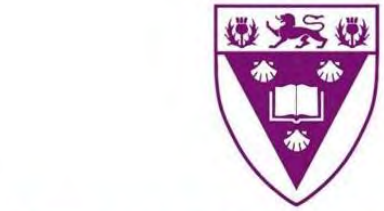

MASTERS THESIS: Cyborg bodies and the search for self: An ethnographic exploration of supportive technologies as tools to mitigate daily distresses

A thesis submitted in fulfilment of the requirements for the degree of Social Science Masters of Anthropology at RHODES UNIVERSITY By Lebogang Zandile Kibane

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Abstract

This dissertation explores the ways in which individuals embody cyborg realities through engaging with technological aids. It examines how these interactions have the potential to bring to light new ways of thinking about and experiencing daily distresses. Pertinent human technology interaction was observed through an overarching cyborg lens, embedded in posthumanist thought. The study began with a "human as cyborg" ontology that sought to impress upon readers the intimacy with which technology is entangled in our lives. It aimed to call to attention the use of the cyborg myth as it is concerned with "transgressed boundaries, potent fusions, and dangerous possibilities" (Haraway, 1985:7). The study followed a cyber ethnographic strategy, where cyber ethnography refers to a virtual research method that observes social and cultural phenomena that are mediated by online interactions. Data was collected over a period of eight months, beginning in December 2020 and ending in July 2021. It was collected through the following means: a short self-administered online questionnaire, computer mediated in-depth interviews, and group interviews. I also kept a journal on reflections of my own use of these supportive technologies.

After analysing the results of in-depth interviews with nine primary participants and twenty-six online questionnaires, the following key themes were brought to light: Firstly, the tethered self, or cyborg self, engages in evolved acts of 'care of the self' mitigated through supportive technology use. Secondly, access to new technologies brings about new ways of performing the self. Thirdly, engagement with supportive technologies provides opportunity for aiding distress in the way of encouraging self-reflective and self-interrogation behaviours as seen in mobile health app use. This constant self-interrogation behaviour in turn develops a kind of technological dependency, characterized by escapism and evolved methods of self-soothing. Lastly, exploring the use of technology to aid distress revealed that technologies generate equal opportunities for improved well-being, as they do for a decreased sense of connectedness and security. The research demonstrates that supportive technology use is entangled in the fabric of our everyday lives. Through it we fashion our identities, alleviate distress, evade distress, and discover new causes of distress.

Acknowledgements

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DECLARATION

I, Lebogang Zandile Kibane, declare that this research is a result of my own work, except where otherwise stated. I have given the full acknowledgement of the sources referred to in the text. This study has not been submitted before for any degree or examination at any university.

Lebogang Zandile Kibane (December 2021)

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Table of the mobile health apps and social media platforms mentioned in the thesis.

Name of technological aid	*Brief Description*
7 Cups	A website which provides online therapy and free support to people experiencing emotional distress by connecting them with trained listeners.
Calm	A sleep and meditation app.
Dipsea	An app that uses erotic storytelling to aid in sexual wellbeing.
Fabulous	A daily planner and self-care habit tracking app.
Gratitude	An app that encourages you to write about what you feel grateful for.
Headspace	A mindful meditation app.
Instagram	A photo and video sharing social networking service.
Samsung Health	Samsung Health is a free application developed by Samsung that serves to track various aspects of daily life contributing to wellbeing such as physical activity, diet, and sleep
Snapchat	A multimedia instant messaging app.
TikTok	A video-focused social networking service, where users can share and create short form videos.
YouTube	A video sharing website where registered users can upload and share videos with anyone able to access the site.
YouVersion Bible	It creates biblically centred, culturally relevant experiences that encourage and

	challenge people to seek God throughout each day.
Woebot	An AI-powered mental health chatbot centred app.

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Chapter 1

Introduction and Methodology

Figure 1

The development of complex technologies has seen an exponential increase in their daily use across the world. Young people, transfixed by their mobile devices, often mediate personal issues through interaction with such devices. Various applications have been developed to assist young people with managing and monitoring areas of their lives, including romantic possibilities, educational opportunities, and health and well-being. The primary interest of this study was to explore the interface between mental health related technologies and attempts to mitigate mental distress. It is important to note that this study uses the term 'mental distress' in place of psychological diagnostic language to define or describe feelings of discomfort experienced by the participants. This was a deliberate attempt to avoid funnelling ways of experiencing, conceptualizing and dealing with uncomfortable feelings through a psychological lens right from the onset. Psychological diagnostic language has only been used when provided by the participant. This opening chapter sets out the background, context, theoretical framework, thesis objectives, as well as the research methods used in addressing these objectives as these were initially envisaged and later adapted due to what became foregrounded in the research.

Background and context

In order to provide a holistic exploration of the human technology interface, one must begin with and settle on a manner of conceptualizing technology. The dominant western narrative of technology can be divided into two pervasive notions, namely technological somnambulism and technological determinism. In technological somnambulism, the relationship between humans and technology is a simple matter of use aimed at producing a predetermined outcome (Pfaffenberger, 1988). Here, technology appears as a "morally and ethically neutral" agent (Pfaffenberger, 1988: 238). In contrast, technological determinism gives undue agency to technology (Pfaffenberger, 1988:239). Here, technology is viewed as a powerful force which "dictates the patterns of human social and cultural life" (Pfaffenberger, 1988: 239). Such a definition assumes that technological processes "induce progress autonomously" (Escobar, Hess, Licha, Sibley, Strathern, & Sutz, 1994: 211). Both views of technology seem to evade critical engagement with the expansive milieu in which the technologies are being produced and used. In addition, these definitions when applied to health-related technologies appear even more lacking in their ability to encompass the complex social parameter within which the

devices are produced and used. By rejecting a "linear view of technological change," a view which is largely perpetuated in anthropological studies, researchers can begin to develop a view of both science and technology that is born out of social constructivism (Escobar *et al*., 1994: 212), a view that is better suited to addressing and assessing the nuances of health-related technologies in a contemporary setting. This position dethrones the pervasive technological determinism of previous studies by illuminating the inherent social processes that are integral to technological processes (Escobar *et al*., 1994: 212). The study illuminated the complex technological matrix within which technologies are used, particularly as it pertains to understanding and mediating distress. The 'injured' self is extended into the virtual in hopes to be made whole.

Gillespie, Best and O'Neill (2012: 2) argue that human beings can be considered "natural born cyborgs" as they are inextricably fixed to their material possessions and their various technologies. Hayles (2008: 3) extends this notion by suggesting that the body is the first form of prosthesis, so using various artefacts, like our mobile phones and the applications they possess, to aid or extend human capabilities is "a continuation of a process that began before we were born". At present, our minds and bodies are engaged in an eternal dance with technology, influencing the way the body experiences and is experienced by the world and by extension the way in which individuals navigate mental distresses (Gleason, 2014:126). A large proportion of the human population makes use of life-saving protheses such as "electronic pacemakers, artificial joints, drug-implant systems, implanted corneal lenses, and artificial skin." (Gleason, 2014:126). Many more individuals rely on an intimate daily interaction with technology in their professional life. For example, a neurosurgeon using fibre optic microscopy during surgery, a farmer using a tractor, and a photographer using a camera. In this sense, the mobile phone, or more specifically mobile health apps, can be envisioned as possible forms of prosthesis that aid those in distress to manage daily discomforts. It is suggested that the inextricable bond between human and technology, or human as cyborg, offers new ways of existing, new ways of thinking, and new ways of defining oneself.

Thesis Objectives

This study initially sought to explore the ways in which individuals can embody cyborg realities through engaging with mobile health apps, and how these interactions have the

potential to bring to light new ways of thinking about and experiencing daily distresses. Through meaningful interaction with participants, the nature of the study began to evolve from an initial focus that only sought to assess mHealth apps, to attempting to understand how supportive technologies, including mHealth apps, social media platforms, and open access websites, provides new and inventive ways of mitigating daily distresses. This was a particularly important adaption as it sought to recognize that millennials are navigating technologically rich environments that often results in media- or technology multitasking. This makes it incredibly difficult to study any isolated behaviour without recognizing the constant exposure to all platforms. Although the margin may have shifted slightly, the initial research questions still remains the same. The study's **main research question** was thus:

> How do the prosthetic possibilities of supportive technologies enable individuals experiencing daily distresses to enact ways of being in the world that challenge traditional notions of marginality and otherness?

Specifically, I aimed to ask the following questions:

- If supportive technologies are viewed as a form of prosthesis, how does this affect views of human nature and questions surrounding the mind-body dichotomy?
- In what ways do supportive technologies extend human capabilities, and how does this influence binaries around bodily function?
- Is it possible that a human as cyborg ontology may dismantle existing binaries, while simultaneously creating new, evolved binaries?
- How does new technologies offer contemporary ways, both positive and negative, for individuals to construct themselves within the growing "techno-biocultural" environment?

