Data governance for young people in the commercialized digital environment

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TikTok (also known by its Chinese name, Dōuyin) has quickly captured the interest of children, adolescents, and young adults in 150 countries around the world. The mobile app enables users to create short video clips, customize them with a panoply of user-friendly special effects tools, and then share them widely through the platform’s vast social network.1 A recent industry survey of children’s app usage in the United States, the United Kingdom, and Spain reported that young people between the ages of 4 and 15 now spend almost as much time per day (80 minutes) on TikTok as they do on the highly popular YouTube (85 minutes). TikTok is also credited with helping to drive growth in children’s social app use by 100 per cent in 2019 and 200 per cent in 2020.2 Among the keys to its success is a sophisticated artificial intelligence (AI) system that offers a constant stream of highly tailored content, and fosters continuous interaction with the platform.3 Using computer vision technology to reveal insights based on images, objects, texts, and natural-language processing, the app “learns” about an individual’s preferences, interests and online behaviours so it can offer “high-quality and personalized” content and recommendations. TikTok also provides advertisers with a full spectrum of marketing and brand-promotion applications that tap into a vast store of user information, including not only age, gender, location, and interests, but also granular data sets based on constant tracking of behaviours and activities.4

Many leading tech companies...are now using AI and machine learning (ML) techniques to reach and engage young people throughout most of the world. Many leading tech companies, including Google, Facebook and Viacom, are now using AI and machine learning (ML) techniques to reach and engage young people, amplifying the ability of digital marketers to “learn”
about an individual’s preferences, interests and online behaviours. Investors are pouring additional resources into new streaming-video services and other digital content for children, based on predictions that they will consume even more video content, much of it commercially driven, on connected TVs, mobile phones, and other devices. The internet-connected toy market is expected to reach US$25 billion in the next several years, with more and more products designed to react to a child’s behaviour in real time and “grow” with them as they become older.

Underlying all of these developments is a complex, far-reaching, global media, marketing and sales apparatus, capable of gathering and using unprecedented amounts of data. Many of these new products include voice-recognition software that can monitor not only the individual child user, but also playmates and others, and in some cases share sensitive personal information with third parties, raising safety and security issues. “Smart speakers,” such as Amazon’s Echo, and the emerging business based on “voice search” also gather extensive amounts of “home life data” based on family interactions and activities. One study predicts that by 2021, US$1.7 billion will be spent by advertisers annually to reach children online. Children and teens are also the focus of continuous scrutiny from global marketing research, performed by a network of specialist firms and media companies, closely following their interests and behaviours.

Underlying all of these developments is a complex, far-reaching, global media, marketing and sales apparatus, capable of gathering and using unprecedented amounts of data. Data and advertising have become so inextricably intertwined that almost all of today’s marketing is now data-driven. As young people eagerly embrace a growing number of social media, gaming platforms and mobile apps, the imperatives of this new business model are shaping the structures, operations, and affordances of their digital experiences. Although privacy and data protection laws — including both the European Union’s General Data Protection Regulation (GDPR) and the United States’ Children’s Online Privacy Protection Act (COPPA) — have influenced some of the advertising and data practices targeting young children, they have done little to slow the growth of today’s extensive and sophisticated digital marketing operations.

The purpose of this paper is to explain how data-driven marketing systems are being incorporated into the wide spectrum of digital platforms and services popular with young people, and to argue for a comprehensive approach to data governance that takes into account the integration of data in today’s online marketplace. We will begin by identifying several key trends that are deepening the role of data throughout its operations, highlighting their impact on children’s interactions with digital culture. We will discuss how the tech industry’s extensive and ubiquitous data practices raise serious threats to young people’s privacy and subject them to unfair and manipulative advertising techniques, many of which are not adequately addressed by current regulations. We will assess how this commercialized technology system affects children’s well-being more broadly, both on an individual and a societal level, including its disparate impacts on youth of colour, low-income communities, and vulnerable populations. Finally, we will present our recommendations for a framework of principles, policies, corporate best practices and accountability measures to ensure that the expanding digital landscape evolves in such a way that maximizes the opportunities for young people, while minimizing the harms.

Key marketplace trends

We have identified three trends that are emblematic of major changes in today’s digital marketplace, each of which is discussed briefly below.

