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Analysing Major Tech Companies' Policies and Strategies for the Health and Safety of Young Users

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Analysing Major Tech Companies' Policies and Strategies for the Health and Safety of Young Users

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EXECUTIVE SUMMARY

In order to stay on top of regulatory standards, big tech companies must constantly adapt their strategies and implement robust policies around user privacy and security. Young users are particularly present in social media and social networks and are exposed to targeted advertisements and personalized content to a high extent. The constant comparing culture, states of depression and anxiety that some of the platforms are promoting are potentially harmful to young users. Considering this, it becomes even more crucial to implement user privacy and consent policies for young users. This is a two-part report, aiming to understand how digital technology companies and platforms behave in keeping young users safe and healthy online. In the first series we tried to understand who are the big tech companies with the highest and youngest user-bases, what are the functions they provide and how are they related to young users' health and safety online. We reviewed seven big tech companies and some of their most relevant platforms and products to young users. Additionally, we added artificial intelligence (AI) platforms due to their emerging relevance. Lastly, we added seven standalone mobile apps that belong in the category of health and wellness. After completing the review, we decided to go deeper with Facebook and Instagram (Meta Platforms), TikTok, Snapchat, YouTube and ChatGPT. We reviewed their privacy policies, scientific and gray literature to get a better understanding of what they are doing to keep young users safe and healthy. The privacy policies published on these big tech companies' websites are extensive and very ambiguous. The data these companies collect are, arguably, a massive power-weapon that is being used for targeting marketing, advertising and personalized content. This targeting, combined with some of the features of these platforms – such as the bite-size content and loss of time track – can be considered as being potentially addictive. The opportunity that ChatGPT provides to ask for very specific and detailed health advice, carries some potential risks due to the lack of reliability of the information provided by ChatGPT.

Statements such as "we may share data with third parties", are not definite and raise some questions. In some instances, we have noted a difference between privacy policies on paper and reality. For example, despite that GDPR requests users of social media networks to be over the age of 13, this can be very easily bypassed and there is no mechanism in place to ensure that the users are above 13 years old. All of these platforms state their compliance with GDPR, however Facebook and TikTok have previously been fined for lack of data protection.

Despite most of the platforms providing some sort of awareness campaign, the information that is spread regarding specific health concerns – mental health in particular – is not being monitored by

any mechanism. This means that, alarmingly, anyone can publish health-related content on these platforms.

Building upon the findings of this report, it is recommended that big tech companies targeting young users should develop their platforms using the principles of privacy by design and privacy by default, following the example of YouTube Kids. The platforms that are already developed should revise their policies to ensure the safety of young users by introducing external mechanisms that limit overconsumption, reduce personalization and remove infinite scrolling. Other governments are suggested to review the decision made by Australia to ban TikTok and other social media networks for users under the age of 16. Instead of banning TikTok and other social media networks and limiting young users from digital advancements, we should focus on empowering young users to understand the consequences of social media networks and recognize unreliable content. In addition, social media networking platforms should be more transparent as to how they collect and use their data. They should also use a friendly language appropriate for young users and collaborate with relevant stakeholders to make sure young users are safe online. It is also suggested that AI mechanisms be introduced to flag content that is not reliable and to promote content that comes from reliable sources.

1. INTRODUCTION

Digital technology is constantly changing, causing big tech companies to continuously adapt their strategies and implement robust policies around user privacy and security in order to stay on top of regulatory standards (the World Bank, 2024). For example, Apple promotes features like App Tracking Transparency to hand out to users control over their data. This is part of Apple's brand identity now (*How Does Apple's App Tracking Transparency Framework Affect Advertisers?*, 2022). Other big tech companies such as Meta, are focusing towards increased transparency and user control in terms of consent, while facing backlashes over their data handling practices ("Meta's New Digs: A Deep Dive into Practical Considerations of Consent", IAPP, 2024). Google is placing greater importance on user privacy ("How and Why Google Is Embracing Consumer Privacy", IDX, n.d.). ByteDance/ TikTok and Snap Inc/ Snapchat are prioritizing user autonomy and trust to maintain their user base ("Explaining TikTok's Approach in the US", TikTok Newsroom, n.d.; "How Snapchat UX Drives Gen Z's Social Ecosystem?", Worxwide, 2019).

Inevitably, user privacy and consent policies have emerged as cornerstones of digital service providers (*The Importance of Patient Privacy in Online Marketing*, 2024). While on one hand, it requires big tech to create overall benefits, expand social and economic growth, and respond to public benefit demands to respect human rights and address social issues and ethical concerns related to the use of technology; on the other hand, companies should protect user data privacy and strive to ensure the security and controllability of personal information.

User privacy and consent policies become even more crucial for young users due to their high presence online but also due to their vulnerability online. Young users are particularly present in social media and social networks. While social media platforms have become an integral part of day-to-day living, communication and connection, these platforms are also collecting massive amounts of data from the users, raising major ethical concerns and creating potential harms (*Impact of Social Media on Youth*, n.d.). The data collected from social media networks range from browsing history, interests, mental health and emotional state, well-being and fitness. Having access to all this data, enables the companies behind these social media networks to target young users with specific content and advertisements. The algorithms developed use personal data to influence young users' behaviour by promoting specific content, whether for ideal lifestyles, appearance and looks or consumption. Consequently, these platforms become highly engaging and

addictive. This can have a significant toll in the mental health of young users by fuelling insecurities, anxiety, depression and self-image issues (Khalaf et al., 2023).

Young users often lack understanding of the implications related to their data being collected, and can access almost any platform without being asked for a consent from their parent or guardian ("Why Young Brains Are Especially Vulnerable to Social Media", 2023).

On a more positive note, digital technology holds high potential to impact health behaviours positively. The vast amount of data collected by major technology companies and their platforms has transformed traditional methods of behaviour change. This has a positive impact on science's ability to understand and improve health outcomes (Marsch, 2021). As a result of this transformation, these companies and platforms passively collect psychological, social, and contextual data, known as "digital traces", which are useful for analysing the effectiveness of interventions. As well as providing support during critical times, these platforms are also able to provide this service at a very low cost and with very little effort (Moller et al., 2017).

The Internet has become a common source of health information in the past two decades. Adolescents and young people especially benefit from this service as it provides a sense of "safe space" (Gray et al., 2005; Pretorius et al., 2019). Providing individuals with access to health information can facilitate health education and facilitate informed decision-making. However, if shortcuts are sought, risks may arise. This is due to the fact that the online health information and advice is often unreliable. The lack of proper research skills and the inability to assess the credibility of a source and information make the Internet not a particularly safe space to obtain health information and advice.

The popularity of mobile applications in the health and well-being category has also increased in recent years. Apple iOS had about 35,000 apps in the health and fitness category in the first quarter of 2024 ("Healthcare Apps Available Apple App Store 2024", 2024). Despite the fact that existing health and fitness apps are mostly designed for adults, adolescents and young people are also adopting and using them (Higgins, 2016). Typically, these apps include functionality for tracking activity and setting goals.

Due to the barriers associated with gyms – such as the stigma associated with being overweight, high costs, limitations of time, and inconvenience –mobile applications can address these barriers, making them very popular among the general public and young people in particular (Padmasekara,

2014). Health and fitness apps collect real time sensitive health data, increasing the importance of data security and privacy policies. Data breaches and misuse can be caused by a lack of transparency, insufficient encryption, a lack of legal compliance, and third party risks ("Data Privacy Concerns in Health and Wellness Apps: Balancing Innovation and Security", 2024).