Theoretical framework

Feelings of distress create a myriad of inter and intra dependent connections with "other humans, technologies, non-human entities, communication streams, and people and non-peopled networks" (Goodley, Lawthom, & Cole, 2014: 352) - connections that both affirm and reject cultural, social, and political ways-of-being in the world (Goodley *et al*., 2014: 354). Posthumanism attempts to draw attention to these connections while moving across binaries of

self/other, nature/technology and human/machine (Goodley *et al*., 2014: 354). For these reasons, posthuman studies tend to take an Actor Network Theory (ANT) approach. Latour's ANT is often paired with posthuman or cyborg studies due to its decentralization of the role of the human (Gibson, 2015; Kipnis, 2015; Hallenbeck, 2012). As such, non-human actors or actants carry the "same agency or the potential to create change in the network", where a network refers to "a map of associations being made by traces that are left behind by actors" (Latour, 2005: 71). An ANT approach does not begin with a predetermined social outcome, but rather works to assess how a particular outcome is achieved through a detailed assessment of the network within which each actant is produced. Initially, this study sought to adopt ANT as the primary theoretical framework given its ability to evade socially and culturally constructed binaries around the human and technology interaction. However, once I began to engage with my participants on their use of these supportive technologies it became clear that this human technology interaction ought to be observed through the aforementioned cyborg lens, embedded in posthumanist thought. For the purpose of this study, it was more fitting to begin with a "human as cyborg" ontology which sort to impress upon thinkers the intimacy with which technology is entangled in our lives, but also to call attention to the use of the cyborg myth as it is concerned with "transgressed boundaries, potent fusions, and dangerous possibilities" (Haraway, 1985: 7). While ANT sought to bring attention to the networks of non-human and human actants in the interaction between human and technology, the cyborg lens serves to holy dismantle the existing boundaries between the two, making the latter a more fitting theoretical framework for this study.

Methodology

The complex and multifaceted nature of the notion of human as cyborg, rooted in posthumanist thought, requires a methodology that allows for the analysis of complex networks in a way that does not separate the natural from the technological, while simultaneously acknowledging an equal sense of agency to all actors involved (Nimmo, 2011: 112). Ethnography has been considered the most suited form of data collection for posthuman studies, as it is a "deliberately messy methodology" (Nimmo, 2011: 113). Ethnography allows the researcher to combine an analysis of the social, economic and political dimensions of modernisation with an (equal) acknowledgement of the roles played by diverse nonhuman actors (Nimmo, 2011:116).

As a result, the study followed a cyber ethnographic strategy, where cyber ethnography refers to a virtual research method that observes social and cultural phenomena that are mediated by online interactions (Domínguez Figaredo, Beaulieu, Estalella, Cruz, Schnettler, & Read, 2007). Data was collected through the following means: a short self-administered onlinequestionnaire, computer mediated in-depth interviews, and group interviews. I also kept a journal of reflections of my own use of these supportive technologies. What began as a reflective journal evolved into a kind of self-narrative or confessional tale akin to the experiences shared by my primary participants. These autoethnographies did not focus solely on the ethnographer but sought to understand others through the self. Thus, the self, the ethnographer, is an active subject in the process and "a lens to look through to gain an understanding of a societal culture" (Chang, 2016: 49). The journal allowed me to reflect on the research process in a way that recognized my position as both participant and ethnographer.Not only did I note my feelings and perspectives in the 'field', I noted how these perspectivesbegan to influence my interactions with these supportive technologies. The interview schedulesdrawn up for the study included semi-structured and open-ended questions intended to understand better the kinds of capacities and ways of being that apps offer. The questions focused on information related to the development of the self in a technological era, specificallyhow technology can offer relief from distress while extending one's capabilities in ways that transcend binaries. Each interview was transcribed using a secure transcription app.

The group interviews were conducted once the individual interviews had reached saturation. Key themes emerging out of the initial individual interviews acted as talking points in the group interviews. These included, but were not limited to: apps as a necessary distraction from the weight of one's everyday reality; apps as a means of inventing the self; apps as a means of remedying discomfort, and lastly fears around generational 'cyborgism'. In total, three group interviews were conducted, with each group consisting of three participants.

Sampling and recruitment strategies

The study initially used non-probability sampling, specifically purposive sampling strategies. The aim of the use of purposive sampling was to attain a diverse pool of participants, while still maintaining a size that would allow me to build strong connections with the participants and gather detailed accounts. Snowball sampling was later used once it became clear that the

target population was “hard-to-find” because its members were not restricted to a particular physical or cyber location (Bernard, 2017:194). The maximum number of participants needed for this study was determined using both code and meaning saturation, which can be defined as the point at which data collection no longer offers new information (Dworkin, 2012:1319). This was achieved at nine primary participants, including myself, and twenty-six online questionnaires.

The initial point of recruitment was to create an online post advertising the study and detailing the purpose of the study. This post was made available on a number of different social media platforms. Attached to this post was a link to the short self-administered online questionnaire, using a private google forms platform. The questionnaire asked potential participants non-invasive demographic questions, as well as asked them to outline their reasons for using supportive technologies. It was also used as a tool to ascertain if the individuals could be classified as high risk due to severe pre-diagnosed mental health challenges. Once individuals began to fill in the questionnaire, my supervisor and I assessed each response and selected participants who together provided a diverse sample with the lowest level of potential health risk.

Within the first few weeks of posting the study online, a number of national mental health social media platforms shared the study on their own pages. The post was shared on the Mental Health Support and Awareness Facebook page, the Mental Health South Africa Instagram page, and the Mental Health Network Instagram page. The questionnaire, however, received no responses. As noted above, the self-administered questionnaire was meant to be the initial point of recruitment, so the lack of response to it swiftly called to my attention the new circumstance within which my study was taking place. The Covid-19 pandemic, a novel coronavirus that is structurally related to the virus that causes severe acute respiratory syndrome, was recognized in December 2019 (Fauci, Lane & Redfield, 2020: 1). The virus first made its appearance in South Africa in March 2020, and due to a rapid increase of cases in the days that followed, the South African Government imposed a three-week nationwide lockdown starting on 26 March. This initial lockdown was later extended to 30 April. The lockdown imposed restrictions on the movement of South African people. “Shops, restaurants and non-essential businesses were closed, the population was only authorised to leave home for essential grocery shopping and medical reasons; no social, outdoors activities, sports or dog-walking were authorised, and a total ban on alcohol and cigarettes was imposed” (Stiegler & Bouchard, 2020: 696).

Both the restrictive lockdown measures and the legitimate fear for one's health and safety posed real, and on-going, challenges to producing and conducting research. My initial thoughtprocess presumed that conducting a cyber ethnography would mitigate the limitations placed on conducting research by the pandemic, but it did not take into account how the pandemic might have influenced participants' willingness to engage in new research. After several weeksof posting the self-administered questionnaire to no avail, I made contact with the administrative persons in charge of the various mental health social platforms to glean the perspectives of their participants/followers post Covid-19. I received an insightful response from the admin individual of a small, private mental health support group on Facebook. The individuals' thoughts were as follows:

> On the one hand we are very private people. People are very sensitive, especially during Covid. People are struggling. I have helped people on the edge of suicide. I am a Social Scientist myself. I believe in empirical research so I would like to help you, but it will need to come from the permission of individual people as opposed to the group as a whole (Mental Health support group admin, 13 January 2021).

Although I was excited by the individual's willingness to help me with my research, the conversation suggested a need to pivot my initial requirement strategy. It became clear to me that due to the mental health implications of having to navigate through an emerging global pandemic, individuals felt less inclined to interact with the unfamiliar. This resulted in a heavier focus on the use of snowball sampling in order to attract participants. I used my close network of friends and family to distribute my online post, with the self-administered questionnaire attached, on their private social platforms. By doing so, I reduced the sense of interacting with the unfamiliar and began to see a number of willing participants emerge. Through this shift in focus, I was able not only to find participants who were willing to participate in the in-depth interviews, but I also found participants who were willing to share key demographic information in the self-administered online questionnaire.

Research Methods

Having begun the data collection process several months into Covid-19, the proposed data collection methods needed to take on new and inventive forms. I conducted in-depth interviews over a period of eight months, beginning in December 2020 and ending in July 2021. The

interviews took place over various virtual platforms, including WhatsApp, Zoom, and Google Meets, per the participants' preferences. The use of virtual platforms to conduct qualitative research methods goes beyond the current global pandemic context. In the past, technology for remote interviews focused on tools like email and chat/messenger software (McCoyd & Kerson, 2006; Olivero & Lunt, 2004; Opdenakker, 2006). More recent scholarship has examined videoconferencing software that allows for synchronous exchanges (Archibald *et al*., 2019; Deakin & Wakefield, 2013; Deutsch, 2011; Glassmeyer & Dibbs, 2012; Janghorban *et al*., 2014; Wilson, 2011).

Covid-19 created an environment that calls for immediate, yet sophisticated, engagement with these technologies. This manner of interviewing brought with it unexpected consequences. Conducting interviews through a virtual platform immediately creates a physical barrier between the researcher and the participant, negatively impacting one's ability to establish genuine rapport. In order to overcome this, the researcher encouraged a continuous exchange of WhatsApp messages and emails prior to and after the virtual interviews, a technique which has been noted to assist the development of rapport (Seitz, 2019; Deakin & Wakefield, 2013). I found that having attained primary participants through my close network of friends and family profoundly reduced some of the fears around establishing rapport over virtual platforms. Participants were eager and willing to engage and as such we were able to cultivate strong genuine rapport which extends past the data collection period.

Virtual interviews also highlighted issues around unequal access to virtual devices, tools, and internet connectivity (O'Connor *et al*., 2008; Sy *et al*., 2020). Given the technological nature of the study, every participant, by default, had access to a technological device. However, participants did not share equal access to uninterrupted reliable internet connectivity, making virtual interviews a strenuous task. According to Roberts, Pavlakis, and Richards (2021: 2), poor connectivity or "dropped" calls may negatively impact rapport. Thankfully, I did not experience a large number of connectivity issues during the virtual interviews, but where they did occur it notably effected the flow of the discussion and shifted both my and the participant's attention. This was remedied by either rescheduling the session, depending on what was causing the connectivity issue, or switching from one virtual platform to another which may have a better connection. On a positive note, conducting interviews over virtual platforms drastically reduced geographic limitations, allowing for engagement with participants from all over the country (Archibald *et al*., 2019; Dodds & Hess, 2020). This advantage became

particularly apparent in the virtual group interviews, which often included participants from various parts of the country.

