# MEDIATING AND SENSING SCREEN BODIES: A CASE OF SMARTPHONES AND SELF-TRACKING APPLICATIONS

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# MEDIATING AND SENSING SCREEN BODIES: A CASE OF SMARTPHONES AND SELF-TRACKING APPLICATIONS

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## Abstract

As a response to controlling and managing the COVID-19 pandemic, many countries, including India, launched a self-tracking smartphone mobile application (hereafter referred to as app) that would help in contact tracing, syndromic mapping and self-assessment. In this regard, the Aarogya Setu app was launched on 2 April 2020, using the smartphone's GPS and Bluetooth to scan for other COVID patients in the user's vicinity. Amid the din of privacy and security concerns, the app works by collecting a database of all its users and providing information on risk assessment for the user, provision for self-assessment, government updates, booking of vaccination slots, among other things. The government had made it mandatory to have the Aarogya Setu app in order to access many public facilities, thereby facilitating data collection and widespread use. As on 21 March 2021, the app had 170 million downloads.[1] While a judgement of the Karnataka High Court in October 2020 stayed the mandatory use of the app for rail and air travel, in practice various institutions and organisations informally continue to enforce the use of the app for screening.[2,3] This in many ways made a case for self-knowledge, numbers and data to act and behave with precision, and this kind of objectivity was being offered and facilitated by technology.

Self-tracking devices, technologies and cultures then exist and are shaped by smartphone screen cultures which are imbricated in a relationship with broader cultural, social and economic processes. The digital influences, the disciplining discourses, and the media

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[1] https://www.newindianexpress.com/nation/2021/mar/21/not-many-takers-for-aarogya-setu-appdelhi-and-chandigarh-see-highest-respondents-2279311.html

[2] https://www.thehindu.com/news/national/karnataka/cannot-deny-services-for-not-installing-aarogya-setu-app-hc/article32896577.ece

[3] https://internetdemocracy.in/2021/04/aarogya-setu-mandatory-or-not-we-traced-it-for-ten-months-through-our-tracker

technologies of thought have produced this practice. Self-tracking is different from covert surveillance, where data collected is not available to the user. So what compels and attracts respondents to self-tracking? How do they make sense of and use the data they generate? What are the notions of body, the self, and behaviours constructed, configured and mediated via the smartphone screen? This paper makes use of in-depth qualitative interviews to understand the everyday use of self-tracking technologies, and then maps them onto theoretical work on mobility, automation and sensing to make relevant connections.

**Keywords**: self-tracking, COVID-19, technology, mobility, automation, sensing

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## Introduction

The increasing popularity of the smartphone screen as a ubiquitous device points towards how it is at once an idea, media and technology, and our engagement with it in everyday experience has made it one of the dominant screens of our lives. The contemporary smartphone screen, in opposition to cinema, television, mobile phone, computer and laptop, signals towards new frameworks which determine the relationships between technologies, culture and individuals, and requires us to address the materiality and digitality of these technologies and techno-cultures produced. Relatedly, an emerging digital culture practice is that of self-tracking via fitness trackers and smartwatches on the smartphone screen. What is pertinently new about the smartphone screen is the architecture of computer technologies within which this screen is situated. The Internet-enabled smartphone screens have initiated new processes of remediation. Apart from materiality of the design, the ability to run third-party applications on these smartphones set them apart from other feature phones, and help situate these smartphones in the everyday lives of people.[4] By third-party applications I refer to general purpose applications for messaging, photo editing, news, video editing, social networking, among many others. The presence of third-party applications fundamentally shifts the way people perceive, use and interact with their screens. In many ways the

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[4] By materiality of the smartphone screen design I'm referring to its role as a commodity, the software and hardware as a material force, the material relations of production and distribution, the production and storage of data as a materiality itself and subjective experience and use, among others.

smartphone screens collapse the distinction between a television and a laptop/tablet/computer. With third-party applications, the smartphone screen is no more just a communication device as it alters work and play, tasks and leisure, production and consumption.

Digital self-tracking via wearable technology like smartwatches and fitness trackers paired with smartphone applications of those devices, accessed on the screen, are increasingly ubiquitous now, with users producing huge amounts of data about the self. Hence the formation and tracking of the self, and the proliferation of self-tracking technologies to monitor and discipline the self and the body, requires us to address the materiality and digitality of these technologies and techno-cultures produced.

Subsequently, this paper is concerned with how the self gets mediated via the screen in the use of these self-tracking technologies, and the conditions within which this mediation takes place. Since there is increasing entanglement between self-tracking technologies and smartphone screen media (for the former is made functional by smartphone applications which help monitor, record and help make sense of the user's data), there will be an exploration of the emergence and use of smartwatches and smartphone screens, which lie at the intersections of wearable technology, human-technology relations, and the tracking of the self. Further, an attempt will be made to bring the discourses of self-tracking technologies together with smartphone screens to understand how they operate as different modes of play within the regime of sensing. Hence, this paper argues that the smartphone screen is essentially a playful device, not just limited to instrumental use and consumption but offering gamified and play-like experiences. Additionally, the smartphone screen is an affective[5]

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[5] Affect or an emotional evocation is always seen as a physical non-digital response. However, as I have argued, technologies and digital devices also evoke and produce affect (emotional responses, feelings) among users. This affect is also experienced sensorially, where the senses of touch, vision, audio, racing of the heart, the rush of emotions, fatigue, adrenaline get activated by these self-tracking technologies. Pink (2006) for instance has discussed how the future of visual anthropology must engage the senses, especially with reference to digital and hyper media. For her, engaging with visual and other senses is crucial for understanding how for instance identities are constituted and the formation of cultural practices.

screen surface that is an extension of the human body, and creates a sensorium by interpellating existing senses, and also producing new sensory experiences.