Another digital device widely used nowadays are wearables, specifically smartwatches. Smartwatches have the potential to improve physical activity and are generally well-perceived by young people. An example of illuminating data collected by smartwatches are the studies which have shown an increase in step count in children and young adults with attention deficit and hyperactivity disorder (ADHD) ("Why Young Brains Are Especially Vulnerable to Social Media", 2023). Wearable devices are increasingly capable of collecting sensitive personal information and multimodal sensor data, and the unique benefits of smart wearables depend on their capability of tracking and analysing data. However, there is an existing smart wearables-privacy paradox or the so-called personalization-privacy paradox. Authors have argued that the benefit of personalization can put data into risk because personalization is a product of vast data collected from the users (*Impact of Social Media on Youth*, n.d.).

Social networking sites and content communities provide a new medium where individuals can receive and provide health advice and information. The latest data shows that there are around five billion active social media user identities (Amnesty International, 2023). Young people rely heavily on social media networks and other online communities to support their mental health and well-being and it enables them to respond to adversity with resilience (Vexler, 2024). However, social media networks also contain unreliable information, pose risks regarding lack of confidentiality and privacy, risks associated with harmful content and communications and information overload, among other limitations ("TikTok to Ditch 'Addictive' Tool in Europe at EU's Request", Politico, 2024). In addition, the algorithms integrated in these social media networks use personal data to influence young users' behaviour by promoting specific content, whether for ideal lifestyles, appearance and looks or consumption. Consequently, these platforms are highly engaging and addictive. Fuelling insecurities, anxiety, depression, and self-image problems: these platforms can have a significant impact on the mental health of young users (Khalaf et al., 2023).

This paper is a two-part research report. The first part comprises a review of a) the biggest global digital technology companies with a focus on their digital-related health services (direct and indirect) and; b) most-used mobile apps in the category of health. After the first part of the study

had been completed, the following part focused on the largest social media networks and other platforms used by young people, and the mechanisms implemented by these platforms to protect the identities of young users online and to maintain their health and well-being.

2. PART 1: REVIEW OF COMPANIES

2.1. Objectives and scope

This part was completed between July and August, 2024. The aim was to gain a better understanding of what the key players – big tech companies – are doing to provide digital health services or impact health digitally. To begin with, we reviewed a) the major digital technology companies and their platforms that provide digital health services directly or indirectly, b) mobile applications that fall within the health and well-being category.

2.2. Methods

We searched for the biggest technology companies across the most reliable platforms including Forbes Global 2000, Fortune Global 500, Forbes Most Valuable Brands, Deloitte Technology Fast 500, Bloomberg Technology, Gartner Magic Quadrant, Statista, CB Insights, TechCrunch and *The Wall Street Journal*. In the initial screening phase, the ten largest companies that consistently ranked on every list were included. The initial screening phase was conducted to determine if they provided digital health services directly or indirectly, and to understand their user base and influence. As a result of this review, four companies were included. Due to their relevance, user base, and influence, we added four additional digital technology companies.

Next, we searched on the Apple store for the top health mobile applications. From the list of 200 apps, we selected those with the biggest ratings.

At last, the final list of technologies and platforms under review included:

- Digital technology companies (7)
- Search engine (1)
- Social networking sites and content communities (6)
- Mobile applications (11)
    - Physical activity
    - Mental health, mindfulness and sleep tracking
    - Nutrition
    - Reproductive health
- Wearables (3)
- AI based platforms (2).

An extraction sheet was created, and data was collected from the official websites of companies and platforms as well as from other sources of information. The spreadsheet consisted of the name and profile of the company/platform, health-related services, user base and data privacy and security policy sources (Summary: Appendix A, Table 1. "Profiles of digital technology companies, platforms and mobile apps"). To gain a deeper understanding of the functions and features of each digital technology company, platform and mobile application, this review comprises an individual narrative for each.

The final review consisted of four major digital technology companies, including Apple Inc, Alphabet Inc (Google), Meta Platforms, Inc., Samsung Electronics Co., Ltd. Relevant platforms owned by these major tech companies were also reviewed. We added four more digital technology companies due to their user base, relevance and influence (ByteDance, Snap Inc., X corp and OpenAI). In addition, we reviewed mobile apps including Strava, Flo, MyFitnessPal, Sleep Cycle, BetterMe, Headspace, Talkspace and Noom.

2.3. Results

2.3.1. Apple Inc.

Apple Inc. is an American global technology company established in 1976 and headquartered in Cupertino, California, US. It specializes in consumer electronics, software and online services. Apple's mission is to bring the best user experience to customers through innovative hardware, software, and services. As of early 2021, Apple counts around 1.65 billion products in active use. Some of the health-related products they provide include the Apple smartwatch, Apple Health and Fitness+ (Pereira, 2023).

Apple Health gathers all the health metrics into one single mobile application. The data measured through the main device (iPhone, iPad or iPod) and the data measured with Apple watch are all presented into Apple Health. This mobile application provides the opportunity to share users' data with third parties, whether it is a parent, guardian, coach or general practitioner (GP) (iOS - *Health*, n.d.). In addition, all the other mobile apps for physical activity request permission to update data of activities on Apple Health.

Fitness+ is compatible with iPhone, Apple watch and Apple TV. It gives users access to trainer-guided workout videos, for various types of exercise including High Intensity Training,

Yoga, Pilates, Core, Strength, Treadmill, Cycling, Rowing, Dance, Kickbox and Mindful cooldown. While Fitness+ can be used only with an iPhone, it provides a better experience to the user if connected to a smart watch, as it collects real-time data about movement (*Apple Fitness+ - Apple*, n.d.).

The smartwatch developed by Apple pairs up with the iPhone. The primary health-related functions it provides are: activity and workout track, progress track, sleep monitoring, blood oxygen, heart rate and respiratory rate. The latest versions of Apple Watch can also measure wrist temperature. Apple watch can alert users in cases of low and high heart rates as well as irregular heart rhythms, particularly useful to detect atrial fibrillation. Other functions include medication intake, mindfulness techniques and menstrual tracking functions and features. Parents can track their children's time spent in the daylight, even if the children do not have an iPhone. All these data are presented in Apple Health, a mobile app integrated within the system of each Apple phone ("Apple Watch Statistics 2024 By Users and Revenue", n.d.; "Apple Watch Statistics", n.d.).

2.3.2. Alphabet Inc.

Alphabet has operated as a holding company since 2015, yet the main company under its umbrella was founded in 1998 in California, US. Through its subsidiaries it provides web-based search, advertisements, maps, software applications, mobile operating systems, consumer content, enterprise solutions, commerce, and hardware products. Alphabet's mission is to organize the world's information and make it universally accessible and useful. Digital health related products and services include Fitbit smartwatch, Samsung Health and Gemini ("Alphabet Inc: Company Profile and News", 2024).

Google Search Engine: Google receives around 1 billion health questions each day ("Do No Harm? When Dr. Google's 'Opinion' Clouds Care", *AOA*, 2020), making it the most used search engine in the world. Google's search engine can be accessed via a browser whether it is Microsoft Edge, Google Chrome, Safari or Opera. Any type of information requested from the user is presented to them in milliseconds, in the form of a website, image or video. Filtering of data and information is usually done based on backlinks, relevance, language, freshness and page speed. Google has however enabled search engine optimization providing businesses the opportunity to pay for their page to be on top of the list when their services are searched ("Features – How Google Search Works", n.d.).

YouTube is the biggest entertaining and video streaming platform. Users search for various types of content including health information and education. In 2022, YouTube launched YouTube Health, to provide users trusted health information. The platform paired with credible partners including World Health Organization (WHO). With this initiative, YouTube has committed to providing reliable health information to its users ("Health Site", n.d.).

Gemini is a generative AI platform, powered by Google. Gemini can read and comprehend text, analyse images, recognize audio, process and understand video. Gemini can answer complex questions and explain scientific concepts. Users are utilizing Gemini also to search symptoms and health information, because it is easier to write down all the symptoms and receive a personalized answer. Gemini always warns its users not to rely on its advice and information regarding health concerns. In terms of mental health therapy, Gemini can be used to break down a set of activities one can do to navigate any unwanted feelings, while being so cautious and not recommending any medication or clinical treatments (Shewale, 2024).