Once all of the data was collected, I used multi-case analysis to assess the interview data (Merriam, 2009:204). I explored individual interviews separately and assigned descriptive codes to the excerpts that speak to the research questions (Merriam, 2009). The descriptive codes allowed me to create categories that I later translated into themes that focus on specific research questions (Merriam, 2009:179). I then used cross-case analysis to assess the data across all the interviews to develop general themes that are representative of the participants as a group (Merriam, 2009). This was all mediated through NVivo, which is a qualitative data analysis computer software.

Lastly, I kept a diary or reflective journal which allowed me to explore my experience as both interlocutor and ethnographer, particularly how this is enacted in my use of supportive technologies. At the time of the research study, I was making use of the Samsung Health App, YouTube and Instagram affirmation videos. Through self-narratives I was able to reflect on the ways in which, in cyborg fashion, the supportive technologies have augmented my capacities and reshaped my sense of self. The journal also served as a way to reflect on my interactions with participants and thoughts when conducting online observations.

Ethical Concerns

The research questions, methods, and approaches to data collection in anthropological research often place the researcher and their participants in "close and often lengthy associations" throughout the data collection period, and in the case of ethnographic research past this period (Anthropology Southern Africa, 2004: 1). Our primary obligations as researchers are to treat our research participants as subjects and not as the objects of research, and "to ensure our work meets the highest standards of scholarly integrity and accountability" (Anthropology Southern Africa, 2004: 1). According to the Anthropology Southern Africa (2004: 1) guidelines for conducting ethical research,

> The nature of our research relationships and the fact that anthropologists often work in contexts characterised by differential access to power and resources imposes upon us a grave responsibility to consider carefully the character of our research and its likely effects for those who participate in it, particularly those in situations of reduced or

> limited power. Consequently, we need always to be mindful that our research can detrimentally affect our research participants or lead to their feeling they have been harmed by it.

As researchers we have a responsibility to engage only in research projects that will positively impact the lives of our research participants. This research project has adhered to the ethical standards of research as stipulated by Rhodes University, including informed consent, anonymity for participants, gatekeeper permission where appropriate, and secure protection of data. The study has also followed the following ethical guidelines provide by the Anthropology Southern Africa (2004): protecting participant and anticipating harm, informed consent, vulnerable persons, information dissemination, intellectual property, and returns from research.

The following ethical considerations were put into place in alignment with the above guidelines. On all occasions participants were sent an electronic copy of the consent form[1] via email, with the ethical approval document attainted from the university attached, prior to their participation. The contents of the consent form were then verbally reiterated to the participant by the researcher on the first day of the interviews to ensure that they have understood what was enclosed. It is here that participants gave verbal consent to participate in the study as well as verbal consent to allow for the audio recording of the interviews. In order to protect the true identities of the participants pseudonyms were used in place of the participants' real names. In addition, any details that may identify participants, for instances one's place of employment and job title, were only used with the participant's permission. Throughout the production of this thesis participants received written works pertaining to our discussions in order to fact check and ensure that they were happy with the way their thoughts and opinions had been represented. Lastly, each participant was given the option to request a soft copy of the final thesis before it was submitted for final review as well as after it has been submitted if they wish to keep a copy.

[1] Appendix A

In addition to the one-on-one in-depth interviews and the group interviews, twenty-six self-administered online questionnaires were collected. The self-administered questionnaires served as a means to both recruit primary participants as well as provide key demographic information around the issues at hand. As stated above, six of the primary participants were recruited from this questionnaire. It is important to note that the sampling strategies for this study were solely non-probability, so the demographic data gleaned from the questionnaire cannot be generalized to the target population. However, the data from the table created from responses to the questionnaire are summarized here and reflect something of those who were prepared to engage with the postings on various websites. The participants of the self-administered questionnaire were given numerical keys to ensure that their identity remains protected. The questionnaire was first made accessible and published on public platforms in December 2020. It remained open and accessible for the duration of the data collection period. In that time, it obtained a total of twenty-six responses[2]. The respondents ages ranged from nineteen to thirty-eight, with the majority being over twenty and under thirty. Twenty-one of the respondents were female, while five were male, and the questionnaire obtained one gender-nonconforming respondent. Interestingly, of the twenty-six respondents, twenty-one identified as Black. The respondents noted using a wide range of mhealth apps. The following apps were used the most by the respondents: Headspace, Calm, Instagram, and YouTube**.**

The research participants

In conducting this study, I continuously met with eight individuals virtually over a period of eight months. Six of the eight participants were recruited using the self-administered online questionnaire, while two were recruited solely by means of snowball sampling. The following descriptions act as short portraits of the participants, written from my own perspective. These accounts attempt to provide an evocative image of each individual while cementing their presence in the thesis as larger than the notion of 'participant'. I attempt to recognize each individual as a holistic being. Their participation in this study highlights a small fraction of that being. In addition, the individuals have been given pseudonyms to protect their identity.

> **Lesedi** is a close family member living in the busy Johannesburg region. He is a twenty-five-year-old young man at the start of a promising career as an IT specialist. In the years that I have known Lesedi, he has never been one to shy away from difficult conversations.

[2] See appendix C for complete response to the self-administered questionnaires.

His sunny disposition and undeniable wit were invaluable contributions to the general mood of the interviews. His initial interaction with health apps began in 2016 due to feelings brought on by the loss of his grandmother. During this time, he began following two Facebook support groups for individuals dealing with feelings of depression and anxiety. This led him to discover the mHealth app called 7 cups, which he defined as a web application that "uses artificial intelligence (AI) to render the service of soothing someone who has a broken heart".

Mpho is a delightful, self-contained thirty-eight-year-old woman who is currently a part-time student majoring in psychology. She enjoys the company of close friends and family, but is happiest when she is home alone with a good book. Although she is an avid app user, she finds comfort mostly in confiding with people in the close-knit circle around her. Her initial use of the mobile health app called Woebot came as a recommendation from a friend. She describes the app as creating a therapy-like environment where one could express one's feelings and emotions and receive a pre-programed response, with either suggestions on how to move forward, or prompts to encourage inward reflection.

Liam and I have been acquainted through a mutual friend for over six years, and in that time I have grown to understand and appreciate his bashful and reserved nature. He is a twenty-three-year-old man with notable creative talents, living in the city of Cape Town. He has a degree in graphic design and is presently doing freelance work in his field. Our interactions took on new creative forms in order to accommodate his severe social anxiety. Liam stated that the mobile health apps that he used in the past didn't result in "much success with addressing [his] issues." He stated that the initial apps he used were to help curb an addiction and to allow him to express his thoughts and feelings to a trained psychologist. These apps, however, had not addressed Liam's needs adequately. During the research period, Liam used apps that helped him manage his physical exercise regimen, as well as social media apps that allowed him the necessary "escape from everyday life".

Enzokuhle is a cheerful twenty-four-year-old woman living and working in Gqeberha. She has an infectious sense of humour. She has a long history of using mHealth apps for a variety of issues. At the time of the study, she made use of the following apps: Calm, a sleep and meditation app, YouVersion Bible an app that helps users listen to and read the bible on the go, Elevate, an app for developing certain cognitive functions in the brain, dipsea, an app that attempts to facilitate sexual wellness, and, lastly, Flow, an app that helps

woman track their menstrual cycle. She finds comfort in her religious faith above all else, and often finds herself returning to Bible scripture in difficult times. The app helps her mitigate feelings of distress through providing a video tutorial, a sermon, a music video, songs, and even breathing exercises.

Siphesihle is a nineteen-year-old gender-nonconforming individual with a gentle disposition. They turned to mHealth apps for a very short period of time in an attempt to remedy anxious feelings around productivity in the workspace. Siphesihle notes social media apps as adding to these anxious feelings. They made use of a mHeath app called Fabulous. They described this app as "a self-help app that uses behavioural science to help people reach their daily goals by emphasising on the importance of routines and good physical health".

Amahle has a quiet, contemplative demeanor. Interestingly, Amahle uses social media apps as a means of mitigating feelings of distress, namely TikTok, Snapchat, and YouTube. The apps offer her a much-needed distraction from reality. Without them she experiences intrusive thoughts around self-doubt, which have in the past resulted in anxiety attacks. In the past, she tried to use a mHealth app called Calm but found that it was not effective.

Noma is a beautiful, soft-spoken young woman whom I became acquainted with through Lesedi. She is currently working as an IT engineering Intern. Much of her mHealth app use has been through the advice of a friend. She noted that the apps help reduce feelings of work-related anxiety.

Nyasha is exceptionally well-read. She expressed an affinity with the study of linguistics and a passionate interest in reading classical literature. Through in-patient therapy she has been diagnosed with borderline personality disorder and clinical depression, which she credits to a chemical imbalance in the brain. She is not an avid app user, but her perspectives on the impact of technology on mental health and general wellbeing were crucial to the research.