**Mapping Self-tracking Technologies and Practices on Screen**

Quantifying of the self has existed in different offline non-digital ways before—diary logging of amount of time spent sleeping, walking, running, exercising, swimming, making a count of laps, the number of weight repetitions, etc. Technological advancement has now facilitated digital self-tracking in the form of wearable technology or wearable devices known as personal activity fitness trackers which also double up as a smartwatch with bigger screens. Among a host of reasons offered by respondents of self-tracking devices and apps, the recurring ones seem to be becoming fitter and healthier, having intimate knowledge about the body and self, managing an illness or disease, regulating sleeping patterns, benchmarking performance, feeling more productive, disciplined and well-managed (a sensorial feeling users gets from strapping their self-tracker to their wrist, for instance). The apps in the screen are immersive and interactive, inviting the audience–user to engage with them, give commands and respond to their stimulations, hence requiring critical attention. Self-tracking apps, much like videogames, exist in a world of simulation, providing the user the pleasure of navigating, controlling and responding to representations on the screen. These self-tracking apps offer very specific play pleasures of passing time, working on the self and social interaction.

Contemporary studies on self-tracking draw upon and contribute to various discourses such as those on health, user interfaces, tracking experiences, data bodies, surveillance as well as sociological questions. Work on self-tracking has received attention from researchers working on health care and user experience (Lomborg & Frandsen 2016), on their uses in diagnosis, medicine and health (Hoy 2016), on the construction of the fit and healthy consumer (Fotopoulou and Kate 2016), on sociological perspectives on quantifying the self (Lupton 2016), on users and the possibilities of gamification (Maturo & Maretti 2018), on online learning and coaching in sports (Lentferink et al. 2017) and some specific studies on cycling and cycling communities' usage of self-tracking (Lupton, Pink et al. 2018). However, till now, understanding the mediation of the self through self-tracking technologies has not been pursued via studying the screen media or smartphone screens specifically as playful experiences. Pink and Fors (2017) have in fact made a case for and call upon researchers to

explore the new digital materialities emerging out of these self-tracking technologies and mobile communication use. They have tentatively signalled towards studying the enmeshment of screen media and self-tracking technologies, which is at once both a technical and cultural practice. Taking off, and even departing from some of the work done in this field, this paper is concerned with how the self gets mediated via the screen in the use of these self-tracking technologies, and the conditions in which this mediation takes place. Hence, I argue that there is a need for research on self-tracking technologies to be viewed from the lens of playful communication and screen media scholarship.

## Playful Media Experience

Since the screen is not just an object, the dual-ness of on-screen images/applications as well as viewing and handling of the screen make it a practice. Hence the smartphone screen is placed very uniquely in comparison to the other media objects in the landscape. An emerging question is that how do we categorise media experiences that do not neatly fit within the definitions of media consumption and use? Specifically new media devices and texts, which offer interactive pleasures and possibilities that can be thought of as play? Apart from games, there are emerging new media platforms that invoke very particular modes of use or consumption and can be referred to as playful. Play has been a significant term in research on gaming culture and use of computer technologies and media for robotics and programming. For instance, Levy (1994) has explored computer history by focusing on hackers and the development of computer games for play. Salen and Zimmerman (2003) have discussed game design fundamentals at length, outlining elements of psychological, social and meaningful play, among others. In separate chapters, they detail play as experience, as pleasure, as meaning, as narrative and as simulation. Dovey and Kennedy (2006) have situated and explored games within the field of cultural studies, and have argued that the concept of play can help redefine the way we create and consume culture. Games are considered playful activities as opposed to tasks which are purposive and instrumental in their use of technologies. Often attracting negative and anxious views, the concept of play in video games has provoked wild assumptions ranging from concerns of alienation and violence to addiction, among others. Hence, play has not received a sustained examination within the field of media studies, apart from work on video games (which has been recent), to use it as a frame of analysis for other media forms and texts. This paper argues that play can

then be used creatively to look at it as a mode of media consumption and as a cultural practice, specifically where there is *consumption* of new media forms not exclusively for instrumental *use* of digital technologies, which might be still considered ambiguous owning to their fleeting nature.

The concept of gamification is not entirely new but the contexts in which it is being adapted and adopted are certainly novel. The smartphone screen offers numerous possibilities for playful activities and communication. The concept of play is not only a characteristic of leisure, but can also be invoked in other contexts, such as tracking body parameters (self-tracking devices and applications). The smartphone screen lends itself very well to playful activity, because apart from being a communication device, it is also a playable device, one which we toy with when we are bored, for leisure and pleasure. The screen itself, and the apps within it offer unprecedented ways to pleasure ourselves. The concept of play on the smartphone screen with respect to media technologies, platforms and texts has the potential to complicate and even confuse the established silos in media and cultural studies, including but not limited to production/consumption, real/virtual, structure/agency, meaningful/banal and representation/simulation, to name a few.