Fitbit tracks various metrics including heart rate, sleep, exercise, calorie burn, stress management, mindfulness. In addition, Fitbit can also measure breathing rate, resting heart rate, heart rate variability, SpO2 and skin temperature. Other trends such as blood glucose, menstrual health, weight, meals and water intake can also be tracked via the login feature. To see data collected from the Fitbit smartwatch, the Fitbit app needs to be installed. When connected to Google Connect, all data collected from the phone and the smartwatch are synchronised into one platform, similar to Apple Health and smartwatch ("Fitbit Revenue and Usage Statistics", 2024).

2.3.3. Meta Platforms

Founded in 2004 under the name Facebook Inc., it is a provider of social networking, advertising, and business insight solutions. Meta went under construction when it acquired a few powerful communication platforms. However, since its establishment in 2004, Meta (Facebook Inc) is committed to help people feel connected and closer. Meta's most famous products are Facebook, Instagram, WhatsApp and Threads. Although, they are not solely designed to provide digital health services, they are widely used for health promotion and education ("Connecting People With Health Resources",| Meta, 2019).

Facebook is the largest social network site by the number of active users. The sole purpose of this site is to connect people, whether it is family members, friends or unknown people who share a

similar interest or concern. This led to the establishment of various groups and forums on Facebook, including medical and health. Users with various health concerns and conditions post on Facebook groups their symptoms and other sensitive health information and expect fellow users to provide advice. Facebook has recently launched the Facebook Preventive Health Tool to connect users to resources and check-up reminders ("Facebook Inc Company Profile - Facebook Inc Overview", n.d.).

Instagram is also a content sharing and networking site. In the past years, it has also been used as a medium, even by therapists, to share health information with the intention of public awareness on certain topics such as mental health. Users can follow an account or hashtag relating to a health condition and receive information about that specific condition continuously. Around 71 per cent of the US population aged between 18-29 have active Instagram accounts ("Instagram Statistics 2024", 2023). Globally, 31.7 per cent of the users are between the age of 18-24 (Instagram, n.d.). Both Facebook and Instagram collect massive amounts of data to facilitate a personalized experience for their users.

Both Facebook and Instagram have integrated certain design features in their interfaces that encourage excessive use including scrolling and reels, giving users the opportunity to get bite-sized information, which is considered to be addictive.

2.3.4. Samsung Electronics

Since being established in 1969, Samsung has grown into one of the world's leading technology companies, and become recognized as one of the top 10 global brands. Samsung is devoted to creating superior products and services that contribute to a better global society. Galaxy smartwatch and Samsung health and the two top products owned by Samsung Electronics, that provide digital health services ("Samsung: Overview, Mission, Vision, Values, Principles", n.d.; "Samsung Announces Open Innovation Initiative With Leading Universities and Academic Hospitals To Build Digital Health Ecosystem", n.d.).

Samsung Health: According to Samsung's official website, the galaxy smartwatch has to pair with the Samsung health app on an android in order to have access to all the data collected by the smartwatch.

Galaxy Watch: The smartwatch developed by Samsung, provides some similar functions and features to Apple watch and Fitbit. The main features include body composition, stress level

measurement, heart rate, sleep, fitness goal setting and tracking and ECG (electrocardiogram). Recent launches can also measure blood pressure ("Explore Samsung Watches", Samsung, n.d.).

2.3.5. ByteDance

ByteDance was founded in 2012, with the mission to inspire creativity and enrich life. It operates as a multinational Internet technology holding company with a range of content platforms that inform, educate, entertain, and inspire people. In 2017, it launched a global short video product which took off very rapidly. ByteDance has made it easy and fun for people to connect with, create and consume content. ByteDance is known for inventing TikTok, one of the most widely used content sharing platforms, where health advice and information is very current ("ByteDance - Inspire Creativity, Enrich Life", n.d.).

Tiktok has gained an incredible number of users in the past decade. While it is used to share various sorts of short videos and content, it is also being used to share health-related information and education. Health practitioners have also created their platforms where they share insights about different conditions and diseases.

Mental health content is also prominent on TikTok. According to Amnesty International, out of every five-six hours of scrolling, almost one-two videos are potentially harmful to the users. Tiktok has over 1 billion users, with 36.2 per cent being aged between 18 and 24 and 33.9 per cent between 25 and 34 ("TikTok Age Demographics [Updated June 2024]", n.d.). Several countries around the globe have banned TikTok or added restrictions due to its addictive features and concerns about privacy and cybersecurity ("These Countries Have Already Banned TikTok", 2024; "TikTok to Ditch 'Addictive' Tool in Europe at EU's Request", Politico, 2024).

TikTok, with the bite-sized content and scrolling, gives users the possibility to engage in content for a short time or scroll away if they lose interest. Additionally, the highly personalized content exposes users to relevant content. Furthermore, the emphasis on a culture of trends and challenges makes users want to stay up to date, hence the high engagement with the platform.

2.3.6. Snap Inc.

Snap Inc. is an American camera and social media company, founded on 16 September 2011. The company was named Snapchat Inc. at its inception, but it was rebranded Snap Inc. on 24 September 2016, in order to include the other product under the company name. Their mission is

to contribute to human progress by empowering people to express themselves, live in the moment, learn about the world, and have fun together. Snap Inc. owns Snapchat, a live content sharing platform which is also becoming big in sharing health advice widely ("About Snap Inc. - Benefits, Mission Statement, & Photos", obSage, n.d.).

Snapchat is a platform for instant messaging via live videos, photos and text. Snapchat has introduced for the first time posts that are available for 24 hours only. Users can search content in the form of short videos across multiple fields and topics including healthcare. Brands who have Snapchat accounts like Refinery29, Health Digest and Seen Health share health-related information to over 7 million users. Hashtags like #mentalhealth or #mentalhealthawareness reach millions of users daily. Out of 422 million, 20 per cent are aged between 13 to 17 and 38.5 per cent are between 18 to 24 (Ponek, 2024).

Snapchat encourages users to engage daily with their networks via Snapstreaks, which if not updated, can be lost. The 24-hour stories and snaps create an urge among users to share everything with their network. The reactions from the network regarding the content they share, keep users active on the platform.

2.3.7. X Corp (X)

Formerly Twitter Inc and a subsidiary of X Holdings Inc, X Corp is a social networking platform for people to create and share ideas. Twitter Inc was founded in 2006 and restructured into X Corp in 2023. The company, through the platform, provides public self-expression and conversation. The mission statement of X Corp is to transform the way we interact on social media: blurring the lines between communication, commerce, and innovation. X is used to share various information including health related ("About X Corp - Benefits, Mission Statement, & Photos", JobSage, n.d.; "2X Corp Company Profile - Overview", n.d.).

X, still colloquially known as Twitter, is a platform used for entertainment but also by scientists to share research results. Tweeting can be done on mobile and tablet versions of the app, on the website and, in several countries, also via SMS. Re-tweeting or sharing other users' posts happens more frequently on X compared with other social media platforms. Words or topics mentioned most frequently over a certain period of time are said to be trending on this platform: these trends help X to understand their users. X often censors hashtags that are considered abusive. In

addition, X has established Community Notes, a community driven feature for fact checking. Verified accounts on X are for businesses, brands and activists or influencers (Help Center, X, n.d.).

2.3.8. OpenAI

OpenAI is an AI research and deployment company that conducts research and implements machine learning. Founded in 2015, OpenAI is dedicated to advancing artificial intelligence in a safe and beneficial manner. OpenAI's core mission is centred around advancing artificial general intelligence (AGI) in a manner that benefits all of humanity. OpenAI recently launched ChatGPT, a chatbot with natural language processing (NLP).

