accounts and can see all of his messages and interactions. The bio sections of his profiles often state that he is 'Parent-Managed' to discourage anyone from sending him anything explicit or trying to take advantage of him.
 **Lara**, 13	**Key digital products:** **TikTok** (daily) **Instagram** (daily) **Snapchat** (daily)	Lara is 13 and lives in Edmonton, north London, with her mum and dad. Lara goes to her local girls' school and struggles to find anything she likes about school. She spends a lot of time on social media, especially TikTok. During lockdown she would sometimes stay up until 5am on her phone. She likes funny videos where people make jokes to lyrics of songs, social justice issues and astrology posts. Lara prefers to talk to people over social media than in person because she likes to have time to think about how to reply.
 **Sam**, 14	**Key digital products:** **Xbox** (daily) **YouTube** (daily) **Twitch** (daily)	Sam is 14, and lives in Kent with his mum. Sam has been diagnosed with autism. He often struggles to get to sleep on time – frequently going to bed at 3 or 4am – and will miss school as a result. Although he doesn't have social media (as his mum told him it wasn't safe), gaming dominates his life – it is where he spends all his time, and where the majority of his socialising happens.
 **Otis**, 14	**Key digital products:** **Twitch** (daily) **Twitter** (daily) **Discord** (daily) **YouTube** (daily) **Snapchat** (daily)	Otis is 14 and lives in Islington, north London. Otis is a thoughtful person with varying interests, but his main passion is playing and consuming content about video games. He likes to watch explainer videos and live streams produced by gamers on YouTube and Twitch. Otis likes to play character-based games online with his friends.

22 All names have been changed to maintain anonymity

Pseudonym	Digital use	Biography
 **Ellie**, 14	**Key digital products:** **Snapchat** (daily) **YouTube** (daily) **Instagram** (daily) **Twitter** (weekly)	Ellie lives with her mum, dad, and elder sister in Cambridge. She likes the academic aspect of school and learning and is particularly interested in creative subjects such as art and photography. She missed large portions of school throughout Years 7 and 8 as she struggled with emetophobia (phobia of vomiting) and anxiety. During this time, she spent a lot more time online, connecting with people via games and social media.
 **Jack**, 14	**Key digital products:** **Yubo** (daily) **Snapchat** (daily) **TikTok** (daily)	Jack is 14. He lives with his mum, stepdad, and stepbrother in a remote rural area on the edge of Welshpool. His home is very isolated, with little access to public transport. This means that the only way he is able to see his friends is by car, or more often, online. As a result, he spends a lot of time on social media. Jack divides his time online between scrolling through Instagram, watching videos on TikTok, connecting with new people on Yubo and adding people on Snapchat in his local area in order to increase the number of Bitmojis that appear on his Snap Maps.
 **James**, 14	**Key digital products:** **TikTok** (daily) **Instagram** (daily) **Snapchat** (daily) **PS4** (daily)	James is 14, and lives with his mum, dad, younger sister, and younger brother in Belfast. James does not particularly enjoy school and wants to become a professional boxer when he leaves. James is keen to use his Instagram account to build his profile as a boxer, and also hopes to be sponsored by a sportswear brand in the future. He also enjoys using TikTok and playing online games with his friends on his PS4.
 **Hannah**, 14	**Key digital products:** **TikTok** (daily) **Snapchat** (daily) **Facebook** (daily) **Instagram** (recently deleted)	Hannah lives in Newtownabbey, Belfast with her mum, brother, and younger sister. However, she moved around a lot throughout her childhood. She was very shy and found being a teenager hard. She sees a lot of content about people bringing attention to their own mental health issues on social media, which she finds difficult to see as she has mental health issues of her own. She found herself able to be "more confident over texting [than] in person", as if she "does something wrong you can just delete it". When she met up with a boy for the first time after they'd been Snapchatting, she was so shy that she didn't know what to say.