Subsequently this study has used 'play' as a productive category to explore media experiences that do not neatly fit within the definitions of media consumption and use, to fully account for the interactive pleasures and possibilities of media play and playfulness. In what is considered one of the foundational texts on play, Huizinga (1955) attempted to recoup play from its relegation of being an inconsequential activity not warranting reflection. For him play and games can be serious and consequential activities which characterise human beings (*Humo Ludens*). For Huizinga though, play was a separate activity from real life, or outside of it, if you like. It was distinct from the material activities of life, taking place in intervals, and hence removed from the everyday temporal and spatial rhythms (such as playing a game of chess, working on puzzles, etc.). Play was then continuously temporary, but not ephemeral. The smartphone screen however transcends Huizinga's conceptualisation, because it has a powerful sense of continuity, creating an ambiguous sense of time and space, muddling the differences between the real and the imaginary and producing new intimacies between technologies, bodies and perception. Caillosis (1962) developed these ideas further

to differentiate between *ludus* and *paidia*, the former referring to rules and adherence to those rules and the latter invoking creativity, freedom and spontaneity in the act of play.

Raessens (2006) has also described this emerging phenomenon as 'ludification of culture', and this general process of integrating game-like elements in products and services for greater audience-user involvement has also been referred to as *gamification* (Deterding et al. 2011). It has similarly been argued that the play has now become a significant part of cultural economy (Rifkin 2000). In fact, moving away from the assumption and association of children with play, sociologist Zygmunt Bauman has argued that, 'The mark of postmodern adulthood is the willingness to embrace the game whole-heartedly, as children do' (Bauman 1995:99).

The ontological and epistemological problem of categorising media practices which cannot be neatly labelled as use or consumption have led to exploration of finding new frameworks, models and tools of examining contemporary media experiences. The concept of play then is emerging as a useful way to account for new modes of consumption, production, distribution, reception, engagement and re-use. A basic way to define play would be, 'free movement within a more rigid structure' (Salen and Zimmerman 2004:304) where play also has the possibility of overwhelming the larger structure. This definition accounts for two things, a) providing a useful concept to engage with contemporary media practices, and b) highlighting the dynamism of the interplay between agentic action (human) and controlling structures (human and non-human technology) in media experiences. Play is emerging as an everyday mode of living digital lives. Media technologies have increasingly ludic interfaces (Fuchs 2012) and users now possess great amounts of ludic literacy (Zagal 2010) or gaming literacy (Zimmerman 2009). One of the primary tensions that operate here then are how playful media has the possibilities of facilitating agentic action, but also stands the risk of being co-opted or controlled by a larger structure, as will be argued in subsequent chapters.

Hence it becomes desirable, and even urgent to examine the conceptual framework of play vis-à-vis the smartphone screen and its media applications and technologies. Since the idea of play also invokes a set of rules and structure, there is then power and control, choice and negotiation, structure and creativity, moves that can and cannot be done. The relationship

between the screen and the user then becomes more intimate, and strict distinctions between them untenable due to the texture and circuits of screen experience. So, how do the pleasures of play operate on screen? How is the audience-user implied and implicated in the formation of the screen experience? What are then the regimes which mediate the conditions of screen play experience?

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**Sensory Medium and Text**

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In examining the cultural canvas of emerging screen media practices and the spaces in which they are produced, consumed and circulated, this paper has approached the 'screen' as a sensory medium and text, which produces and activates not only meanings but also conscious and unconscious elements, as it has the power, both embodied and technological, to activate senses. The contemporary smartphone screen, in opposition to the mobile phone, computer and laptop produces interaction via the senses—of touch, of vision, of space, and of hearing, enabling and making possible our experience of the screen itself. Sensing is the ability to perceive, and technologies increasingly help in configuring and enabling this perception, thereby ordering sensory experiences. Humans have historically amplified and extended their senses by using instruments and artefacts such as telescopes, microscopes, microphones, etc. among other devices (Connor 2005). In fact, it is not limited to these devices becoming routes for us to merely sense the world, but they also produce newer sensations and sensing capabilities themselves. Connor further suggests that the camera for instance knows how to 'see' on its own, and the microphone knows when it 'hears' a sound, acting and sensing independently of the subject. These technologies also adapt and become intelligent over time, adapting to the changing environment. The ability to sense then gets repositioned by technologies. The smartphone screen is a popular and widespread technology of sensation which directs us towards new sites and practices of sensation. While a lot of what the smartphone screen does is invisible and virtual, it simulates and stimulates our senses in how we navigate our everyday worlds. Our sensory taxonomies have been rearranged, in many ways augmenting the sense of sight, touch and sound, and extending it via light, location and

mobility. The screen exists in and produces a multimedia sensorium[6], where the technology senses you and in turn you sense it through the screen. A very intuitive, real-time relationship between the screen and fingers and the palm develops, with streams of data flowing both ways. In fact, portable and wearable tech and screens have truly become an extension of the body. The touchscreen of the smartphone screens set it apart from other mediums such as that of the television or cinema. This tactile nature enables a kind of travelling through windows, much like how Friedberg (2006) has argued for 'seeing' as a cultural practice in her work on the window. Firstly, a user makes use of fingers to move through windows—which points towards the mobility that it offers; secondly, a user also has to touch in order to see, and finally how the screen is held and cradled in the hand itself which is how the kinetic and haptic converge. This is the temporal collapsing of making and viewing images or 'haptic experience of productivity' (Verhoeff 2012:84).