ChatGPT allows conversations and assists users with various tasks. In healthcare, ChatGPT can be used in various areas: to provide health education and promotion, training for health and medical students, mental health support and advice, and to monitor and analyse health data from wearables (Montazeri et al., 2024). ChatGPT has limited information across various topics, so the responses are based on the data that has been fed into it. In addition, it does not have the ability to understand context, so the information provided can be very general. If used for health advice, it can lead to misinformation among users and potentially negative consequences.

2.3.9. Mobile Applications

Strava is a mobile application which enables athletes to connect, find motivation, explore places, track the activity and analyse the data. Strava can track any physical activity whether it is indoors or outdoors. The main statistics that Strava collects include speed, elevation, distance, time, heart rate, cadence and power. These statistics are presented in charts and graphs. It also reminds users when it is time to change old shoes or gear. Performance data can be shared on social media or with friends on Strava who can comment and congratulate users on their achievements. Additionally, Strava facilitates group activities and matches users who are in the same area. It also provides a map and has integrated weather forecasting into the app (“Strava Features Complete Overview”, 2022). When registering, Strava collects data such as first and last name, birthday, sex and email.

BetterMe is a wellness platform developed for online health coaching with a focus on workouts, meal plans and motivating challenges. Main features include calorie intake logging, water tracker, step tracker, pre-recorded workout videos and intermittent fasting programmes. BetterMe has also launched BetterMe: Mental Health, another mobile app that solely focuses on guided

meditation, breathing exercises, sleeping sounds and mental health coaching. Recently, they have added to their portfolio of products and services fitness gear, corporate wellness and BetterMe wearable band ("About BetterMe", n.d.; "BetterMe App Review in 2024", 2024). When first registering, BetterMe gives the option for users to fill out a quiz with personal information in order to create a personalized plan.

SleepCycle is a personal sleep monitoring and smart alarm clock mobile application. SleepCycle features enable users to record their snoring and play sleep sounds. SleepCycle can be synced with an Apple watch to track sleep and silent or smart alarm. In addition, SleepCycle provides Sleep School for users who want to know more about sleep. Premium features include wake up mood, where the user inputs their mood as soon as they wake up and the app analyses whether there is a correlation between sleep quality and mood. Among other features, the premium version also provides heart rate measurements ("The Sleep Cycle App Explained: A Guide to the Functions & Features", n.d.).

Headspace is a mental health and well-being mobile app with hundreds of different videos for mindfulness, breathing exercises and podcasts. On Headspace, users can add a routine and schedule for their daily sessions. Users can also choose the length of their videos and podcasts. Headspace offers bedtime meditation and videos, yoga, physical activity and mindful cardio exercises and soundscapes. Users can search for curated content such as mindfulness at work, for parents and kids, and themed collections like British collection which includes commuting, queuing, tea break and Sunday roast among others ("I Tried The Headspace App—Here's My Review", 2023; "Meditation and Mindfulness Made Simple", n.d.).

Talkspace is a famous telemedicine platform. It specializes in virtual therapy and psychiatry services for adults and teens. Talkspace gathers initial information from users to match them with the right licensed therapist on the platform. Talkspace offers communication methods for the patient and the therapist such as message-based therapy, video-based therapy and live chat. Talkspace also provides a self-guided mental health support programme with self-guided therapy sessions, online classes and self-reflection. In addition, a version of Talkspace, called Talkspace Go, provides content on topics most relevant to teens. Therapy payments are done via the app, and are integrated with insurance providers and employers, among other funding sources. Talkspace also features a progress tracker. Other mental health exercises and workshops are also facilitated in

this platform (Talkspace, 2020; “Talkspace Announces Second Quarter 2024 Results” Talkspace, Inc, n.d.).

MyFitnessPal is a food intake and physical activity tracking mobile application. The main features of MyFitnessPal include goal setting in terms of nutrition, physical activity and weight: encompassing a food diary, calorie tracker, weight chart, exercise tracker, app community, reminders to record meals, graphs and reporting. The premium version also offers barcode scanning, access to meal plans and workout plans and more advanced analysis of food in terms of nutrition. This version is available in selected countries (MyFitnessPal App, n.d.).

Noom is a weight loss mobile application which focuses on behaviour change. To begin with, Noom introduces a quiz to the users, collecting sensitive data in order to personalize the plan and user experience. The app offers features such as weekly challenges, educational content, progress tracking tools, virtual coaching and biometric tracking. Noom also offers prescription medication to lose weight to users who qualify. Employers provide Noom as an employee benefit too (“Noom Diet Review”, 2019).

Flo is a reproductive health mobile application which supports tracking of period start and end date, fertility window, ovulation calculator, PMS symptoms, flow intensity and birth control. It uses AI to predict future cycles and fertility and notifies users in time to make them proactive on their well-being. All the data collected over a period of six months can be shared with doctors who can analyse trends and patterns based on evidence. In addition, Flo provides articles and educational materials regarding reproductive health, and has developed a chatbot to provide more specific information to the users (“Increase Appointment Effectiveness with Flo’s Educational Support”, n.d.).

2.4. Discussion

It is important to note that the largest technology companies are not limited to health; they provide a range of hardware and software products, some of which have an impact on health or well-being, directly or not. Services and products provided by big tech companies that contribute to digital health include search engines, social networking sites, content communities, artificial intelligence platforms, wearable devices, and mobile applications. Social networking sites and content communities are designed to connect people to each other and with information.

Wearables, often seen as trendy fashion accessories, are designed specifically to keep track of physical activity and maintain health and well-being, particularly when paired with mobile applications.

Google's search engine provides the largest database of information containing both reliable and unreliable sources. Searching for health information and advice on Google can be helpful for some users but incredibly misleading for others. For example, Googling symptoms can potentially harm people with heart disease, or people who are in the process of making a health-related decision. In some cases, the information found online can also convince patients to doubt medical knowledge.

New platforms such as ChatGPT provide a new avenue for users to ask for health advice, with very specific and detailed questions. The rise of ChatGPT and other AI platforms such as Gemini is revolutionary, however in terms of health there are some potential disadvantages. ChatGPT has limited information across various topics, so the responses are based on the data that has been fed into it. In addition, it does not have the ability to understand context, so the information provided can be very general. ChatGPT is a chatbot hence lacks emotional intelligence. The data gathered is always stored and possibly used for research (43).

The findings of this report indicated that social media networks like Facebook, Instagram, Tiktok, Snapchat and YouTube have a huge user base and can easily be used to spread health information and awareness. Some of these platforms have integrated certain design features in their interface that encourage excessive use. For example, TikTok, with bite-sized content and scrolling, gives users the possibility to engage in content for a short time or scroll away if they lose interest, and highly personalized content seeks to keep users interested by exposing them only to content likely to be relevant to them. Furthermore, the trends and challenges culture makes users want to be updated, hence the high engagement with the platform. This is similar to Facebook and Instagram, where the scrolling, reels have been designed with the sole purpose of user engagement and retention: but they are now being considered as addictive. Snapchat encourages users to engage daily with their networks via Snapstreaks, which, if not updated, can be lost. The 24-hour stories and snaps, creates an urge among users to share everything with their network. The reactions from users' networks regarding the content they share keeps users active on the platform.

Smartwatches like Apple, Fitbit and Galaxy enable health monitoring and behaviour change by collecting vast amounts of data and personalizing the experience for the users. They are typically paired with an app, allowing users to view their health trends. However, these apps collect

personal, health sensitive data which can be shared with third parties. While wearables are extremely relevant in today's health landscape, the data they collect is very sensitive and in case of a “hijack”, they provide a good opportunity for the hackers to steal users’ identities and information about their lives. Smartwatches are vulnerable in terms of security due to a weakness in software or firmware and their reliance on Bluetooth connectivity.

Mobile applications also have a significant role and capacity in facilitating behaviour change. App stores such as Apple store or PlayStore are filled with a variety of health apps. In order to drive a change in behaviour and stay relevant in a largely saturated market, developers have to personalize as much as possible by collecting massive amounts of data from users: this data is often sensitive.