1. The rise of adtech and kidtech. Major companies, including Google and Facebook, are now part of an integrated chain of relationships — collectively known as “adtech” or “martech” — that include ad agencies, data brokers, marketing clouds, data management platforms, e-commerce applications, lead generators, artificial-intelligence ad specialists, media companies, measurement providers, and many other specialized services. Advertising technology has introduced a new generation of tracking and targeting software systems that make it possible to access, analyze and act upon a wealth of data on individual
consumers, including purchasing behaviours, device use, social media communications, online interests, location and geographic movements, financial status, health concerns and much more. For example “cross-device tracking” enables advertisers to follow and target users across all of their digital devices, determining, through a single identifier, that the same person who is on a social network is also viewing a TV programme and later watching video on a mobile phone.14 “Programmatic” advertising uses superfast computers to generate targeted marketing to someone in milliseconds, and is now the dominant global method for online marketing.15 AI and machine learning applications can assess how someone reacts to a particular ad or piece of content, and then deliver a subsequent series of ads with altered messaging specifically designed to be more appealing to the individual user. Through Google’s “Director’s Mix” ads, advertisers can more effectively target YouTube viewers. Facebook and many others offer similar systems.16 Paralleling these developments is a growing “kidtech” enterprise, which uses many of these same advertising technologies, with some adjustments in response to child data protection laws and online safety concerns.17 Kidtech services and other child-directed content providers argue that they are complying with privacy and data regulations by using “contextual” marketing techniques, instead of the more intrusive data-driven behavioural or programmatic practices that trigger data-protection issues. However, contextual advertising has been transformed through machine learning, natural language processing and other advanced techniques, all of which use data to identify and target users. As a consequence, many of the “kid-friendly” marketing operations do not differ substantially from those that are aimed at adults.18 The fundamental goal is to facilitate advertisers’ ability to reach and influence children, to forge ongoing relationships with them, and to create lifelong loyal consumers.

2. Marketing and advertising drive the design and functionality of media experiences. Digital platforms are structured to optimize engagement, foster habitual behaviours, and maximize the impact of marketing messages, as opposed to being neutral spaces for social interaction, entertainment, and expression. The concept of engagement has become a linchpin of tech industry Big Data strategy. Its purpose is to ensure that users are continuously and seamlessly interacting with digital media platforms, responding to brands and marketing, and generating data points. With children’s content increasingly distributed across tablets, smartphones, streaming devices and other platforms, programmers and advertisers are embracing new interactive storytelling technologies, including games, virtual reality and augmented reality experiences, and creating advertising formats that can be integrated directly into these powerful immersive environments, all designed to maximize engagement and trigger impulsive actions. For example, so-called “playable ads” are incorporated into gaming platforms, “constructed with well-known icons and strong game UI [user interface]” so that “users can immerse themselves in game-play” and respond instantly to various “calls to action”, such as downloading coupons, entering sweepstakes, or making purchases online.19 Digital marketers are also drawing from behavioural science to create particularly powerful new methods for directing user behaviours and influencing decision-making. The tech industry uses the somewhat benign term of “persuasive design” to describe these practices.20 However, consumer groups and other researchers refer to many of these design interfaces as dark patterns, especially when they are intended to “benefit an online service by coercing, steering, or deceiving users into making unintended and potentially harmful decisions.” Such techniques are routinely incorporated into e-commerce sites and other commercial online platforms.21

3. Increasing sophistication of ad testing and measurement. Over the last ten years or so, there has been a large uptick of research specifically aimed at developing powerful advertising techniques and measuring the impact of digital advertising.22 For example, Nielsen, which is a leader in the new field of neuromarketing, uses a variety of neuroscience techniques to maximize the impact of digital advertising on human behaviour, including electroencephalography (EEG) to monitor brainwaves in order to identify “three key measures of engagement: attention, emotion, and memory”; “facial coding”
to capture a variety of emotions; and eye-tracking technologies to measure how individuals engage with visual content on screens. Using these and other methods, marketers can design and refine advertising messages so they can trigger “attention processing” and embed themselves solidly into an individual’s memory. Neuromarketing services are available throughout the world, and are used by many companies to test ad techniques for products marketed to both adults and young people alike.

Marketers can design and refine advertising messages so they can trigger “attention processing” and embed themselves solidly into an individual’s memory. Measurement and analytics systems have also evolved considerably, and are now altering the overall operation of digital marketing, with increasing focus on children. Simple, one-dimensional measures such as “clicks”, “likes”, views, and impressions are now only a tiny part of a highly complex system that includes detailed analytics covering the full range of a consumer’s digital media interactions. New metrics can monitor not only how a viewer responds to an ad, but also whether that same user purchased the product featured in the ad. The media and advertising industries have explored the creation of a new measurement standard designed to provide a “comprehensive view of cross-platform, digital and mobile measurement of content and ads among children and teens aged from 2 to 17.” Advertisers routinely create proprietary panels of children and adolescents who agree, along with their parents, to participate and are then provided with devices to enable continuous tracking of their online activities. This information is then used to develop effective models for targeting other young people. Measurement can also take place in real time, following users’ movements, communications and activities from moment to moment and measuring their reactions to various advertising and sales appeals. As a result, marketing techniques can be tested, refined and tailored for maximum effect.