Using the smartphone screen is at once a physical and performative activity. Unlike the viewing practices like that of television or cinema, it is not just consuming images, but is image-making constantly; it is production and reception at the same time. It also requires massive amount of coordination—between fingers, eyes and hearing, screen and image, and space and time. Sensory experiences show that the image on the screen can be expanded with fingers, pinched to a smaller size, disappear with a flick and appear again with a combination of finger gestures. The concurrency of smartphone screen's ubiquity in human life at every time of the day and an intimate connection between users and their screens makes it a unique object of study. The screen in McLuhan's (1964) sense is literally an extension of humans, in a way in which our central nervous system is technologically extended by the screen—when users engage with the screen via multiple senses of touch, hearing and sight. Even our sense of space is affected by the screen, in our movement and positioning of our bodies, tilting of our heads, tracking of our hands. If the smartphone screen is a sensuous form of capital, technology and media, then what are the social and cultural processes that activate the physical responses of our senses in the mediation with the screen? The smartphone screen sensuously evokes activities of everyday life and hence calls for a study of the deep

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[6] The sensorium refers to all sensory faculties which humans might possess, in order for them to perceive and experience the world. Among others, Gibson (1966), Stoller (1989), Jackson (1983), Howes (1991) and Ong (1991) have variously theorised the sensorium as an apparatus of the body, providing cognitive abilities to understand and communicate the impressions of the world at large.

signification of sensation. Human interaction with smartphone devices via sensors for both incoming and outgoing information produces sensory experiences apart from the traditional five senses and there is invocation of other sensory experiences as well. The interaction between humans and smartphones is significant, because it is not just the stimulation of human senses but also the presence of mobile sensors themselves which together converge to produce, for instance, the sense of fitness and health, the sense of freedom to choose, the sense of beauty, the sense of proprioception (ability to perceive bodily movements) and the sense of limerence (love and affection), among others. How does the smartphone screen impact the sensorium by extending human senses?

## Notes from the Field: In-depth Interviews

The self-tracking app in its display of data offers the opportunity for playful exploration of various data sets, graphs and representation simulating the user's material and bodily world through a feedback loop, also creating a circuit between the fingers, the screen and the app. The structure of the app in the screen allows the user to exert some control in the data that is recorded, allowing them to creatively manipulate it, or bend the rules if you like. Hence the pleasures of self-tracking play on screen can at once be a force of incorporation while also providing the possibilities of active, creative and resistive acts. The aspect of gamification in self-tracking apps becomes apparent when the apps try to motivate and engage users by offering badges, medals, milestone achievements and even invite users to compete with others in their social circle. These figures are recorded in the data provided below –

**Table 1. Respondent Details**

| Respondent Pseudonym | Self-tracking duration | Gender | Age | Fitness Activities Tracked |
|---|---|---|---|---|
| Rishabh | 1 year | Male | 18 | Cycling, weight-lifting, steps |
| Saloni | 1.5 years | Female | 19 | Steps, running, walking |
| Aman | 4 years | Male | 25 | Sleep, walking, fitness activities, calories burnt |

| Akanksha | 3 years | Female | 30 | Running, cycling, steps |
|---|---|---|---|---|
| Kamal | 1 year | Male | 27 | Sleep, weigh-lifting, menstrual cycle |
| Sania | 2 years | Female | 25 | Sleep, steps, walking, fitness activities |
| Ritwik | 1 year | Male | 19 | Steps, calories burnt, food, running |
| Zoya | 1 year | Female | 18 | Swimming, running, fitness activities |
| Abhinav | 1.5 years | Male | 19 | Sleep, calories, steps, walking |
| Saurabh | 1 year | Male | 20 | Calories, steps |
| Richa | 2 years | Female | 21 | Cycling, running, sleep |
| Aravind | 2 years | Male | 21 | Walking, calories burnt, running, food, fitness activities |
| Aditya | 2.5 years | Male | 23 | Sleep, calories burnt, heart rate, food, walking, steps |
| Aditi | 3 years | Female | 24 | Heart rate, steps, walking, food, exercise |
| Heena | 5 years | Female | 30 | Running, sleep, calories burnt, menstrual cycle, food, steps |
| Anant | 3 years | Male | 29 | Sleep, weight training, fitness activities |
| Supriya | 1 year | Female | 23 | Food intake, steps, menstrual cycle |
| Shruti | 5 years | Female | 26 | Sleep, calories burnt, food, running, cycling, menstrual cycle |
| Srikanth | 1 year | Male | 21 | Running, calories burnt, steps, heart rate, food |
| Sayasha | 2 years | Female | 19 | Menstrual cycle, steps, food, walking |
| Ruhi | 1.5 years | Female | 18 | Steps, activity minutes, calories burnt, fitness activities |

**Table 2. Classification of type of user**

| Classification | Description |
|---|---|
| Light | Once or twice a day |
| Medium | More than two times a day, during an activity |
| Heavy | Multiple times a day |

**Table 3.  Motivation**

| Motivating Factor | Description |
|---|---|
| Knowledge | To know more about their body, parameters |
| Fitness | To feel encouraged to work out and be healthier |
| Achievement | Generated data giving a sense of accomplishment |
| Willpower | Helps pushing them to do better |
| Companion | Feels like a monitor and/or teacher |

**Table 4. Demotivation**

| Demotivating Factor | Description |
|---|---|
| Screen overuse | Smartphone screen overuse due to its ubiquitous part of majority of the tasks/activities of the day |
| Invasion of privacy | Fear of data being exploited |
| Fatigue | Technological fatigue from using the device and app |
| Doubt | Data does not always correspond to bodily feelings and sensations |
| Time | Requires investment of time |
| Charging | Batteries of smartwatches, fitness trackers need to be charged everyday |

| Paranoia | Becoming very obsessed with self-tracking and data |
|----------|---------------------------------------------------|

How do the users make sense of this data they produce, and how productive is it for them? In order to probe these concerns further I held in-depth unstructured interviews (refer to Table 1 for data and details). The discussion and observation focussed around how respondents on an everyday basis experienced wearable self-tracking technologies such as the smartwatch/fitness trackers as play while they went about their everyday activities, and how it was mediated via the smartphone screen. Here I have included people who used their smartphone screens as trackers as well, in addition to those who used smartwatches and wearable fitness trackers on the wrist.