Lebo. I, through the use of a reflective journal, reflect on my own use of supportive technologies and the emotions I experience brought on by the research process as a whole. Through this process it becomes apparent that my position as ethnographer begins to spill into the role of active participant. As such, I see the need to provide a brief description of my role as participant. I am a twenty-four-year-old woman living in the lively city of Johannesburg. My use of mHealth apps dates back to 2015 and is informed by my

diagnosed mental health concerns. Having been diagnosed with both an anxiety and depressive disorder, I constantly need to navigate periods of very low lows and anxiety-filled productive highs. In the past, I have made use of Headspace and the Calm app, but at the time of the study I was using the Samsung Health App, YouTube, and Instagram affirmation videos to mitigate my feelings of distress.

Significance of the study

The use of supportive technologies to mitigate various daily distresses is a fairly new area of study. However, the increased number of smartphone users, and therefore mobile app users, has created a need to assess these apps (Merry *et al*., 2012, Rizvi *et al*., 2016, Repetto *et al*., 2013). Anthropology recognizes that in many instances, issues of social reproduction, culture, religion and self are facilitated and catalysed by technologies (Coleman, 2010: 489). However, a review or study of supportive technologies in anthropology is lacking. This study hoped to begin to fill this gap whilst freeing anthropology from its history of technological determinism, by adopting a posthuman perspective - a perspective that can move across traditional binaries of human function while observing, equally, the role of human and nonhuman entities in creating meaning.

Thesis outline

The thesis is made up a single introductory chapter, a literature review and three ethnographic chapters and a discussion section. Each ethnographic chapter outlines a key analytical theme of the study as gleaned from a critical analysis of the in-depth interviews and online questionnaires. In Chapter 1, the methodology applied in this study is discussed and explained. The goals of this research, the research question, procedures, and the technique are outlined. Additionally, the theoretical framework within which the data is interpreted is defined.

Chapter 2 provides an overview of the existing literature relating to the issue of supportive technology use. It interrogates the cyborgness of the millennial generation by providing an overview of literature regarding posthumanism and distress.

Chapter 3 provides an overview of the nature of the relationship that millennials have with their technological aids by exploring how the tethered self, or the virtual self, engages in acts of self-care

Chapter 4 explores two broad perspectives related to fears around technological engagement. It interrogates technophobia and technostress as they relate to using technological aids to mitigate feelings of distress.

Chapter 5 explores the use of supportive technologies for the sole purpose of escaping reality. It does so by hypothesising that supportive technologies act as pacifiers for young adults.

The discussion chapter concludes the research by providing an overview of the study, outlining the researcher's final thoughts and addressing the limitations of the study.

Chapter 2

We are all cyborgs: A Literature Review

Figure 2

Anthropology and technology

In 2011, 17 percent of U.S. adults used their phones to look up health and medical information, and an estimated 44 million health applications were downloaded (Gaggioli & Riva, 2013: 141). By 2016, there were over 250 000 health apps and more than 10 000 "mental-health"-specific ones (McNiel & Binder, 2018: 205). These health-specific apps are often developed on psychological therapy methods, usually cognitive-behavioral therapies (CBT) as well as contemporary principles of CBT which include mindfulness and acceptance and commitment therapy (ACT). For this reason, studies around their efficacy are framed within a psychological or psychiatric context. (Ahtinen, Mattila, Välkkynen, Kaipainen, Vanhala, Ermes, Sairanen, Myllymäki, & Lappalainen, 2013: 2).

Although a few clinical studies of the apps suggest a lack of efficacy, 11 percent of persons with diagnosed impairments are using them today (McNiel & Binder, 2018 :205). The use of apps to mitigate various daily distresses is a fairly new area of study. However, the increased number of smartphone users, and therefore mobile app users, has created a need to assess apps which claim to alleviate health-related distress (Repetto *et al*., 2013; Merry *et al*., 2012, Rizvi *et al*., 2016). It is still uncertain if this plethora of mobile health apps has any effect on health or general wellbeing.

One of the obstacles in assessing the efficacy of such technologies lies in "the relative newness of the technology and the explosive pace of market growth in the past decade" (Liew, Zhang, See & Ong, 2019: 2). Kumar, S., Nilsen, W.J., Abernethy, A., Atienza, A., Patrick, K., Pavel, M., Riley, W.T., Shar, A., Spring, B., Spruijt-Metz, D. and Hedeker, D., 2013, conducted a study which focused on "the evaluation of mHealth measurement methodology, reliability, and validity of data". Based on their findings, Kumar *et al*. (2013: 228) asserts that the major challenges of studying mHealth apps are the "effects of variability on time-intensive data collection and the lack of a gold standard to assess convergent validity" (Liew *et al*., 2019: 2). These challenges are further exacerbated by the sheer volume of these apps, a number which is constantly growing. The difficulties in the evaluation of mHealth apps are made apparent in a review of the literature around their efficacy. Although these studies use psychological diagnostic models, and are thus medicalized and illness focused, they offer a small window into some of the attitudes that exist towards the apps.

Digital therapeutics refers to a group of "sophisticated, evidence-based software that can complement or even replace prescription drugs for managing certain health conditions"

(Lougheed, 2019: 1). In a review of seventy-five controlled trials where such technologies formed the basis of health interventions, healthcare workers found the technology-based interventions "of low quality" especially in instances where there was high variability in the types of measured outcomes. In their perspective "health care systems already burdened by suboptimal outcomes and excessive costs, premature clinical adoption of these mHealth technologies may detract from, rather than contribute to, what is needed for true overall health improvement" (Liew *et al*., 2019: 2).

In 2019, Vaghefi, and Tulu conducted a qualitative longitudinal study which aimed to assess the continued use of mHealth apps, specifically health and wellness apps that are not disease-specific and promote general wellness, by collecting data through "34 pre and post use interviews and 193 diaries from 17 participants over two weeks" (Vaghefi & Tulu, 2019: 1). The study illustrated that although these technologies offer new worlds for human engagement, prolonged use is often poor. According to Vaghefi and Tulu (2019: 2), individuals often stop using the app "just before the fifth interaction, and a quarter of mHealth apps are used only once after installation". Although the apps are promising in their suggested outcome, it is less likely that the user will experience the intended benefits of mHealth app use, such as improved access and quality of care, if the use is short-lived (Vaghefi & Tulu, 2019: 1). This study is particularly interesting in that it, similar to the study of this thesis, evades framing its aims in a psychological model by setting a unit of analysis which is focused on the use of the app as opposed to illness.

In a large trial study of "myCompass, a mobile phone and Web-based program for stress, depression, and anxiety" (Ahtinen *et al*., 2013: 3), forty-four individuals experiencing a current episode of depression, anxiety, or stress were asked to engage with the app for a period of six weeks. The app used programs which consisted of "self-tracking, reminders, and tips on the phone and CBT-based 10-minute self-management modules on the website" (Ahtinen *et al*., 2013: 3). The results of the trial proves that participants experiences reduced "psychological distress, and improvements in functional impairment and self-efficacy" (Ahtinen *et al*., 2013: 3).

Additionally, Torous and Powell (2015) highlight fourteen studies around the use of smartphone apps to aid the management of distress related to major depression and bipolar disorder (Miloff, Marklund, & Carlbring, 2015 :383). While few of the studies offered clinical conclusions, the evidence collected highlights the possibility for the use of apps to collect, in

real time, diagnostical information as well as provide adequate psychoeducation and medicine management remotely (Miloff *et al*., 2015: 383). There are also electronic games that have been uniquely designed to aid psychotherapy for, "among others, the treatment of depression (Merry *et al*., 2012), impulse-control disorders (Fernández-Aranda *et al*., 2012), schizophrenia (Morris *et al*., 2003), and anxiety disorders (Difedeet *et al*., 2007)" (Miloff *et al.*, 2015: 383). According to Horne-Moyer (2014), the use of expertly designed electronic games in psychotherapy has been found to have equal efficacy to traditional treatments for a wide-range of medical and mental health issues (Miloff *et al*., 2015: 383).

Anthropology, at present, cannot offer similar reviews or studies on these supportive technologies, as anthropology, at least historically, has been guilty of perpetuating technological determinism that silences the social matrix within which technology is used and leaves little room for further socio-cultural inquiry. Since the 1950s, anthropologists have conducted ethnographic studies on new and modern technologies (Sharp 1951, Godelier 1971, Pfaffenberger 1992, Budka, 2011). More recently, these studies have evolved into sub-disciplines such as digital anthropology, cybernetics, cyber anthropology, or the anthropology of cyber culture. According to Downey, Dumit and Williams (1995: 264), cyborg anthropology is an activity of theorizing which offers cultural anthropology entry into the contemporary conversations about science and technology as cultural phenomena with more established studies such as Science and Technology Studies (STS). This is a reconstruction that will begin to set into motion a new wave of "technologies and technoliterate practices that are better suited" to the unique needs of the new millennium (Escobar *et al*., 1994: 215).

A number of anthropologists, including Claude Lévi-Strauss, Margaret Mead, Clifford Geertz and Gregory Bateson, used these spaces to draw attention to issues pertaining to technology and communication in the contemporary world (Budka, 2011). In addition, Bateson conducted ethnographic studies which often explored "how organisms, humans and animals, relate to each other and their environment" (Budka, 2011: 2). Having said that, anthropology is still finding its way in the ethnographic study of technologies and mobile apps, a gap which I hope this study can begin to fill. According to Budka (2011: 7), The first attempt to conduct a "holistic ethnographic study" of the internet was made in 2000 by Miller and Slater in their pioneering book, *The Internet: An Ethnographic Approach.* Miller went on to conduct an ethnographic study of mobile usage in Jamaica with Horst and in 2011 authored a book about the use and perceptions of Facebook in Trinidad, Jamaica (Wallis, 2012: 57). Anthropology recognizes that

in many instances, issues of social reproduction, culture, religion and self are facilitated and catalysed by technologies (Coleman: 2010: 489).