While these products and services are currently serving as an effective method to drive behaviour change in certain individuals, the data they collect can carry some risks. It is highly important that users are aware of the consequences before they decide to purchase or use any of these platforms.

Moving forwards, it is deemed as necessary to look at these platforms' measures to protect all the data they collect from the users. The next steps will be to assess:

- Data and privacy policies
- Mechanisms to specifically protect data and privacy of young people
- User consent and transparency
- Data sharing practices
- Compliance with regulations such as GDPR, HIPAA and CCPA.

The final product aims to provide a comprehensive view on how digital technology companies and health mobile apps conduct themselves in the digital health space.

3. PART 2: REVIEW OF POLICIES AND STRATEGIES

3.1. Objectives and scope

Building upon the findings from the first part of the research, the second part narrows down the focus to the biggest social media networks and other platforms used by young users, to gain a better understanding on the privacy policies of these companies, with a particular focus on young users and what are some of the main mechanisms they are implementing to protect young users' identities and maintain their health and well-being online.

3.2. Methods

To begin with, this is the second part of a two-part research project. The first report attempted to create an informed overview of some of the major big tech companies to better understand their influence over young users. The focus was on big tech companies and their platforms such as Apple Inc., Alphabet Inc., Microsoft Corporation, Meta Platforms, X Corp, Snap Inc., ByteDance and OpenAI. In addition, we focused on some of the most used health and well-being mobile applications. Health and well-being companies would be highly relevant to help gain a deeper understanding of tech companies' privacy policies and data protection, and how they can be promoted to young users for healthier engagement online. Yet, we chose to focus on a few platforms with the biggest and youngest user base and the platforms with the highest influence over health and safety of young users. The final companies that will be reviewed are: Alphabet Inc. (YouTube), Meta Platforms (Instagram and Facebook), Snap Inc. (Snapchat), ByteDance (TikTok) and OpenAI (ChatGPT). While Alphabet Inc, specifically Google, would be of utmost interest, another paper focusing solely on Google, is planned by the author as a next step.

This report represents a qualitative analysis of existing privacy and consent policy compliance, exploring data collection, usage, privacy, compliance, and young users' safety on the Internet. The main source of information is respective companies' and platforms' privacy policies published on their websites, and other relevant journal articles and gray literature. The data gathered have been analysed using deductive thematic analysis which typically begins with predefined themes. Deductive thematic analysis has been utilized as the most appropriate method for this qualitative

study. The pre-identified themes include: data collection practices, data usage, sharing data practices, security and data protection, privacy control, compliance with laws and regulations, transparency and clarity, cookies and tracking and initiatives for young users.

Data for the purpose of these reports was collected from respective companies' websites, and their published policies. In addition, data and information was retrieved from scientific journals and gray literature. This data collection went on from September to November, 2024.

3.3. Results

After a thorough analysis of the privacy policies published at respective companies' websites, the findings have been categorized based on the predefined themes: data collection practices, data usage, sharing data practices, security and data protection, privacy control, compliance with laws and regulations, transparency and clarity, cookies and tracking and initiatives for young users. In general, privacy policies are typically extensive documents that use complex legal language, ambiguous jargon and very broad or generalized statements which makes them very confusing for users in general and particularly for younger ages.

3.3.1. Data collection practices

Big tech companies and their platforms employ comprehensive data collection strategies which allow them to create detailed user profiles, making it easier for targeted advertising and engagement optimization.

While most of the users are aware that their personal information is collected with each platform they choose to sign up for, some users are unaware that personal information is not all the data these platforms collect.

After carefully analysing privacy policies of Meta platforms, Snap Inc., Byte Dance Inc., OpenAI and Alphabet Inc. (with a focus on YouTube), the results indicate that all of these above-mentioned companies collect more than just personal information with their platforms (Figure 1). Additional data is collected, such as user-generated content including posts and conversations, activity and device information including the device of the user, IP addresses, browsers and operating systems. Location data is also collected precisely if location services are enabled. In addition, third-party information from other websites and platforms is also collected by these platforms. Instagram, Facebook, Snapchat, TikTok and YouTube, collect third party information for targeted

advertisements additionally to service improvement, whereas OpenAI does not use any form of targeted advertisements, hence the data it receives from third parties are solely for service improvement.

The data variety collected from the users, can be potentially used to influence decisions via ads, news feed and content, often leading to excessive use and addiction. For young users, it can lead to anxiety, decreased attention span, and other mental health issues (Prasad et al,. 2023).

Data Collection Practices	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Personal Information	✓	✓	✓	✓	✓
Content and Interactions	✓	✓	✓	✓	✓
Device Information	✓	✓	✓	✓	✓
Location Data	✓	✓	✓	✓	✓
Third-Party Information	✓	✓	✓	✓	✓

Figure 1. Data Collection Practices according to the privacy policy of each company

3.3.2. Data Usage

All the types of data collected by Meta Platforms, Snap Inc., Byte Dance Inc., OpenAI and YouTube are used to enhance performance and to tailor content based on user preferences. While all of them also use the data collected to show users ads based on their interests, activities and demographics, OpenAI does not engage in any targeted advertising activity. Service improvement of all of these platforms relies on the data collected by the users, whether it is to better understand users, develop new features or ensure functionality. The data collected by the platforms can also be used for fraud detection, identity verification and to prevent any malicious activity (Figure 2). Additionally, users' data is also used for algorithm improvement and AI models. The algorithms developed can often be biased, leading to discriminatory results. For young users this can mean,

for example, lack of access to specific educational opportunities. In addition, algorithms can reinforce stereotypes by portraying people of a certain religion or race repeatedly based on these stereotypes (European Union Agency for Fundamental Human Rights, 2022).

Data Usage	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Personalization	✓	✓	✓	✓	✓
Targeted Advertising	✓	✓	✓	✗	✓
Service Improvement	✓	✓	✓	✓	✓
Safety and Security	✓	✓	✓	✓	✓
Research and Development	✓	✓	✓	✓	✓

Figure 2. Data Usage according to the privacy policy of each company

3.3.3. Sharing Data Practices

According to their privacy policies, all the companies and platforms under this review share the data they collect from the users with advertisers, enabling them to reach their audience (Figure 3). Often, these platforms partner with cloud storage, security and analytics companies, which involves sharing user data with them. By integrating various platforms, users can share the same content across multiple channels and each platform can gain user data from another. Data is also shared with law enforcement authorities and courts upon request.

Although data sharing practices are stated in the privacy policies of each digital company and platform under this review, the use of vague language and generalized statements such as “we may share your data with partners”, without specifying who the partners are, leaves users uncertain about these platforms’ data sharing practices. Most users, and especially young users, are confused by such language. As a result, users cannot make informed decisions regarding their privacy.

Sharing Data Practices	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
With Advertisers	✓	✓	✓	✓	✓
With Partners and Vendors	✓	✓	✓	✓	✓
With Third-Party Apps	✓	✓	✓	✓	✓
Legal and Regulatory Requests	✓	✓	✓	✓	✓

Figure 3. Sharing data practices according to the privacy and policy of each company

3.3.4. Security and Data Protection

According to their privacy policies, all platforms provide encryption in transit to protect data interception during transmission (Figure 4). Snapchat and Facebook Messenger provide end-to-end encryption with their features like snaps or secret messaging. Instagram has also rolled out the secret message feature, although this is not yet available globally. TikTok, YouTube and OpenAI do not provide end-to-end encryption. However, all of them provide two-factor authentication (2FA), whether it is via SMS, authentication apps, backup codes, security keys or email verification. While 2FA is provided, the responsibility is left upon the user to set up this double encryption.

In reality, Meta Platforms have received some of the biggest fines from the Irish Data Protection Commission (IDPC) for violating GDPR's restrictions, for transferring data of European users to the U.S. without the necessary mechanisms in place. TikTok has also been fined by the same entity for GDPR breaches in data processing, transparency and fairness particularly for young users (DPM, 2024).