Addressing the impact of data-driven marketing systems on youth

The developments described above offer a glimpse of the many ways that data and advertising are converging in today’s Big Data digital marketplace. The practices are deployed throughout the entire global digital media system, encompassing all of the major social media networks, gaming platforms, mobile apps and video streaming services that young people are embracing. Because of their hidden and complex nature, they are not easily discerned or well understood by children, parents or data-protection authorities. Youth around the world continue to rely on digital media as essential tools in their personal and social lives, helping them explore their identities, providing a vital link for friendships and peer groups, and empowering them to mobilize on behalf of climate change, racial justice and other political causes. But as key targets for “monetizing” the digital economy, children are growing up in an online environment where they are subjected to constant commercial surveillance and inundated with marketing messages that are woven throughout their online experiences.

Government policies in countries around the world offer only limited protections for young people in this expanding, commercialized media culture. Scholars Ingida Milkaite and Eva Lievens reviewed government data-protection regulatory frameworks in the United States, Europe and selected countries in Africa and Latin America, finding a “fragmented landscape when it comes to the rights of the child to privacy and data protection.” The same is true for advertising and marketing policies, which are often handled separately from data protection and privacy regulation, and in some cases by different government entities without fully addressing the nature and scope of contemporary digital practices.

While regulation has produced some safeguards for children, tech industry strategies have mitigated the impact on digital marketplace practices. For example, in the United States the 1998 Children’s Online Privacy Protection Act (COPPA) was the first government law to establish privacy and marketing protections for children on the internet. Advocates sought to include all children under 18, but opposition from the marketing and tech industries kept the age limit at 13. Many of the major technology and social media companies have chosen to respond to COPPA by setting terms of service that officially ban children under the age of 13 from their platforms and, in some cases, by looking the other way when under-aged youth are accessing them. As a consequence, many of the children and all of the
adolescents who engage with social media are subjected to the entire spectrum of sophisticated data techniques and online marketing applications that are currently state of the art in today’s commercial digital media system.

As Big Data continues to drive the growth of commercialized technology, its values, imperatives, and operations are influencing young people’s lives, raising concerns beyond data protection and marketing. Constructed around the fundamental goal of optimizing ad delivery and impact, digital platforms can shape user behaviours — triggering and rewarding certain actions, while promoting some kinds of content and suppressing others. For example, the algorithms deployed by Facebook, Twitter, and other social media privilege material that sparks a strong reaction from users, and is likely to be shared virally. These systems contribute to widespread disinformation and political polarization, which can have serious consequences for young people’s socialization as citizens, and for the health of democratic institutions themselves. Predictive analytics and personalization enable marketers to treat individuals or groups of consumers differently, which impacts social and economic equality. “Discrimination by association” has become commonplace in the online advertising industry, where people are grouped according to their assumed interests or inferred traits and are offered, or excluded from, different products, services, or prices on the basis of their presumed affinity. A growing body of academic research has documented how these systems can lead to disparate impacts on communities of colour, low-income groups, and other vulnerable populations.

Recommendations for data governance policies

Integrated approach. Only a comprehensive and integrated approach to data governance will produce effective policies for children. There is a growing awareness among many researchers, advocates, and regulators that the digital marketplace needs to be understood and approached more holistically. For example, policymakers in a number of countries have launched investigations into the ways that issues of antitrust and competition are linked to data protection and privacy. We need to address youth data protection through a similar cross-cutting approach, exploring the interconnections between data and marketing operations, the overall structure of the digital marketplace, and the impact of all these systems on the well-being of children as a whole. This requires us to define more specifically, based on universal shared principles, what outcomes are desirable, and to assess whether these technologies produce those outcomes. It will also require us to rethink how data policies have been traditionally formulated. While fundamental concepts of the Fair Information Practice Principles (FIPPs) — such as data minimization and purpose specification — remain important, we should adopt an approach that ensures that data governance truly reflects the “best interests of the child”. Regulators, civil society, scholars and others should create a framework that incorporates the kind of outcomes we wish our children to experience from the commercial data culture. Privacy, human rights, fairness, justice, equity, and healthy child development must be moved to the centre of the policy debate. Data protection authorities should be structured to operate across the key domains that impact the lives of youth in their country, and to ensure adherence to the principles of the UN Convention on the Rights of the Child. In addition to addressing the needs of the individual child, policies should be developed that ensure specific groups of young people, including those from marginalized socioeconomic and ethnic backgrounds, are treated fairly and protected from discriminatory and other disparate impacts.