Human as cyborg: towards a posthuman technology

For many, the term 'cyborg', which Haraway (1985: 3) defines as "a cybernetic organism, a hybrid of machine and organism", is associated solely with characters found in science fiction, and, in particular, "films such as *The Terminator*, *Blade Runner* or *Minority Report*" (Warwick, 2014: 265). According to Haraway (1982: 3), contemporary science fiction is full of cyborg creatures that are simultaneously animal and machine. In a real sense the world is populated with real life cyborgs; however, each specific cyborg has a different emphasis depending on the types of technology and connection it involves (Warwick, 2014: 265).

Human as cyborg provides grounds to begin to interrogate and deconstruct essentialist notions of the body and question existing binaries that not only inform harmful hierarchies but encourage an intolerance of difference (Gleason, 2014: 126). Specifically, the cyborg subverts notions of the natural and artificial, and makes ambiguous historical notions applied to biological organisms and technology (Haraway, 1985: 317). Haraway's use of the cyborg myth is concerned with "transgressed boundaries, potent fusions, and dangerous possibilities" (Haraway, 1985: 7).

The use of the cyborg myth is apparent in a number of varying critical studies. In a study which sought to examine the technologised body and its environment in marketing communications, concepts of cyborgism and posthumanism appeared in the theoretical literature reviewed (Campbell, O'Driscoll, & Saren, 2005: 346). The coming together of cyborg theory and the posthuman bridges the gap between abstract theory and "lived aesthetic experience" (Campbell *et al.* 2005: 346). Campbell *et al*. (2005: 345) suggest that the way the human body is "reconstructed through technology in advertising, and how the concept of the 'posthuman' has been represented is a salient aspect of visual culture", illuminating the transgressed border between human and technology.

A separate study, conducted by Williams & Gilbert (2019), which sought to investigate recommended reforms for the research design of wearable technologies for autism intervention, foregrounded cyborg theory, particularly cyborg theory and critical disability studies, as a lens to "assist the computing research community in developing the critical analytic filter necessary

to competently evaluate research impacts for the disability community" (Williams & Gilbert, 2019: 3). In this context, the cyborg ontology encapsulates a consciousness dependent upon the disruption of boundaries between organic matter and technology necessary for embodied representations of the disabled body. William and Gilbert (2019) suggest that differently abled individuals have long been cyborgs. Their "life and cognition are reliant and co-constituted by the existence of an interface between flesh and technology" – through their use of pacemakers, dialysis machines, hearing aids, and wheelchairs (Williams & Gilbert, 2019: 3). Essentially, the cyborg ontology is persistent across academic research that looks to evade binaries around human technology interaction (Lisahunter & Stoodley, 2021; Pelegrin-Borondo *et al*., 2017).

Similar to the cyborg is the notion of the posthuman. According to Hayles (2008: 3), the posthuman subject represents "a collection of heterogenous components, a material informational entity whose boundaries undergo continuous construction and reconstruction". Braidotti's (2016: 15) posthuman ideation brings together Foucauldian genealogies with feminist politics, borrowed from Haraway's cyborg manifesto, "to provide embodied and embedded accounts of the multi-layered and complex relations of power that structure our being human". The posthuman offers a rejection of the humanist subject - a universal standard of bodily perfection; a standard that is often assumed to be a heterosexual white male of European descent, who is completely able-bodied (Goodley *et al*, 2014: 347). At the core of this universal imagery is a "dualistic… notion of 'difference' as pejoration" (Braidotti, 2013: 2), that suggests that the humanist subject is as much defined by the categories from which he is excluded. In this way, difference "acquires both essentialist and lethal connotations for people who get branded as the others" (Braidotti, 2013: 2), a branding that reduces one to a status of less-than-human (Braidotti, 2013: 2); a status that remains at the core of the discrimination faced by individuals living with perceived mental distress (Swartz and Watermeyer, 2008: 187). The tenets of posthumanism are further developed by contemporary studies such as those of new materialism.

New materialism, like posthumanism, follows a post-anthropocentrism shift that decentralizes humans in a manner that "not only emancipat[es] the affective capacities of the non-human but also establish[es] an ethics that can engage productively [with] human culture, with other living things, and with the wider environment of inanimate matter" (Fox & Alldred, 2018: 3). The posthuman doctrine demands that "the knowing subject" disentangle itself from the normative idea of human functions and capabilities, and rather engage in the creation of self through a complex dynamic network of multiple actors (Goodley *et al.*, 2014: 354). In addition,

advancements in science and biotechnology have drastically altered the "basic frame of reference for the human [body] today" as compared to the frame of reference that was widely accepted in the past (Goodley *et al*., 2014: 354). This is particularly apparent in contemporary disability studies, which continues to see a wave of new technologies and/or assistive devices redefining previous frames of capabilities ascribed to impairmented bodies.

Posthumanism and distress

For the purposes of evading medicalized language to refer to individuals' feelings of discomfort, this study makes use of the term 'distress' or 'mental distress'. The motivation for this is that feelings of distress do not always emanate from diagnosed or perceived disabilities or psychiatric conditions; therefore, beginning the study with medicalized language shifts the focus of the study from an exploration of individuals' attempts to use technology to mitigate uncomfortable experiences to a study that explores how differently abled persons use supportive technologies to mitigate symptoms associated with their diagnosis. Having said that, I use this literature review to interrogate the use of posthumanist ideologies in relation to impairment and disability studies. Researchers have already begun to postulate the application of a posthuman perspective to contemporary disability studies (DeShong, 2012; Cheyne, 2013; Goodley, Lawthom, & Cole, 2014).

The study of impairments and disabilities offers an interesting vantage point for the analysis of cyborg identity and the reconstruction of what it means to be human in the contemporary era. Many of the changes apparent in contemporary critical disability discourse resemble the tenets of posthumanist thought. The combined critique of normative bodily models and the advocacy for new embodied ways of thinking and theorizing about impairment makes for the perfect marriage of disability studies and a posthumanist perspective (Goodley *et al*., 2014: 353). Key to this notion is the realization that impairment creates a myriad of inter and intra dependent connections with "other humans, technologies, non-human entities, communication streams and people and non-peopled networks" (Goodley *et al*., 2014: 352); connections that both affirm and reject cultural, social, and political ways-of-being in the world. Posthumanism attempts to draw attention to these connections while moving across binaries of self/other, nature/technology, and human/machine (Goodley *et al*., 2014: 354). As stated above, little is

known about the extension of the posthumanist perspective as well as the image of human as cyborg, in relation to general distress.

New technologies embody contemporary ways, both positive and negative, in which individuals live and construct themselves within the growing "technobiocultural environment" humans have, and continue to manufacture (Escobar *et al*., 1994: 214). Technologies offer new worlds for human engagement, and once deployed they become embedded in the fabric of daily life (Pfaffenberger, 1988); hence the need to explore the kinds of realities that are possible when humans and technologies are married in a world of prosthetic extension, or what Haraway (1987) first named as humans' cyborg identity.

Chapter 3

“Technology of the self”: Millennial journeys through self-identity

Figure 3

Millennials and technology

It is 2 am and I am wrestling with sleep. For as long as I can remember, my mind has always been a web of thoughts; a labyrinth that I have yet to make my way out of. Today, I anxiously pace through this maze, yet again. I have no idea where I am headed, or if sleep will find me tonight, but what is clear to me is that my phone has been my closest ally in this journey. It is through the warm blue glow of my phone screen and the soft lull of mediation music that I have been able to work through these anxious feelings. This leads me to ponder, what is it about our technologies that we find comfort in? Why do we, as the millennial generation, turn to technology in the most intimate moments of our lives? To which I respond by way of journaling:

> Technology is constant. When no one else is, when nothing else is it remains a constant, apart from the occasional low battery and the dreaded network problems. Something about knowing that it is there to fall back into when the rest of the world seems grey and muddied makes it feel like the friend you never asked for but can't seem to live without. I mean I know I can live without it but the reality is I don't have to (Lebo, 9 February 2021).

This chapter is divided into four sections. It provides an overview of the nature of the relationship that millennials have with their technological aids by first exploring how the tethered self, or the virtual self, engages in acts of self-care. It then explores the societal parameters within which this care of the self is enacted by subverting the idyllic use of technology as seen in pop culture and unpacking the sense of 'material precariousness and mounting unfreedom' faced by millennials living in South Africa. Finally, it uses the narratives developed in the discourse on the 'care of the self' to interrogate contemporary acts of self-stylization as performed by millennials through their technological devices.

An exploration of the human-technology interaction must begin with a theorization of the millennial generation. The millennial generation refers to a group of individuals born between 1981 and 1996, colloquially known as 'digital natives' or the native speakers of digital language (Cheung, 2013: 471). The term 'millennial' generation was first proposed by Tapscott(1997) and Prensky (2001) (as cited in Stewart, Oliver, Cravens & Oishi, 2017). The generationalso goes by the term Generation Y. The Pew Research Centre noted that in 2015, the Millennial Generation surpassed their predecessors (Generation X/Gen X) as the largestgeneration in the U.S. labour force (Stewart *et al*., 2017: 46). It is believed that the techno

native nature of millennials means they have uniquely adapted "behaviours, way[s] of thinking, and learning process[es]" than that of previous generations as they perceive information and communication technologies in more inventive ways (Stewart *et al*., 2017: 46). To illustrate, Stewart *et al*. (2017: 47) suggests that academic professors are faced with the task of adapting the learning process to support the new motivational needs and interactional styles of millennial students. Where millennials were once believed to be unmotivated or less driven, it is now clear that they are driven by a different set of principles and priorities (Stewart *et al*., 2017: 47).