This research also acknowledges that a lot of this digital mediation between the respondent and the smartphone screen is intangible, in the sense that sensorially it evokes certain bodily responses, understandings and feelings. I have used Pink's (2015) sensory ethnographic approach to make sense of respondent responses and how they articulate everyday experience of the smartphone screen and wearables. In face-to-face and digitally mediated interactions via online video platforms, I asked my respondents to also demonstrate how they used these apps and accessed this data on their smartphone screen while also letting them reflect on their everyday engagement with these devices and technologies and how it made them feel. My choice of respondents was not confined to a particular brand or model of device, but broadly those who dabbled with wearable technology such as smartwatches or fitness trackers.

My respondents included young men and women between the ages of 18 to 30, living in Delhi, studying as well as working professionally. Respondents were found through snowball sampling method of self-trackers in my extended network. Interviews were conducted between December 2019 and January 2021, and the list of respondents and their context of screen to monitor exercise, sleep, movement, activities, motivation and demotivation factors are mentioned in Tables 3 and 4. Their approach to use of screen media devices and self-

tracking technologies ranged from athletic use for training and monitoring, intermittent use for certain events and tracking some parameters, to those wanting more insight into their existing regimens and others who were hoping to be more 'active' with the use of these technologies. I used a qualitative interview approach, to explore the respondent's understanding of self-tracking as a form of play, and their sensory experiences. Using an open-ended approach, I could get a clearer description of how self-tracking is practiced with respondent's reflections on how they use it, and how it is embedded in their daily life. I have used pseudonyms for my participants, and wherever names are mentioned I draw on in-depth interviews which are either paraphrased or reproduced as direct quotes.

My respondents used a wide variety of wearable tech such as Garmin, Mi, Fitbit, Samsung, Apple, and Cult.in among others. Trackers can be categorised as 'heavy', 'medium' and 'light' (Table 2). For many respondents, these trackers, apart from being playful devices, were also a useful contraption, much like a tool at the moment. Respondents used it either through the day or during specific times of the day such as during exercise or an outdoor activity or post-sleep, depending on their needs.

For instance, Akanksha remarked how the first thing that she did in the morning was to ensure that her data was syncing with her smartphone, and then to go on to revisit previous day's data and graphs on her smartphone screen, benchmarking for her own self, how she must do better and not worse than the day before. Sania also spoke about how she would obsessively focus on her sleep behaviour on the screen from the previous night to understand how her sleep cycle went, comparing REM, light and heavy sleep parameters and getting anxious about it, even though she felt fairly fresh after her sleep. She mentioned how she discontinued this practice after a year and now only casually looks over the data. This suggests that screen media devices, and self-tracking technologies need to be seen as relational and contextual in how they frame our experiences but perhaps don't determine them.

There was a certain valorisation of 'feeling' active and fit while using these applications by most respondents. There have been concerns over how the data these applications produce, and the meanings they offer might parade as what Foucault (1984) calls 'truth regimes', by defining and dictating respondent actions and behaviour. However subjective experiences of the respondents suggests that this concern might be overstating the extent to how these apps

control and dictate behaviour, as some have said, that they switched off or removed the smartwatch/tracker intermittently. This was evident from personal narratives of Rishabh, Saloni and Aman, who reflected on how they interweaved app analysis with how they actually felt, by making sense of the numbers and data in a more agentic way.

In many instances, the functionality of the app and device was also not fully used. For instance, Ritwik, Zoya and Srikanth reported that they ignored one or more metric/function of the tracker they used. Heart-rate and food consumption and calories were one of the major metrics that were ignored or not taken very seriously by most respondents. Some also felt that the app statistics of their sleep cycle and pattern including light sleep, REM and deep sleep did not always correspond with how fresh and well-rested they felt the next day, thereby making them suspicious of those apps or unwilling to engage with that data or retrieve those figures.

The relaying of information and data back to the respondent is also of crucial interest here. This is in the realm of visuality and touch mediated via the device and the app on the smartphone screen. Parayil (2020:130) for instance has argued that the formation of visual media subjectivity is in fact deeply entangled with sensorial aspects of the user and society at large. He elaborates on the concept of 'sensorial continuity and break' for the subject in their engagement with various media technologies. He further adds that in the broader canvas of technology, media and sensory perception, the formation of visual subjectivities lies in the discursive field of media technologies. On the related issue of incorporating a touch-oriented approach to media studies, Parisi and Archer (2017) urge that in addition to visual culture and sound studies, the study of the sense of touch to build haptic media studies is an urgent requirement, owing to the proliferation of media technologies which work haptically, even though they might be initially activated visually and aurally.