Pseudonym	Digital use	Biography
 **Wendy**, 15	**Key digital products:** **Snapchat** (daily) **TikTok** (daily) **YouTube** (daily) **Facebook** (weekly)	Wendy lives with her mum and sister in Glasgow. The majority of Wendy's friends are from her local area and go to the same school as her. She is interested in music and likes 'following' her favourite artists on social media. She is very tuned in to the drama that happens at school between different social groups. This drama continued on Snapchat during the first lockdown when her school was closed. Wendy also once engaged with eating disorder content on social media and was subsequently added to group chats which encouraged people to eat less.
 **Otto**, 15	**Key digital products:** **Omegle** (daily) **Instagram** (daily) **Discord** (daily) **Snapchat** (daily) **TikTok** (daily)	Otto is 15 and lives with his mum and dad in north Wales. Otto has struggled with anxiety and some behavioural issues, resulting in him only going to school on a part-time basis. He has recently become estranged from most of his friends as he thinks they've changed and he doesn't like them any more. He now spends all his time online, spending about 13 hours a day on his phone, and 9 hours gaming. Otto often spends his time online looking for connection and stimulus and says he doesn't get this in his offline life.
 **Katie**, 15	**Key digital products:** **Instagram** (daily) **Snapchat** (daily) **TikTok** (daily) **Yubo** (weekly)	Katie is 15 and lives in a small village near Birmingham with her parents and older brothers. Katie prefers to hang out with the boys at school as she often finds the girls to be judgemental and hard to trust. Like many young people, Katie has a main Instagram account and a spam account. On her main Instagram she only posts 'really good' pictures, ones that she is proud of. A good photo, she says, will get around one like per minute from when it's posted. Katie has had multiple adult men message her on Instagram asking her if she wants to move to India and meet them. She also likes Snap Maps because she likes that people can see where she is and what she is up to.

Pseudonym	Digital use	Biography
 **Alara**, 15	**Key digital products:** **Instagram** (daily) **Snapchat** (daily) **TikTok** (daily)	Alara is 15 and lives with her parents and two younger brothers in Edmonton, north London. Alara loves shopping and make-up and is generally very conscious of how she looks. She says this is a result of seeing influencers and Instagram models on social media, who make her feel like she needs to spend more time thinking about how she looks. Alara would like to post more on social media but is never satisfied with her photos. Even when she does post a photo online, she soon takes it down as she says that the more she sees the photo, the less she likes it. Alara also uses filters that smooth out her skin and will sometimes use editing apps to touch up her photos.
 **Dan**, 15	**Key digital products:** **Discord** (daily) **YouTube** (daily) **WhatsApp** (daily)	Dan is 15 and lives with his mum in Walthamstow, north London. Dan is a shy, introverted person who likes to spend time on his own creating comics – writing the stories and drawing the characters. He's interested in action, fantasy and sci-fi, so he plays a lot of games that reflect those interests and likes joining role play servers on chat sites too. Dan doesn't see his friends outside of school as much as he used to, as he's happier spending time on his own – working on his characters, chatting online, and playing his games.
 **Cornelia**, 15	**Key digital products:** **Snapchat** (daily) **Instagram** (daily) **YouTube** (daily) **TikTok** (daily)	Cornelia is 15 she lives with her mum in Brentford, north London. She says she goes to a very strict school and her parents have high expectations of her, which results in her feeling a lot of pressure. She worries a lot about disappointing her parents, but she also wants to be a teenager and be out with her friends. Cornelia uses Snapchat throughout the day to see what her friends are doing and explained that she will leave people 'unread' if she wants to show them that she is annoyed with them. While Cornelia said she felt confident in the way she looked, she used filters when she posted on Instagram to smooth her skin and give the image a warmer glow. She also mentioned that her 'ideal body' would be that of Cardi B or Beyoncé and that sometimes she feels insecure about her own body after seeing their posts on Instagram.