Young people are 'becoming' in an increasingly networked world, characterized by a seamless integration of technology into their daily lives. This seamless integration of technology into the lives of the youth is reiterated at the beginning of Sherry Turkle's (2010) *Alone Together: Why We Expect More from Technology and Less from Each Other*, in a statement that suggests that inquiry into technology usage is shifting from asking 'what we would use computers for', to 'what don't we use them for'. As a generation, millennials "think with, think into, and think through [their] smart tools" (Anderson & Rainie, 2012: 5) in a way that perceives mobile technology as an extra limb or an external mind.

Turkle (2010) also highlights how technology offers the youth new ways of communicating and staying in constant contact with one another devoid of geographical barriers. In a study conducted by Gibbs (2012), individuals were asked how their lives had been changed by mobile technology. "The vast majority of 4700 respondents from the U.S., the U.K., China, India, South Korea, South Africa, Indonesia and Brazil, agreed technology had brought them into closer contact with friends or family" (Cheung, 2013: 471). This is particularly true at the time of writing this thesis, as the world navigates a global pandemic. As expressed in the introductory chapter, governments and public health institutions across the globe have set strict lockdown measures that encourage social distancing practices and stay-at-home guidelines in order to curb the spread of the Covid-19 pandemic (Nguyen, Gruber, Fuchs, Marler, Hunsaker, & Hargittai, 2020: 1). The first few months of the pandemic saw an exponential increase in the use of social media platforms, instant messaging apps, and video conferencing apps. The increased time spent at home meant individuals became more reliant on various technologies to keep connected with their loved ones, their work commitments, and their passions and hobbies (Nguyen, 2020). In April 2020, a survey was conducted through the Clint survey firm that collected online questionnaires from 1374 U.S. adults. The study used quota sampling to account for age, gender, education level, and region to obtain a sample representative of U.S. Census figures. The data showed that of the 43 percent of the 1374 respondents made use of

instant messaging apps more frequently than they did prior to the Covid-19 pandemic (Nguyen, 2020: 2). The data also highlighted a 36 percent increase in voice calls, a 35 percent increase in social media use, and a 30 percent increase in video calls (Nguyen, 2020: 2). In summation, the study showed that 46 percent of respondents had only increased their use of communication-based technologies (Nguyen, 2020: 2).

However, technology has also increased reclusive habits that push us further away from non-virtual social interaction (Cheung, 2013: 473). These virtual social interactions provide us with a kind of intimacy, but in the 'real' world we often feel alone. Research conducted by YouGov (2019), a public opinion and data company, indicated that millennials were the loneliest generation with three in ten of those surveyed suggesting they always or often feel lonely (Dwivedi and Lewis, 2020: 4). The feeling of loneliness is not just an individual matter, but an inherently social, cultural, and biological one, because humans are genetically hardwired to seek out social connections and group membership in order to survive (Ozawa-de Silva and Parsons, 2020: 614). In addition, feelings of loneliness have been strongly associated with an increased presence of mental health issues such as depression, anxiety, and suicidal ideation, and may even alter gene expression in ways that make the body less healthy and more susceptible to illness (Beutel *et al*., 2017; Cacioppo & Patrick, 2008; De Jong Gierveld, Van Tilburg, & Dykstra, 2018; Hafner, 2016; Hammond, 2018; Peplau & Perlman, 1982; Perry, 2014). At the American Anthropological Association's 2017 annual meeting scholars gathered to theorize on contemporary anthropological and ethnographic perspectives of loneliness (Ozawa-de Silva & Parsons, 2020: 614). This study inadvertently adds to this discourse by drawing attention to new ways in which the youth experiences feelings of loneliness despite living in an increasingly networked world. According to Ozawa-de Silva and Parsons (2020: 614) young people who express feelings, or experiencing extreme feelings of, loneliness "are quite often surrounded by peers and family, despite feeling completely alone". In this way the feeling of loneliness acts as a state of perceived social isolation, rather than actual physical isolation (Cacioppo, Fowler, & Christakis, 2009; De Jong Gierveld *et al*., 2018), a state that is further exacerbated by the emotional distance created by the human technology interaction (Ozawa-de Silva & Parsons, 2020: 615).

The emergence of smartphones has transformed most of us, digital natives and digital immigrants alike, into cyborgs "whose physiological functioning is dependent upon electronic devices" (Cheung, 2013: 472). According to Cheung (2013: 472), individuals "feel like death, adrift and losing their mind without having 'Smartphones' with them". Richard Forno, a long-

time cybersecurity expert, adds to this by stating: “My sense is that society is becoming conditioned into dependence on technology in ways that, if that technology suddenly disappears or breaks down, it will render people functionally useless. What does that mean for the individual?” (Cited in Anderson and Rainie, 2012: 12). Nyasha, a participant who felt strongly about the negative impact that human technology interactions have on general well-being, expressed that:

> Technology has become a kind of added limb, or an extended part of the mind. And to sever this limb would result in complete mental collapse. We are so reliant on technology that our minds are completely stunted, without our little apps and gadgets we are etching towards total mental paralysis (Nyasha, 12 June 2021).

As a collective, the youth have developed a frightful intimacy with technology, and yet they finding it increasingly difficult to share intimate details of themselves with close friends and family members. They feel at home expressing these feelings, or a version of these feelings, to seemingly ‘non-judgmental’ strangers on social networking sites or artificial intelligence (AI) on mHealth apps (Cheung, 2013: 471). Enzokuhle echoes this sentiment in a statement describing her use of mHealth apps:

> It kinda feels like I’m talking to a brick wall but then it’s like also helping but not judging. You are just there speaking your mind and being completely honest, even with yourself. Sometimes you will surprise yourself with the choices you make, you don’t realize that some things appeal to you (Enzokuhle 13 April 2021).

A second participant, Amahle, used Snapchat as a kind of digital journal where she took videos of herself listening to her favourite song or relaying something that happened in her day. The videos were never posted or shared with others; she instead saved them to her Snapchat cloud to be able to view them at a later date. She felt that this particular Snapchat feature allowed her to have a safe space to speak freely about her thoughts and emotions without fear of judgement. She stated that after creating these videos she felt a sense of relief and a sense of comfort. Amahle fell into the category of participants who did not make use of traditional mHealth apps but felt that her engagement in various social apps, such as Tiktok, Snapchat, and YouTube, was directly related to how they managed their daily distresses.

Millennials are drawn to the allure of the conceivably “timeless and consequence-free ‘identity play’” that exists online (Cheung, 2013: 472). The individual is made discoverable in a virtual world with seemingly no boundaries. The internet provides a platform for individual self-

expression and provides endless romantic options to choose from (Tréhu, 2017: 533). Queer youth are able to "cultivate a sexual minority identity online" that may not be possible in their 'real' life (Craig & McInroy, 2014: 95-96). Equally, online platforms offer opportunities for differently abled people to position themselves in the social world devoid of the ableist gaze they are too often faced with in the 'real' world (Bowker & Tuffin, 2002: 328).

Through the internet, millennials are boundlessly liberated to enact processes of self-actualization or self-stylization, a pop culture favourite. Social platforms are a maze of suggestions for self-improvement of the mind and body in all aspects of daily life (Tréhu, 2017: 534). Millennials live in a sea of pop culture certified buzzwords: wellness, productivity, optimization, to name a few (Tréhu, 2017: 534). If you have a problem the internet can help you fix it.

Care of the self

The self in the digital space is characterized as an object of personal projection, and computing sites act as homes for these projections, the "second self" (Turkle, 2006: 1). Contemporary language around technological use alludes to a coinciding life lived both onscreen and off screen, plugged and unplugged, in which the self is constantly produced. Turkle suggests that this new language calls for "a new placement of the subject, such as when we say "I will be on my cell," by which we mean …I am wired into (social) existence through my [phone]" (Turkle, 2006: 2). The technological self or, as Turkle (2006) proposes, the self that is tethered to digital space, is thus a "re-embodiment, a prosthetic consummation and a disembodiment" of the body "into still-nascent computational space" (Turkle, 2006: 1). How then does the tethered-self engage in acts of self-care?

In ancient Greece, the goal of care of the self was characterized by attempting to fashion one's life into "an object for a sort of knowledge that could only be achieved by training of oneself by oneself" (Markula, 2004: 306). This suggests that the ancient Greeks practiced a kind of care of the self that circumvents the self-centred inquiry into "one's inner self" that is apparent in contemporary modes of "self-understanding". New age processes of enacting the self are characterized by a 'need' to discover one's true hidden self, suggesting that the true essence of an individual must be, and can only be unmasked by, a series of constant self-analysis and self-interrogation processes (Tait, G., 1993: 13).

mHealth apps and various social media sites used by the participants of the study are used as self-interrogation platforms to monitor general health and well-being in an attempt to grow closer to our inner selves. Social media "sites such as 'Patients Like Me' and 'Tu Diabetes' allow community members to enter a variety of data associated with their health state for self-tracking over time and for comparison with other community members" (Paton, Hansen, Fernandez-Luque & Lau, 2012: 16). Apps like YouTube, which is an online video sharing social media platform, were used to seek out self-help content, such as yoga videos, positive affirmation videos, soothing meditative sounds, and educational videos for self-improvement. In the self-administered questionnaire a number of respondents noted Tik Tok, YouTube, and Snapchat as social media apps that allowed them to explore or evade feelings of distress on a daily basis. One of the people who participated in the online questionnaire wrote: "I find these apps to be a good source of relief and good distraction from reality" (Participant nine, 8 April 2021).