The app haptically compels the user to respond to it within the mesh of steps available to reach figures, analysis and data about the user. This quantifies the self, leaving the qualitative analysis to the respondent. It reduces all other modes of knowing and seeing the body, the emotional for instance, the external factors, the mental capacities and other subjective experiences to the background. Smartphones have conditioned respondents to expect alerts, notifications and reminders when they interact with them. The question is, how do users experience these prompts which tell them when to sleep, eat or exercise? What are the users'

subjective experience of self-tracking via these wearable devices and apps? Heena for instance shared how in the initial few days of using the device and app, she would promptly get up when the app would notify that she had been sitting for too long. She also shared how she would not sleep before she completed the required 10,000 steps of the day, sometimes walking in her home in the night to get the requisite numbers. However, after a few months of usage, she muted the notifications, and only accessed it when she felt the need to.

For a lot of respondents it was the explicit element of play, such as the curiosity to use a new gadget for leisure and fun that prompted them to use these trackers and apps. The playable pleasure from seeing a graphical representation of their day was fascinating for some, or an award or a badge for completing certain number of steps certainly made them happy or lifted their mood or made them feel good about themselves. For a few, the integration of these apps with their social media accounts also made it easy for them to share their representation of self by sharing and posting graphs and data about how fit they were or how close they were to achieving their goals, or to present a side of their personality. Shruti for instance referred to and could be seen tapping into the larger discourse which places good value on taking care of one's health and being fit and committed to an active lifestyle. This discourse is circulated in popular culture at large, with recurrent references to clean eating, tracking habits and trying new workouts.

These apps also allow for self-tracking any time, starting from even the middle of the day, for those who are infrequent or not fully committed to its use. It is very similar to a social media app, as Abhinav said that he uses it sometimes in the day out of boredom just to scroll through it and learn things about himself. He also shared that the social component of the app encourages interaction via the app with others, with families constantly posting and updating their fitness levels on family chat groups on WhatsApp, building a new kind of sociality.

Is it the technology then which pulls in the respondent or is it the activities that are enabled by these technologies that resonates with them? In order to navigate this, I have attempted to decentre these technologies and then study how they are embedded in everyday life. Screen media such as the smartphone screen affords a particular kind of mobile, automated and sensory affect, leading to new emerging screen media practices, where the self-tracking technologies exist within the existing ecologies of what all can be done with the screen.

'*Feels like I ran a marathon*' – Srikanth after running on the treadmill, on a pre-fixed speed and time.

'*Feels good to have completed 10,000 steps today*' – Heena who had recently started using self-tracking features on her smartphone screen.

'*Feel like I am getting better every day*' – Ritwik who has been tracking his progress for over a year.

'*I feel like I'm so conditioned to wearing my fitness tracker, if it's not on my wrist, if I cannot sense it, I feel like I'm missing something. The feel of the strap on my wrist is a kind of reminder that I should take the stairs and not the lift for instance. If I have been sitting on my chair for long, I get a vibratory nudge (a notification) that I have been inactive for so and so minutes, that suddenly makes me get up and walk around the room.*' – Aditi reflecting on her use of self-tracking apps every day.

'*When I see someone wearing a fitness tracker, I automatically feel this connection, that yes this person is also concerned about their health and fitness.*' – Aditya

Often sensory experiences are difficult to define or verbalise, with most sentences beginning with 'I feel…'. In the conversations with my respondents, many struggled with articulating a description of sensations or their sensory experiences. How they experience and perceive the world is linked to the sensory aspects of that experience. Often this description is with reference points and metaphors to closely approximate how they feel, sensorially. Sensing then is developed via cultural, social, material and bodily practices. Berger (1972) described the ways in which we *see* and *look* at paintings, photographs and advertisements, showing us how visually we come to understand, know and experience the world. Latour (2004) has similarly discussed how perfumers are trained and made to learn the skill of smelling, and how their bodies learn and cultivate sensing. Howes (2003:29) has similarly urged anthropologists towards a 'sensual and sensory turn' for instance to account for sensory phenomenon and explanations to describe cultural formations and practices and how sensory experiences structure interactions.

The sensory and embodied nature of self-tracking practices, and the resultant production of the self is entangled with digital materialities of technology. The body comes to being through experiences, and senses are socio-culturally and materially produced, and in this case technologically mediated. How bodies come to being via technological mediation of the senses is at once about embodiment as much as it is about the materiality of the technological device. For instance, Merleau-Ponty (1968) saw human perception as embodied, and not cognitive, and his phenomenology of perception illustrated how tools become an extension of our sensory perception. Our body according to him learns to be a certain way, learning and picking up skills to interact with tools. Supriya shared how while she was conversant in using the smartphone screen, the tapping on the device, the double tap, the long press, the pinching of the screen—all of these actions to access various data sets on the screen were learnt by her over a period of time, where she intuitively picked up the gestures, which were eventually memorised by her hand and body. This reveals how perception travels from embodiment to the process of learning new skills (which the body learns by experiencing the world), or to take from Bourdieu (1990), the *habitus,* or a habitual state or way of being. This being is in relation to our relationships with others and the immediate contexts we are a part of. In this sense, we are structured, but as agents we also structure the structure. So, our practice and activities are a product of our relationship between our habitual state (*habitus*), and our position in the field (*capital*), within a particular social space (*field*) which involves learning of the skills to use the device and the screen, which is the acquisition of sensory knowledge and technical skills. These self-tracking technologies produce affective experiences, where they objectify user's sensual and perceptive responses, in their constitution of an affective experience. In that sense screen media is not just representational, but contextual, situational and experiential.