All platforms have implemented threat detection systems, which track unauthorized access, hacking attempts and any potential suspicious activity. To comply with legal requirements, data is retained for a longer period even after it has been deleted by the users, however these privacy policies have not specified for how long and what type of data is retained.

Security and Data Protection	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Encryption	✓	✓	✓	✓	✓
Two-Factor Authentication	✓	✓	✓	✓	✓
Threat Detection	✓	✓	✓	✓	✓
Data Retention	✓	✓	✓	✓	✓

Figure 4. Security and Data Protection according to the privacy policy of each company

3.3.5. Privacy Control

A number of platforms, such as Meta, Snapchat, TikTok and YouTube, allow users to set their account to private, limiting who can view their content and interact with them on the platform. Due to the unique nature of ChatGPT, OpenAI has placed a lot more emphasis on the user's rights to access, edit, and delete their data. In every platform, users can opt out of personalized ads (Figure 5). This is not relevant for OpenAI and ChatGPT. However, users in any of the platforms can download their data and access them – yet this option is not very clearly communicated to them. Users can also deactivate or delete their respective accounts on these platforms at any time, however, it is usually not very straightforward to do so. Some platforms such as Meta, do not delete all the data of a user, after account deletion. On Snapchat, users can request to delete all their data from Snap's database. TikTok does not clarify whether the data is or is not deleted after account deletion.

Privacy Control	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Privacy Settings	✓	✓	✓	N/A	✓
Ad Preferences	✓	✓	✓	N/A	✓
Data Portability	✓	✓	✓	✓	✓
Deleting or Deactivating Account	✓	✓	✓	✓	✓

Figure 5. Privacy Control according to the privacy policy of each company

3.3.6. Compliance with Laws and Regulations

All platforms state that they adhere to regulations such as GDPR for the EU and CCPA for the U.S. (Figure 6). Such compliance with these regulations grants users control over their personal data and requires transparency over how their data is handled. However, Meta Platforms and TikTok have been fined in the past for GDPR breaches (DPM, 2024). In addition, GDPR requires that technology companies implement privacy by design and privacy by default ("Art. 25 GDPR: Data Protection by Design and by Default," n.d.) meaning that they have to be designed to collect minimal data without user intervention. Considering that the platforms under this review collect extensive user data, this raises further questions about GDPR compliance.

Social media networks (Instagram, Facebook, TikTok, Snapchat) comply with Children's Online Privacy Protection Act (COPPA). One key aspect of COPPA is that it limits the use of social media networks for users under the age of 13, without parental consent. All of the above mentioned platforms apply this, yet young users' presence on social media suggests that this is not necessarily being respected. YouTube and YouTube Kids both comply with COPPA, although in different approaches: YouTube adheres to COPPA standards, while YouTube Kids was designed to adhere to COPPA standards. Although complying to given standards is very positive, even standards like GDPR and COPPA have loopholes. For young users, COPPA **requires** parental consent but it does not clearly define what that should look like, enabling digital companies and platforms to find easy ways to bypass. In addition, regulation standards do not prevent bias in algorithms, which often lead to discrimination or/and manipulation. These standards are not unified and there is a lack of a

common global standard, meaning that when users are travelling, they might not be protected under the same standards that protect them in their home country. Some digital companies are using compliance at a surface level, without taking any significant steps towards protecting young users online.

Compliance with Laws and Regulations	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
General Data Privacy Regulation (GDPR)	✓	✓	✓	✓	✓
California Consumer Privacy Act (CCPA)	✓	✓	✓	✓	✓
Children's Online Privacy Protection Act (COPPA)	✓	✓	✓	✗	✓

Figure 6. Compliance with Laws and Regulations according to the privacy policy of each company

3.3.7. Transparency and Clarity

Privacy policies are extensive documents most of the time written in a legal jargon that makes most users ignore them. While platforms provide transparent privacy policy updates (Figure 7), some of them are known to use a clearer language compared to the others. Meta has updated its privacy policy in 2022, claiming it is now easier to understand. Privacy policies are usually divided into sections, meaning that the user does not need to go through everything, if they are seeking some specific answers. However, privacy policies do not gain so much attention in the interface of any of the platforms, apart from ChatGPT, which due to not being overwhelming with functions and features, makes it easier to navigate through to its privacy policy.

Transparency and Clarity	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Privacy Policy Updates	✓	✓	✓	✓	✓
Access	✗	✗	✗	✓	✗
Clear Explanations	✗	✗	✗	✓	✗

Figure 7. Transparency and Clarity

3.3.8. Cookies and Tracking

All platforms use cookies as an integral part of their operations (Figure 8). The purpose for the use of cookies on all platforms is to personalize experience, enhance security and service improvement. All companies provide various opt-out options including ad personalization, privacy settings, analytics and third-party sharing. OpenAI's opt-out options relate to data access, marketing communications and cookie management. However, opt-out options are typically quite difficult to understand and navigate, leaving users exposed to high level tracking.

Cookies and Tracking	META	SNAP	BYTEDANCE	OPENAI	YOUTUBE
Cookies	✓	✓	✓	✓	✓
Third-party Tracking	✓	✓	✓	✓	✓
Opt-out Options	✓	✓	✓	✓	✓

Figure 8. Cookies and Tracking according to the privacy policy of each company

3.3.9. Initiatives for Young Users

The services provided by Facebook, Instagram, Snapchat, TikTok, OpenAI and YouTube are restricted for users above the age of 13, a rule enforced by COPPA and GDPR. However, digital platforms still rely on self-reported age information, which is very easily bypassed by users.

Recently, TikTok announced it will ban beauty filters for teens ("TikTok to Block Beauty Filters for Teens", 2024). Australia wants to completely ban TikTok and other platforms. The government has introduced the Online Safety Amendment (Social Media Minimum Age) Bill 2024, which puts the responsibility on the social media networks to control users' age. This bill is considered a big step towards keeping any user under the age of 16 from having a social media account. Systemic breaches from the social media networks such as TikTok, Facebook, Instagram and Snapchat among others will be subject to fines up to $49.5 million ("Social Media Reforms to Protect Our Kids Online Pass Parliament", Prime Minister of Australia, 2024). TikTok is risking being completely banned in the US in early 2025 due to a deadline set by the Supreme Court to ByteDance Ltd., to divest ownership in the US version of TikTok. While this is a political move, it has gained a lot of attention in the public discourse, raising debates as to whether the potential ban of TikTok could have an impact on freedom of speech and could limit young users'digital advancements ("US TikTok Ban, 2024; What's next for TikTok Now That the App Might Get Banned?" CNN Business, 2024; Holly, 2024). US based TikTok content creators are already discussing on the platform about having to potentially move their activities to YouTube.

Some of the platforms provide various parental supervision tools, for example Instagram and Facebook provide Family Pairing:- a feature that connects accounts of parents with those of children. This enables parents to monitor activity, set daily limits and manage settings. Snapchat offers Parental Oversight, where parents can see their children's friend list, and their recent interactions. This feature enables parents to also see children's app usage without having full access to their account. TikTok also provides a similar mechanism where parents can access direct messages, limit use, comments and content for their children. OpenAI does not provide something similar. YouTube has developed its dedicated platform, YouTube Kids, categorized in three levels: preschool (aged four and under), younger (aged five to eight) and older (aged nine to 12). In this platform parents can customize settings, content, time limit and disable search features. Parents can select content categories that are appropriate for their children. However, these safeguards are also typically very easy to bypass. Parents can also have limited understanding in regards to how to monitor their children's activity and use of data. Often parents are not even aware of the availability of these functions.

YouTube is also trying to limit the exposure of teenagers to aggressive content and content related to idealized fitness levels,weight and physical features.. This mechanism has been rolled out in the United States and is expected to expand to Europe and all around the world soon ("YouTube Will Begin Limiting Access to Fitness Videos for European Teens. Here's Why", Euronews, 2024).