Three respondents stated that they made use of Headspace, which is a mHealth app that aims "to improve the health and happiness of the world" (Headspace, 2021) by providing accessible resources that teach individuals about the essentials of meditation and mindfulness. Three respondents also reported using Calm, which is a mHeath app that has been consistently voted as the number one app for Sleep, Meditation and Relaxation (Calm, 2021). In addition to these, respondents reported using apps like 7 cups and Woebot which use an artificially intelligent chatbot to mimic a 'real-life' therapy session using the principles of cognitive behavioural therapy (CBT). When asked about her motivation for adopting these mHealth apps Enzokuhle reflected:

> I think feeling very insufficient or feeling like I'm not doing enough with my time or just feeling like I can do more to elevate my brain... That's one thing I hate, feeling unintelligent, so well. I really hate that. They help you to be in tune with the current language. You know, everyone is talking about mental state, so without those … it just helps me exercise my mental state and be in tune with myself, being present. So those are the kind of things I wanted to exercise because I felt like I was just living day by day (Enzokuhle, 13 April 2021)

Through these mHealth apps, Enzokuhle practices a kind of care of the self that is characterized by constant self-analysis in an attempt to improve upon 'undesirable' traits. Similarly, Lesedi found that the self-reflective questions posed by the AI chatbot of the mHealth app he regularly

used, Headspace, "allow[ed] one to reflect on one's feelings and begin to view one's circumstance in a different lens." He admitted that the AI responses often came across as generic, but they were always able to help him "think differently about the situation [he] was in."

These sentiments were also echoed in Mpho's reflections on her use of the mHealth app Woebot:

> If you put in the work, I can see how it would help you. It is helpful in ways that it makes you think about things in a different way (Mpho, 3 February 2021)

Through this interaction she was able to organize her thoughts and to reflect on her feelings in a manner she found productive. In short, these excerpts reveal a kind of 'care of the self' that perceives the body as a project or a narrative that is constantly adapted and rewritten (Frank, 1998: 329) at the centre of which lies knowledge, or self- knowledge of one's bodily functions and dimensions as they are embodied in our lived experiences. The act of engaging with various supportive technologies can be recognized as "programmatic practice of therapeutic disciplines" or what Hadot terms spiritual exercises, which attempt to "improve the acuity, health, and control of our senses by cultivating heightened attention and mastery of their somatic functioning" (Shusterman, 2000: 533). Philosophies of the soma, or what Shusterman terms somaesthetics "work… toward improved awareness of our feelings, thus providing greater insight into our passing moods and lasting attitudes" (Shusterman, 2000: 533). As individuals we feel through, and with, the body, and as such our experience of ill health or distress is centred in the senses, which are conditioned by the soma. We often recognize internal distress through changes in the external. To illustrate, in my reflective journal, I meditate on how:

> A really big part of having anxiety that isn't really discussed is how it physically presents itself in the body. I have spent the last two weeks in and out of my GP's office with anxiety induced stomach ulcers. Oddly enough I didn't really feel like I was overly anxious but I guess my body felt otherwise. Alongside the ulcers I have also been struggling with lockjaw. I think my body has been telling me to slow down but I haven't been paying attention (Lebo, 16 May 2021).

Similarly, one's breathing, although rarely noticed, may provide evidence of one's emotional state (Shusterman, 2000: 533). Bringing attention to our breathing may reveal concealed distresses. A reoccurring muscular contraction that not only constrains movement but results

in tension may also reveal anxious feelings we wish to evade (Shusterman, 2000: 533). In short, the use of supportive technology is often a response to perceived bodily ailments or perceived errors in bodily functioning which stem from our own individual locus of normal function. It is a cog in the quest to self-mastery that places the individual as the eternal subject. What do I recognize these feelings to mean? How can I improve upon myself? How can I improve upon how I am perceived?

Material precariousness

According to Markula (2004: 306), the current mode of care of the self is rooted in "religious, legal and scientific norms that dominate" our understanding of the world around us. The contemporary self is shaped in a scientific ideology that indicates "what the self is, what desire is, what the unconscious is". (Markula, 2004: 306). Through this, individuals are perceived as 'normal' when their self-expression and social behaviours adhere to prescribed notions of being in the world. A strictly visual ontology suggests that the way one sees the world is mediated by belief, such that culture and perception interact and these contingencies powerfully affect how bodies may be seen and judged (Bowker and Tuffin, 2002: 328). The power afforded to one's sight often violates the freedom of others to construct themselves by their own means. One's self-definition becomes controlled by the behavioural and aesthetic norms that guide others' decisions about what is socially, culturally, and morally appropriate (Bowker and Tuffin, 2002: 328). Visual perception may condemn a person to a particular identity, hence the allure of inventing a new 'palatable' version of oneself online. This hierarchy therefore co-opts the youth into a process of creating a version of themselves that is in line with what they perceive to be societal expectations. In the initial interview process, Liam stated that his "main source of distress is trying to fit into the expectations that are put on [him] by peers, family and society at large". In a follow up session, I asked him to outline some of these expectations, to which he responded:

> Well, I guess all those people have one general expectation and that is for me to get my shit together basically. A part of that problem is that I don't know what I want to do with my life. I don't have [a] passion for anything, or at least I'm convinced I don't. But fine, lots of people don't know either, and they do something they don't like to have money to do things they do like. But I don't know what I like to do except to

> escape, and as a result whenever I do a job I don't like I get extremely depressed. It could be that whatever problem I have is just clouding my head with doubt and fear, making me ignore the things I genuinely like doing and convincing me that I just don't like them. It puts fearful thoughts in my head saying I won't succeed, or I'll disappoint, or I'll end up not liking it, reverting back into a depressive state. If there was a job that could allow me to escape at the same time, I'd be doing that, but I don't have that. I'm not sure I can be happy without dealing with the problem I have inside. I just don't know how to do that. And no one seems to be acknowledging the problem. My family and society might think I'm just lazy, and my friends don't know the full extent of how I feel so they might think I'm not trying hard enough (Liam, 29 July 2021).

The idyllic use of technology presented in pop culture blogs and social networking sites is contrasted with a "material precariousness and mounting unfreedom" catalysed by societal concerns around: systematic inequality, social exclusion, damage to the environment, stagnating incomes, poverty despite full-time work, delayed marriage and childbirth due to economic uncertainty, and civil and global unrest (Tréhu, 2017; Dwivedi and Lewis, 2020).

In one entry of my reflective journal, I reflected upon the above milieu of societal concerns.

> I am in the process of transcribing and synthesizing some of the key themes in my interviews and the process has caused me to think deeply about what it means to be a young adult in the era we are living in. It seems to me that my generation is having to negotiate societal expectations that did not exist a decade ago. Pop culture has made it cool to be politically correct; to reject binaries; to be your authentic self as long as that self is natural and palatable; to be black minus the historical institutionalized oppression; to protest even when you don't understand the cause; to be educated but not necessarily learn; to practice self-care as seen on Instagram. Add to this long list of things we should or shouldn't be affected by: generational trauma, the Black Lives Matter movement; the ethnic cleansing of Palestinians; growing gender-based violence; a global pandemic, and the startling statistics on youth unemployment. We have literally been thrust into what feels like a vortex, with the hope that we can use our youthful wit to pull us out. We are not lazy. We are just tired (Lebo, 19 May 2021).

There are a number of thoughts in this reflection that I wish to broaden. The most pertinent being what are the societal expectations that millennials are having to navigate that may not have otherwise existed a decade ago. It is true that each generation is faced with a new set of

circumstances to navigate, which gives rise to a new set of attitudes, beliefs and sensitivities. To illustrate: the generation that lived through the Great Depression experienced both Word War II and the Cold War, the baby boomer generation experienced "the space race, the civil rights movement, Vietnam and Watergate, Generation X saw the fall of the Berlin wall and the emergence of the HIV and AIDS pandemic" (Oblinger, 2003: 1).

A study conducted by Deloitte in 2021 revealed that 56 percent of millennials living in the United States believe that systemic racism is "fairly or very widespread throughout society" (Deloitte, 2021). They also expressed feeling as though the anniversary of George Floyd's murder fuelled the rise of the Black Lives Matter movement, and to this end more than half of millennials "believe that society may be on the precipice of real change when it comes to systemic racism" (Deloitte, 2021). A similar study reported that 61 percent of millennials have attended a college or university making them the most educated generation. Although this seems like a positive change, the current supply of educated workers is much higher than the demand for them in the work place, increasing the number of unemployed millennial youth across the globe. The United States census data reflects that 40 percent of the country's unemployed group is made up of millennials (The 10 Most Serious Problems Faced By Millennials, 2021). In a survey conducted by the *Washington Post,* millennials were flagged as the most financially fragile generation, with only six percent of the population making substantially more than is required to cover their basic needs. Having said that, these statistics reflect the fate of millennials living in the United States specifically (The 10 Most Serious Problems Faced By Millennials, 2021).