The users' bodily awareness of doing a physical activity gets activated by the screen and the fitness trackers. How does the data they generate make them feel? How is the process of generating and accessing this data sensory and affective? How does it feel to hold the screen in their hands? The complex relations of mediation in the web of humans, non-human actors, activities, bodies, devices, software, algorithms, data and the actual spaces, all combine to tap into and produce sensory experiences. They are multi-sensory, as they record a wide range of

sensory experiences, mediate them and then remediate them back to the users via the screen. Theses senses are data-fied, by telling users how they feel, what the numbers mean (or should mean), their feelings, health and general well-being and fitness. The app also teachers the user to train their senses, to know what it means to be active, to know how well or poorly they slept, and teach them how to perceive.

A significant reason for many respondents to use self-tracking was also emotional. The need to feel more physically active and good about themselves, the pleasure received from sports and the generation of data as evidence, the desire to have better health parameters were some of the reasons they shared. On some occasions, data gave pleasure and happiness at knowing progress, some other times it was stressful or even annoying, if it did not meet their expectations. The self-tracking apps on the smartphone screen and the devices are always digitally present, they are always active and on. They are always sensing the user's body, generating data in the background, they light up, they vibrate and produce heat—all sensory signals letting the body know of its existence. The screen senses the body, and the body is also in sense of the screen and the device it wears. Therefore, this data collection is *experienced* and *felt* by the body, as it is afforded mobility, physically and digitally.

While data is always conceived as intangible and not influencing the senses, the smartphone screen, the app, the device and its technology generates data which produces affective response from the body, in the form of embodied action.[2] It is a phenomenological process whereby the technology monitors and tracks the body and relays results, on the basis of which the body is made to act accordingly. There is a mediation between the smartphone screen and the body, which produces new ways of imagining and structuring the body, new meanings produced with respect to bodily functions and activities, which in turn generate more data. The human sensorium plays a crucial role in facilitating this mediation, as it is acted upon by the screen. The sensorium created between the body and the screen converts bodily perceptions into experiences which are then intercepted by the sensors on the wearable self-tracking technology and remodelled into data streams which are then communicated to the self-tracking device.[3] The body gets extended as an object which can be studied, monitored and calculated, with the help of the self-tracking technology, which acts as a bodily implant, and transmutes the body in a network of other bodies and objects.

Saloni revealed that there was an immediate sense of pleasure in signing up and feeling in control of her body in terms of whatever health issues she was concerned about. In that sense it is also a part of buying, owning and using new commodities which give pleasure, and how careful, attentive and regular we are with that new piece of technology. Aman revealed that for a few months, wearing the device, and accessing the application on screen was an activity which required his full attention and bodily awareness. Sania for instance shared how she slept wearing the self-tracker, and the knowledge of having completed about 1000 steps within an hour of waking up was revealing in terms of how the body works. It encouraged her to be more active through the day, for instance pushing herself to take stairs rather than an elevator, and making the effort to walk rather than take some means of transport. This made her acutely aware of how her body was reacting, by increasing her footstep count and activity minutes.

For a lot of my respondents the role played by tracking apps is that of a guide, taking them through their fitness journey, nudging them to do better, some even trying additional features such as training programs or personalising their goals. The steps feature is the most used and liked feature, which provided immediate quantifiable gratification, and included the vibration notification which congratulated them on completing the required number of steps a day. The congratulatory notification and badge of honour received made them feel jubilant, adding to their affective state. This is also the easiest and most relatable activity mentioned by my respondents. This also spawned other kinds of conversations, with their friends as well as related to the information they sought on the Internet, trying to know their body more intimately.

The app on the smartphone screen is a visual reminder of the self's progress and the bodies' progress. The haptic act of opening the app, touching the tabs to open required data sets, and scrolling through the day's activity and other parameters produces emotional affective response. Ruhi shared how she anticipated great results when opening the app, hoping to see a spectacular graph. The moment she saw fewer than expected activity minutes, it made her heart sink and she felt a knot in the stomach. She also confessed to excessively obsessing over the number of steps, to the point that before she went to sleep, she would walk inside the house in the night to log in the requisite 10,000 steps a day (as mentioned before many respondents reported doing this over a period of time). Looking at their results made them

feel that they could do better, so they pushed themselves further during a workout to meet their goals and ramp up their intensity.

Respondents often described 'feeling good' and more in 'control' of their bodies and lifestyle after using self-trackers. It would then be correct to argue that the self-tracking technologies embedded in the smartphone screen via the app make use of sensory regimes to track bodies, and to help people make sense of these practices. The sensory reaction to taking a certain number of steps in a day to meet the standard template is one example. The vibration and notification sends the user a sensory signal to get up and move, in many ways sending them sensing signals and automating their response. As argued in the previous section, some respondents over a period of time chose to not respond to these sensory signals, thereby negotiating their emotional affective response with the self-tracker. There is also contradiction of bodily senses, when Heena remarked that her Fitbit on some instances shows a certain amount of 'activity minutes' when she is certain that she was active for longer. Conversely, Saurabh pointed out that sometimes the number of steps shown contradicts his knowledge and experience of knowing that he had not undertaken that many steps. At this point, there is a dissonance and suspicion towards the technology, guided by the respondent's own bodily awareness and sensations of how they feel.