Pseudonym	Digital use	Biography
 **Matilda**, 16	**Key digital products:** **Snapchat** (daily) **Instagram** (daily)	Matilda lives in Cambridge with her mum, dad, and grandma – as her older brother and sister have gone to university. She is very confident and sociable, and is particularly interested in drama – taking part in many productions alongside other extracurricular activities such as sports teams and dance. Her dream job is to be an actress, although she also loves animals and would like to be a vet. She's aware of how much time she spends on social media, claiming she was addicted to Snapchat and Instagram. She recently deleted TikTok because "you can spend hours and hours on it, hours just pass, and it feels like five seconds".
 **Darius**, 16	**Key digital products:** **Snapchat** (daily) **Instagram** (daily)	Darius, 16, lives in West Sussex with his mum and dad. He is currently studying drama at college, and also enjoys playing basketball and going to the gym. Darius lives with ataxia, a degenerative nervous system disease, which has caused him significant anxiety in the past. Although he used social media for only a few hours a day, Darius felt there was a lot of pressure to 'look perfect' and 'not be a virgin' online and felt that his peers would do anything not to stand out or look 'weird'. He also sometimes used filters to 'smooth' away his acne, particularly when talking to girls. Darius also regularly received messages from 'bot' porn accounts. Although he ignored these now, he described being excited and engaging with these when he first used Instagram at age 13.
 **Niomi**, 16	**Key digital products:** **Snapchat** (daily) **Instagram** (daily)	Niomi, 16, lives in a flat in Glasgow with her mum and younger sister. She lives in the flat below one of her friends, but most of her other friends live nearer to school, so she doesn't get to see them as much. She uses social media a lot but doesn't post as much as she used to. At 13, recognising what seemed to get attention, she would post a lot of photos of herself on Instagram – often quite revealing ones, like bikini shots. She enjoyed how many comments and 'likes' the pictures received and hoped she might even get sponsored by a brand.

Pseudonym	Digital use	Biography
 **Bob**, 16	**Key digital products:** **Twitter** (daily) **Instagram** (daily) **TikTok** (daily)	Bob is 16, and lives outside Edinburgh with his mum, dad, and older brother. He has ASD (autism spectrum disorder). After his GCSEs, he began to struggle with his work as he was no longer enjoying school. He has since started taking new subjects, including musical theatre. Having previously struggled, Bob has also recently strengthened his friendships at school and found a group he feels part of, although he rarely sees any peers outside of school. He has also joined a local theatre group and describes this as "like an escape for me". Bob feels he can express himself most easily on social media and is part of what he calls 'Stan Twitter' (for fans of certain musicals). Bob's two closest friends are people he met online, and he also enjoys trying to create popular TikTok videos.
 **Tod**, 16	**Key digital products:** **Instagram** (daily) **YouTube** (daily) **Twitch** (rarely)	Tod is 16. He lives with his mum, dad and younger sister in Chelmsford, Essex. He's been badly bullied in school for being transgender, and also has bad anxiety, meaning he is only at school on a part-time basis. Tod spends a lot of time on social media, as he says he struggles with face-to-face interaction. It is also where he finds things that interest him, and where he feels he can express himself.
 **Carrie**, 17	**Key digital products:** **TikTok** (daily) **Snapchat** (daily) **Instagram** (daily)	Carrie is 17 and lives in Leeds with her mum, stepdad, and younger siblings. She is highly motivated to work hard at college as she wants to go to university to study psychology. While she is happy and has a large circle of friends at college, she previously found school much tougher and struggled to fit in. Carrie struggled with an eating disorder when she was 15 and still sometimes struggles with her body image. She told us that she can no longer upload a photo of herself without using a filter.
 **Chris**, 18	**Key digital products:** **Instagram** (daily) **Discord** (daily) **Snapchat** (daily) **Kik** (historically) **Omegle** (historically)	Chris, 18, lives with his mum and younger brother in Newcastle. He was shy and seeking connection at 12, and so started role-playing on Kik, Omegle and Discord. This turned sexual very quickly and he entered into a number of online relationships, some of which ended up being coercive and damaging.

Building the digital world that young people deserve

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