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addressing online safety, cyberbullying, and advertising of harmful products, such as tobacco, alcohol, and unhealthy foods.44

Independent assessment. Data use and advertising applications in development, as well as those already in practice, should undergo a careful independent assessment to determine whether they take unfair advantage of young people’s developmental vulnerabilities, health, or well-being. For example, before allowing tech companies to deploy AI, personalized advertising, virtual reality or facial recognition in commercial services for children and teens, regulators should require formal reviews to determine if they are appropriate for young people.45 Techniques or practices judged as harmful to children and/or adolescents should then be restricted through a regulated approval process.

Addressing broader impacts of youth interactions with commercial platforms. Regulators and industry should also reexamine the functionalities and affordances of digital media platforms that attract large numbers of youth, making changes in operations that encourage habitual engagement, foster addictive responses, or promote circulation of false and misleading information. A Human Rights, Ethical and Social Impact Assessment (HRESIA) tool, as suggested by Alessandro Mantelero, could be developed so that companies can better assess anticipated and unanticipated consequences more effectively.46

Young people throughout the world must be guaranteed the right to grow up in a digital media environment that supports their healthy development, fosters personal and collective growth, and strives to engender democratic values. Policies must ensure that all are treated with fairness and dignity in the growing digital marketplace, but are also socialized to be responsible consumers and citizens who embrace their digital rights.
Good Governance of Children’s Data project

The Office of Global Insight and Policy is bringing together 17 global experts in a project to explore trends in the governance of children’s data, including the tensions between different rules and norms, emerging concepts and practice, and implications for policy and regulation. Debate on the future of children’s data affects a diverse range of issues, including data ownership and control, data fiduciaries, profiling for digital marketing purposes, child-friendly privacy notices, data erasure upon request, age verification, parental responsibility, data protection by design and default, algorithmic bias, and individual and group data.

The project aims to highlight the gap between the world we want for children and today’s reality, developing a manifesto on how children’s data could be optimally managed and what steps need to be taken. To help develop this manifesto, members of the working group will publish short analyses of different approaches to data governance.

Endnotes

1 “What We Know about Marketing on TikTok”, WARC Best Practice, March 2020 (personal copy).

2 Perez, Sarah, “Kids Now Spend Nearly as Much Time Watching TikTok as YouTube in US, UK and Spain”, TechCrunch. 4 June 2020; “US Teens Use TikTok as Much as Facebook”, WARC, 7 November 2019.


6 Owen, Rob, “Cornucopia of Children’s Content Comes to Streaming Services”, Variety, 2 August 2018.


10 See, for example, “Kids & Youth Research 2019”, Market Research Society; “Kids & Family”, ViaconCBS.

11 McDonald, James, “One in Four Ad Dollars Goes to the Google/Facebook Duopoly”, WARC Data Points, March 2019.


17 Perez, Sarah, “Kidtech Startup SuperAwesome is Now Valued at $100+ Million and Profitable”, TechCrunch, 19 February 2018.


25 See, for example, Canada-based True Impact; Nielsen, “Consumer Neuroscience”; Neuro-Insight; Neurosense; Neuro-Insight, all accessed 2 July 2020.

26 “What We Know About Audience Measurement”, WARC Best Practice, December 2018.


31 The authors spearheaded the campaign in the 1990s that led to COPPA’s passage. For a detailed case study of that effort, see Montgomery, Kathryn C., Generation Digital: Politics, Commerce, and Childhood in the Age of the Internet (Cambridge, MA: MIT Press, 2007), 67-106.

32 Requiring protections for children until they turn 12 reflected a U.S. regulatory regime that provided some safeguards for children in broadcast and cable TV. Montgomery, Generation Digital, pp. 69-72.


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The Office of Global Insight and Policy serves as UNICEF’s internal think-tank, investigating issues with implications for children, equipping the organization to more effectively shape the global discourse, and preparing it for the future by scanning the horizon for frontier issues and ways of working. With dedicated expertise in seven policy areas — digital technology, human capital, governance, the environment, society, markets, and finance — the Global Insight team assists the organization in interpreting, and engaging in, a rapidly changing world.

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The authors are grateful to Lindsey Barrett, Caroline Cinders, Steven Vosloo, Gabrielle Berman and Karen Carter for their thoughtful comments and input into the text.

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