The graphical display of a week of activity and exercise, with time logs, intensity and rest duration, calories burnt and distance covered is a lived experience of the week and bodily movements. Foucault (1984) has cautioned about this validation or valorisation of bodily data which does not adequately represent the self, but is a part of the larger regimes of scientific truth. Do the statistics then alienate the users from actual bodily experience, or do they always correlate with bodily sensation? During one such in-depth interview, Srikanth who recently started using a smartwatch to track his fitness activities seemed unhappy with his footsteps count. He believed that he was not walking as much as the numbers were logging in, and was even distrusting about the number of calories he was spending. In his opinion, the app was overstating his progress, and the vibration alert congratulating him on completing 10,000 steps made him uneasy. This relationship between objective data which controls mobility, automates experiences and produces sensory relationships with the applications go on to produce such subjective experiences.

As respondents often demonstrated confusion over bodily data relayed back to them via the screen which was at variance with how they themselves experienced an activity, or last night's sleep, we can see a tension between respondent's embodied experiences and the data gathered and generated by the screen. This contradiction of inaccuracy between the senses and bodily perception and the device produced discontent, with some respondents raising questions of this automation of their actual experience. Hence this points out to my earlier argument that there cannot be an external totalising control over the body, for this body is experientially constituted. The body and screen relationship can be best understood as a dynamic process, where embodiment and technology are enmeshed into co-constituting and co-producing the idea of the self. The bodily experiences are then complemented by self-tracking technologies as a contextual influence. The sensorium created in the heterogenous entanglement and interaction between the body and the device and the screen suggests a socio-material coupling between them, where the self gets co-shaped by human and non-human actors, including human bodies' behaviour and signals, the software, the design and hardware of the device and technology. This is something that has also been put forward by Latour (2005) for instance, that the relational effects of the network effectuate the dynamism of all the actors, shifting their positions, with their identities getting constantly made and re-made.

These apps and devices also have a bearing on the users' understanding and knowledge of what their data means from their sensory responses, as they get to know their body better. For instance, Akanksha spoke about how she worked out in the day and alternatively in the evening to see how she performed at different times of the day. She figured that she was slower in the morning, as opposed to in the evening, when she was active for longer. If she had to burn the same number of calories in the morning she realised she had to lift heavier weights to compensate for how slow she moved in the morning. Similarly, Ruhi who primarily uses her smartphone app to track her footsteps when she goes for a walk twice a day, figured that she needed to walk faster in the evening for she did not burn the same amount of calories as she did in the morning. She also tracked her sleep cycle and pattern, and figured that she gets deep sleep only when she sleeps before 10 pm, and refrains from using her smartphone. A lot of applications and trackers also track menstrual health and cycles. Sayasha confessed that tracking her irregular cycle was emotionally stressful for her when she would get a screen notification that she had missed her period. Before this she

would have a fair idea of her cycle but never down to the day, but the app reminded her of that. This was an additional sensory dimension to their bodily experiences, beyond their bodily ability to ascertain and know. However, in accounts of some other respondents, constantly looking at the app hindered their workouts because they kept stopping to check in on the data being generated and hence preferred to rely more on how their body was feeling and sensing that activity, and only later reviewing the data

Finally, a few respondents who had been using self-tracking apps for more than n year confessed to becoming habitual to using the device and the app. Something similar has been argued by Merleau-Ponty (1968) when he spoke of how the body learns certain kinds of behaviours over a period of time, via a kind of training and habit. Bodily habits then underpin social and cultural memory, and the device and smartphone screen incorporate certain behaviours in the habits of the body. Hence the screen, the device and the app, all have combined to play a role in the constitution of an affective environment. The affective experience of self-tracking technology then organises the sensual and perceptual relations of the self with the body, mediated by the screen.

### In lieu of a Conclusion

The accounts of my respondents revealed the ways in which the screen mediates perception, action and conditions their experience playfully. Hence, I made an attempt to understand how humans and non-humans co-exist, co-evolve, inform each other, and how technologies such as self-tracking and the screen become a part of fashioning, and the ways of knowing and understanding the self. My respondent's accounts revealed how the screen shaped and reshaped their idea of the self, where some new aspects of the self were produced and revealed, while other aspects were concealed or reduced. The irony of technological innovation in artificial intelligence is that it claims to be superior, faster and better at processing than the human mind, but every subsequent development and update aspires to make it more human, more relatable and believable to the user. Hence in this paper I have attempted to tease out the complex relationship between the self and the playable (screen) technology.

Some research on self-tracking in various forms has argued that it is at heart, part of the neoliberal project which aims to create a self-optimised citizen, making people responsible for their own health and wellness, by monitoring their physiological parameters (Ajana 2017). While I partly agree with this idea, I also see self-tracking as a very intimate surveillance of the self, where respondents are actively and very consciously evolving and co-constituting these technologies, all couched and dressed as a form of play. There are moments where respondents reject or abandon the app and devices, or repurpose them for their own use. Anant who has been using an iWatch for many years revealed how he got tired of tracking and going through his bodily data, and even though he has not removed the app and doesn't sync his data anymore, he simply continues to use the smartwatch as a digital watch. This then also speaks to the ways in which respondents modify or appropriate screen media and modify the rules of play by repurposing the play-action. Hence the use of the screen and self-tracking technologies are situated in, but also resistant of, the larger digital technology market ecosystem in which they operate. And this exploration has revealed how the self gets mediated via the screen and the conditions within which this mediation takes place.

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