All platforms engage in some sort of awareness campaign on different topics. Instagram has launched a specific campaign to increase awareness regarding bullying, mental health and body positivity. Facebook also runs some campaigns against cyberbullying, misinformation and staying safe online. Meta Platforms have initiated one-day workshops in schools in Argentina with teachers, parents and students, aiming to scale up through Peru, Chile and Columbia (Vexler, 2024). Snapchat is very active in campaigns regarding mental health and online safety. Snap Inc., has also developed a new feature called Snap Focus to provide resources in collaboration with reliable partners. TikTok has a Safety Center tackling online safety, cyberbullying and mental health. OpenAI provides resources regarding ethical AI use. YouTube's Creators for Change programme, also aims to tackle social issues, bullying, misinformation and mental health. While such campaigns are essential, they do not tackle the issues down to their roots. For example, if platform algorithms are continuously promoting negative content on mental health, campaigns will be just a band aid.

3.4. Discussion

The ever-changing nature of technology has left users unaware about how their data is being collected, used and shared. Big tech and other digital technology companies collect massive amounts of data from users starting off with personal data, users' content and interactions, location, device and third-party information. The collected information is then shared with businesses, partners and third parties. Most tech and digital companies have comprehensive privacy policies outlining how they collect, use, share and protect data. However, privacy policy documents and other consent forms are often too ambiguous to read, causing users to not pay attention to what they are consenting to. This has given big tech and other digital technology companies huge power, to the point where they can influence users' day-to-day decisions using the extensive data they collect from them. While personalization offers customized content and experiences, it also carries a significant risk in terms of behaviour, mental health and social dynamics. This is particularly relevant to young users in the process of identity development –the content they get advertised continuously might have a negative impact on their self-worth, body image and mental health (Prasad et al., 2023). Amnesty International has developed 30 automated

accounts to use in research, and after few hours of scrolling on TikTok, the accounts were drawn into a "rabbit hole" of content which romanticizes depression, self-harm and suicide (Amnesty International, 2023b).

While on paper most of the digital platforms are only available for users above the age of 13 and provide parental control and follow robust data protection for young users, these mechanisms are very easy to bypass. This leaves young users exposed to harmful content, cyberbullying, harassment, addiction, mental health impact, manipulation and advertising, among other risks. Digital platforms still rely on self-reported age information, which is very easily falsified. Meta has agreed that it is still difficult to control whether younger ages are using these platforms. To tackle this, they have piloted a training programme for students and teachers in some of the schools of Argentina, aiming to scale up through Peru, Chile and Columbia. Over the course of a day, Meta wants to share advice with students so that they can recognize warning signs and how to report and react to them. Parents have also been invited to this one-day training (Vexler, 2024). While this is a step, the efficacy is yet to be established.

Social media platforms like Instagram and TikTok are known for encouraging comparison culture with highly curated and visual content targeted at specific users, causing mental health issues and low self-esteem. As part of its goal to launch a new version, TikTok has been working on TikTok Lite, which rewards users based on screen time and completed tasks. While TikTok is already considered to be an addictive tool, the new rewarding version would push users even more to engage with the app and thus increase the rate of addiction. However, the European Commission announced that this could warrant fines and suspension if implemented in the EU, which made TikTok withdraw the scale-up in this region ("TikTok to Ditch 'Addictive' Tool in Europe at EU's Request", Politico, 2024).

All platforms indicate in their privacy policies that targeted ads are limited in young users' accounts, however, several lawsuits have been filed in the past against Meta and other platforms for harming young users by using highly manipulative algorithms and technology tools ("Meta Deliberately Targeted Young Users, Ensnaring Them with Addictive Tech, States Claim", CBS News, 2023).

OpenAI, with its platform ChatGPT, does not use targeted advertising and whereas the data collection, usage, sharing and protection is quite transparent in their privacy policy, there is an increasingly high tendency for users to self-diagnose different health conditions via ChatGPT. While Google receives around 1 billion health questions each day, making it the most used search

engine in the world, ChatGPT provides clearer and more detailed input, which enables ChatGPT to respond with a more detailed answer in return (Shahsavar & Choudhury, 2023).

4. RECOMMENDATIONS

The issues that emerged in this research can be tackled via different sources and mechanisms starting off with young users, parents, educational institutions, big tech companies, non-governmental organizations and governmental bodies. The results lead to six recommendations.

1. **Big tech companies and platforms should implement the principles of privacy by design and privacy by default.** The principle of privacy by design is recommended for major big tech companies in order to ensure data protection is taken into account early on in the development process. Likewise, privacy by default is recommended so that the highest level of data protection is automatically applied in any platform or product. Automatically restricting personalization, ads, and data collection is recommended for users under the age of 18 in particular, following the example of YouTube Kids.

2. **Education and empowerment of young users.** Incorporating digital literacy in school curriculums provides the opportunity to equip students with the know-how on navigating the Internet safely. Teaching students how to recognize whether a source is reliable and how to respond to it.

3. **Transparency and Customization:** Companies should ensure that customers are aware of their data being collected and how it is used. Companies should also provide customers with the opportunity to opt-out of data sharing and personalization., Plain and easy language is recommended for privacy policy updates or changes.

4. **Regulate addictive features**: It is recommended to introduce different external mechanisms to mitigate the addictive features and promote healthier engagement with platforms. Such mechanisms include: lowering or removing personalization and algorithms; adding mandatory breaks, content consumption limits; the removal of infinite scrolling; promoting well-being by promoting more educational content.

5. **Collaborate with stakeholders and regulators:** Collaborate with stakeholders relevant to child safety in order to advocate for the protection of children online and to shape policies that are aimed at protecting young users online. The branding of the companies should also be aligned with GDPR, COPPA and other regulatory frameworks, aligned with their practices and re-designed according to that.

6. **AI to create a safer life online**: Utilize AI to flag and remove content that is harmful and unreliable. Promote reliable sources and foster a positive online space by prioritizing well-being instead of engagement.

5. CONCLUSION

The platforms with the highest youth user base are Facebook, Instagram, YouTube, TikTok and Snapchat. ChatGPT is also emerging as a new platform to search for information, support and advice. The high engagement of young people with these platforms is potentially harming them via exposure to targeted marketing and ads, harmful content and the desire they create to compare lifestyles. Some of the features of these platforms are also being considered addictive i.e., bite-sized content, endless scrolling and the losing track of time. ChatGPT is being used for highly specific and personalized health advice.

All of these platforms have asserted that they comply with the regulations in place, yet their privacy policies are quite ambiguous and the mechanisms they have introduced are typically very easy to bypass

All platforms under this review collect extensive data, which in the case of Facebook, Instagram, YouTube, TikTok and Snapchat, is being used to influence decisions and fuel addiction. The data collected by these platforms is mostly used for algorithmic improvement, ads and AI models, which are also leading to discrimination. ChatGPT uses the data that it collects for research purposes and model improvement. All platforms apart from ChatGPT share the data they collect with third parties, and in their privacy policies it is not clear who these third parties are. Although there are mechanisms in place for security and data protection, Meta and ByteDance have been fined in 2024 for lack of data protection. In platforms such as Facebook, Instagram, TikTok, YouTube and Snapchat, users can set their accounts to private, deactivate or delete their accounts. The last two options are not very straightforward to navigate through in these platforms.

All platforms declare to adhere to regulations such as GDPR for the EU and CCPA for the US Social media networks (Instagram, Facebook, TikTok, Snapchat) comply with Children's Online Privacy Protection Act (COPPA), while OpenAI is working towards that. YouTube adheres to COPPA standards, while YouTube Kids was designed to adhere to COPPA standards. However, they have faced fines for GDPR breaches. COPPA requires parental consent for young users, but does not clearly define it, allowing easy bypasses. Additionally, regulation standards do not prevent bias in algorithms, leading to discrimination or manipulation. There is a lack of a common global standard, causing some companies to use compliance superficially without significant steps towards protecting young users online.

Digital platforms like Facebook, Instagram, Snapchat, TikTok, OpenAI, and YouTube are restricted for users under 13 years old. However, these platforms rely on self-reported age information, which can be easily bypassed by users. Some platforms offer parental supervision tools, such as Family Pairing, Parental Oversight, and YouTube Kids, but these are also very easy to bypass.

Recently, there have been some initiatives undertaken to ensure young users' safety online. TikTok has announced a ban on beauty filters for teens, while Australia introduced the Online Safety Amendment (Social Media Minimum Age) Bill 2024, making social media networks responsible for user age controls. YouTube is also attempting to limit exposure to repeated content promoting idealized fitness levels and weights, physical features, as well as aggressive content, which is expected to expand globally.

Platforms like Instagram, Facebook, Meta, Snapchat, TikTok, OpenAI, and YouTube are implementing awareness campaigns to combat issues like bullying, cyberbullying, misinformation, and online safety. While these initiatives should be praised, they alone do not address the root cause of the problem.

Building on these findings, we have recommended that a number of initiatives can be implemented to further protect young people's data and promote their health and well-being online. To begin with, platforms used by young audiences should follow the principles of privacy by design and privacy by default, following the example of YouTube Kids. Incorporating digital literacy in school curriculums is a start towards teaching students to recognize reliable and unreliable sources. Digital technology companies should increase transparency on how data is being collected, used and shared and use simple language to communicate this. In addition, they should collaborate with relevant stakeholders to make the Internet a safe space for young users, introducing external mechanisms that limit personalization and content consumption, introduce mandatory breaks, support healthier engagement and utilize AI to flag dangerous content and not fuel insecurities, stigma and consumption.

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APPENDIX

Profiles of digital technology companies, platforms and mobile apps

Digital technology Company	Profile	Health related products	User base	Data privacy and security policy sources
Apple Inc.	**Founder/s:** Steve Jobs and Steve Wozniak in 1976 **Location:** California, US **Mission:** To bring the best user experience to customers through innovative hardware, software, and services.	Apple Watch/ WatchOS	100M users	https://www.apple.com/privacy/features
		Fitness+	100M users	
		Health	300M	https://www.apple.com/privacy/docs/Health_Privacy_White_Paper_May_2023.pdf
Alphabet Inc. (Google)	**Founder/s:** Larry Page and Sergey Brin in 1998 **Location:** California, US **Mission:** To organize the world's information and make it universally accessible and useful.	Fitbit	128M	https://support.google.com/fitbit
		Fitbit App	128M	https://support.google.com/fitbit
		YouTube	2.49B	https://support.google.com/youtube

		Google Search Engine	4.9B	https://policies.google.com/privacy?hl=en-US
		Gemini	330.9M	https://cloud.google.com/gemini/docs/discover/data-governance
Meta Platforms	**Founder/s:** Mark Zuckerberg in 2004. **Location:** California, US **Mission:** to help people feel connected and closer.	Facebook (Facebook preventive tool)	2.9B	https://www.facebook.com/privacy/policy/ https://about.fb.com/news/2019/10/privacy-matters-preventive-health/
		Instagram	2.4B	https://help.instagram.com/155833707900388
Samsung Electronics	**Founder/s:** Lee Byung-chul in 1938 **Location:** Suwon-si, South Korea **Mission:** to create superior products and services that contribute to a better global society.	Samsung Galaxy watch	N/A	https://foundation.mozilla.org/en/privacynotincluded/samsung-galaxy-watch
		Samsung Health	64M	https://www.samsung.com/us/account/privacy-policy/ https://samsunghealth.com/privacy

ByteDance	**Founder/s:** Zhang Yiming, Liang Rubo in 2012 **Location:** Beijing, China **Mission:** to inspire creativity and enrich life.	TikTok	1.04B	https://www.tiktok.com/legal/page/row/privacy-policy/en
Snap Inc	**Founder/s:** Evan Spiegel Bobby Murphy, 2011 **Location:** California, US **Mission:** to contribute to human progress by empowering people to express themselves, live in the moment, learn about the world, and have fun together.	Snapchat	422M	https://values.snap.com/en-GB/privacy/privacy-policy/eea-uk-privacy-notice
OpenAI	**Founder/s:** Sam Altman, Elon Musk 2015 **Location:** California, US **Mission:** to advance artificial general intelligence (AGI) in a manner that benefits all of humanity.	ChatGPT	200M	https://openai.com/policies/privacy-policy/
X corp	**Founder/s:** Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams, 2006 **Location:** California, US **Mission:** to transform the way we interact on social media, blurring the lines between communication, commerce, and innovation.	X (former twitter)	368M	https://x.com/en/privacy

Strava	**Founder/s:** Michael Horvath and Mark Gainey, in 2009. **Location:** California, US **Mission:** to connect and inspire athletes worldwide through their innovative fitness tracking platform.	Run, Bike, Hike	120M	https://www.strava.com/legal/privacy
Flo	**Founders:** Dmitry and Yuri Gurski, 2015 **Location:** London, UK **Mission:** to change how female health is viewed, and ensure trust.	Period & Cycle Tracker	280M	https://flo.health/privacy-policy
MyFitnessPal	**Founder/s:** Albert Lee and Mike Lee, 2015 **Location:** Texas, US **Mission:** to ignite powerful nutrition and wellness change in our members by empowering them to succeed on their own terms through personalized data-led insights, guidance, and unwavering support	Calorie counter	200M	https://www.myfitnesspal.com/privacy-policy
Sleep Cycle	**Founder/s:** Maciek Drejak, 2009 **Location:** Gothenburg, Sweden **Mission**: to improve global health by getting people around the world to sleep better.	Sleep Tracker & Sounds	2M+	https://www.sleepcycle.com/privacy-policy-2021/

BetterMe	**Founder/s:** Victoria Repa, 2016 **Location:** Kyiv, Ukraine **Mission:** to create a healthier world for everyone, regardless of age, sex, physical ability, or background.	Health Coaching	150M	https://betterme.world/privacy-policy
Headspace	**Founder/s:** Andy Puddicombe, Richard Pierson, 2010 **Location:** London, UK **Mission:** to design and deliver innovative ways of working with young people to strengthen their mental health and well-being.	Mental Health	70M	https://www.headspace.com/privacy-policy
Noom	**Founder/s:** Artem Petakov and Saeju Jeong, 2016 **Location:** New York, US **Mission:** to empower people to make healthier choices by better understanding yourself and your behaviour.	Weight Loss, Food Tracker	45M	https://noomfood.com/privacy-policy
Talkspace	**Founder/s:** Oren and Roni Frank, 2012 **Location:** New York, US **Mission:** to eliminate the stigma associated with mental health and make therapy available to all.	Mental health therapy	195M	https://www.talkspace.com/notice-of-privacy-practices

About DTH-Lab

DTH-Lab is a global consortium of partners working to drive implementation of The Lancet and Financial Times Commission on Governing Health Futures 2030's recommendations for value-based digital transformations for health co-created with young people. DTH-Lab operates through a distributive governance model, led by three core partners: Ashoka University (India), DTH-Lab (hosted by the University of Geneva, Switzerland) and PharmAccess (Nigeria).

Leadership Team

Aferdita Bytyqi, DTH-Lab Executive Director and Founding Member.

Ilona Kickbusch, DTH-Lab Director and Founding Member.

Anurag Agrawal, DTH-Lab Founding Member. Dean of Biosciences and Health Research, Ashoka University.

Rohinton Medhora, DTH-Lab Founding Member. Professor of Practice, McGill University's Institute for the Study of International Development.

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DIGITAL TRANSFORMATIONS FOR HEALTH LAB

GOVERNING HEALTH FUTURES 2030

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