According to Reiersgord (2021: 1), the societal challenges faced by millennials living in South Africa are "tied to growing up during the end of apartheid and the transition to democracy". For instance, in South Africa, the techno native nature of the millennial generation is influenced by the racial and economic disparities apparent in the country that determines access to technology (Reirsgord, 2021: 1). In addition, an individual's geographic location in the country determines the nature of their network coverage, where individuals living in peri-urban or rural environments are faced with constant power outages and unreliable internet connection. I reflect on my own experience of growing up as a black South African in a single parent household, living in a township in Johannesburg. I only became intimately acquainted with the internet late into my teens, and I used the internet to escape the burden of my immediate social reality by creating and discovering new worlds of engagement. The financial burdens of a

single parent household, the blaring sounds of unemployed youth roaming the streets, and the pressure put on me by systematic racism in schools all seemed to disappear in the virtual world.

The technological habits of millennials often have them pegged as a lazy, self-absorbed generation lacking 'genuine' social interaction. Whether these assumptions are true remains to be explored. However, in the context of the abovementioned storm of societal concerns, some of these "self-indulgent" behaviours may be viewed as a frenzied attempt to create and control a kind of material existence (Tréhu, 2017: 534). 'I may not have money, but I shall be rich socially'. Research suggests that millennial students' intense social media (Facebook) use is related to the formation of social capital (Ellison, Steinfield, and Lampe 2007; Son *et al*. 2016). In this way, social media may help the individual accumulate social capital based on the number of online connections one has; and may be used as a means of compensating for the status associated with financial success (Dwivedi and Lewis, 2020: 6).

Self-stylization

According to Foucault (cited in Markula, 2004: 307), the relationship one creates with oneself can be understood as a "creative activity, a constant process of invention", a process that can be referred to as aesthetic stylization. According to Markula (2004: 308), the "constant self-surveillance seen in contemporary practices of self-stylization can also be seen as disciplinary techniques. In understanding this, we become aware of the need to determine if certain self-stylization practices seen in the contemporary care of the self are merely practices which allow us to comply with the dominant narratives or to "actively increase understandings of one's self" (Markula, 2004), in a process often characterized by the deeply self-absorbed inquiry into the self.

Stylization in the form of dress, art, music, and performed identities is part of a forward "drive to give form to not only the self, but to the world, and to relations with others" (Moore, 2013: 2). It is a persistent effort to create a style of being in the world that reflects the most true, authentic realities of personhood. The exponential increase in access to digital resources and new technologies means that this process is often realized through technological mediums. Technology now forms the permeable membrane through which one's 'authentic' being interacts with the world and forms relations with others. To reiterate, Moore suggests that access to new technologies involves "novel forms of belonging, novel performances of self,

new ways of imagining our relations to others, to objects and to the wider social and cultural worlds we inhabit" (Moore, 2013: 8). The primary participants of the study often turned to their technological aids to construct these novel performances of self. For example, Amahle said:

> A lot of stuff, especially clothes, have been influenced by styles that I've seen on the internet. I think I have been exposed to a lot of different music, clothing styles, and movies from what I've seen online, especially on Tiktok. In a way, it has helped me discover my own sense of style and different music that I might be into. I feel, like, on Twitter you see a lot of the same kind of people, and they're always talking about the same thing; so it gets boring after a while. I go on Twitter just to laugh; then I'm back to Tiktok or whatever else I was doing before I checked Twitter. I'm not a fan of Twitter also because there is a lot of reading. Like, I prefer watching videos or looking at memes when I'm on Twitter instead of the think pieces that people post – those are never fun to read (Amahle, 22 May 2021).

In this regard, technology offers new ways to engage in self-making, to imagine a version of ourselves other than what we presently are. We swim in the limitless potentialities and use our final destination to inform how we present and engage with the world, both 'real' and virtual. Liam who describes himself as "a creative person who likes to think about abstract concepts and is open to trying new things" also leans into the virtual world to express and explore his creativity. As a budding graphic designer, he spends a lot of time on various platforms studying contemporary artistry:

> I keep up with some cultural events such as new pieces of art that famous artists release like films and music. I use social media to keep up with any trends I should know about for conversational reasons. I use the internet to learn about new topics and learn new things. I use apps and games to procrastinate (Liam, 9 July 2021).

Self-stylization is a process that extends across a life span, and the process is often set in motion by the identity crisis that forms the central struggle of our adolescence (La Guardia, 2009: 91). This is around the same time that parents feel comfortable giving their children access to digital resources like a mobile phone, a laptop, and an internet connection. The Pew Research Center conducted a survey in March 2020 which sought to investigate how "the widespread adoption of smartphones and the rise of social media has introduced a new wrinkle to the challenges of parenthood" (Auxier *et al*., 2020: 1). The survey revealed that 73 percent of parents in the United States believe it is acceptable for children to have their own phone by the age of twelve

(Auxier *et al*., 2020). Some 45 percent of U.S. parents say smartphone ownership is acceptable between the ages of twelve and fourteen, and 28percent say it is acceptable between the ages of fifteen and seventeen (Auxier *et al*., 2020: 2). Just 22 percent think it is okay for a child under the age of twelve to have one (Auxier *et al*., 2020: 2). Although the study was conducted in the U.S., a similar trend became apparent among the participants of this study. As Liam revealed, for example:

> My relationship with technology started very early on. I started using the computer before I can remember (I think at the age of 6). My mom would buy me educational games to play at first, and then as I got a bit older would buy me more fun related games like racing, Sims etc. I only started using the internet though in grade 9 [the age of 15]. Then I would mainly play games or watch YouTube videos/download series and movies (Liam, 29 March 2021).

Siphesihle recalls:

> I got introduced to technology at a young age. At around 10, I already had my own phone and hand me down laptop (Siphesihle, 10 May 2021).

With this in mind, it is clear to see how just as we are forming senses of self in our adolescence, we are gently pushed into the digital world through which all further explorations of self are directed.

The care of the self, and the issue of self-stylization speak to the final research question presented in the introductory chapter of the thesis:

> In what ways do new technologies offer contemporary ways, both good and bad, for individuals to construct themselves within the growing "techno-biocultural" environment?

Social media apps allow their users the ability to share content, express opinions about issues that are of interest to them and to communicate and interact with others in a manner that is not bound by time or place. The user can create, express and experiment with their identity among virtual communities of like-minded individuals. They can do so discreetly, by using pseudonyms and virtually performing a persona unlike their own, or they can do so publicly, fully showcasing their most authentic being. Online the construction of self is able to transgress religious, neoliberal binaries around being. We are given the ability to reject scientific ideology around what the self is and how that self envisions its life.

Although we are becoming in new creative ways with the aid of our technological appendages this permanent extension into the virtual also means that we are partially distancing ourselves from the 'real'. When our heads are bowed in commitment to the worlds on our screens, we simultaneously suppress our ability to explore similar potentialities, communities and identities in the physical world.

In accepting that the virtual world possesses a kind of fluidity we thus accept that the construction of the self, particularly the cyborg self as seen in millennials, is a never-ending project, often beginning with our first encounter of the virtual world. It is a boundaryless interaction between our most authentic desires and our interpretations of our cyborg worlds. This chapter has revealed the nature of the relationship that young people have with their technological aids. Young people, the digital native generation, are faced with the task of discovering themselves while constantly tethered to the networked world. In some ways, this synthesis of man and machine allows for a thrilling performance of identity. We are afforded the opportunity to create and recreate who we are in an almost limitless manner, and then we 'lean' into our virtual communities and social networks to affirm these identities. However, the further we lean into the networked the less we engage in the 'real'. This chapter has also drawn attention to the presumption that though constantly networked the digital native generation experience more instances of loneliness and find it difficult to connect with peers in the 'real' world. With that, the chapter that follows further explores some of the perils of this new found intimacy with the networked word.

Chapter 4

A fear of the cyborg: The dark side of technology usage

Figure 4

Technophobia and technostress

As I continue to lean into the data analysis process, it became apparent to me that technological engagement is a double-edged sword and we all harbour fear around our commitment to it and how it may negatively impact us in the future. I wish to draw attention to a passing thought in an interview I had with Lesedi:

> I sometimes think about my old accounts or like posts I made four years ago and I get this sense of panic to delete everything. It's not fair. It's not fair for us to judge each other over versions of ourselves that no longer exist. It's the honest truth: she doesn't exist. And I shouldn't be forced to lie about who I was four years ago. Maybe that person was a little bit raw, and uncut and not professional; but again, she was eighteen. I should be allowed the space to grow and change and learn new things without the fear of being judged at every step of the way. Because the stuff that I am posting now when I get married and become a mom those posts might not resonate with me anymore and I shouldn't have to keep deleting everything or have this constant fear that people are going to go back and judge me (Lebo, 12 June 2021).

As the techno native generation, we feel compelled to entangle ourselves with cyborg realities, but even while intentionally exploring the permeable membrane between the 'real' and the virtual, a tiny terror gnaws inside us (Dinello, 2005: 246). "Like a viral infection, technology develops into an autonomous, invasive force that expands and fulfils its dangerous potential", evading our control (Dinello, 2005: 247). The techno-utopia created by perceived control and dreamy immortality offered by various apps are married to a dark obverse side, characterized by a complete lack of control. This chapter explores two broad perspectives related to fears around technological engagement. Firstly, it interrogates technophobia and technostress as they relate to using technological aids to mitigate feelings of distress. It secondly investigates the overwhelming presence that technological aids have in the lives of millennials, particularly as it relates to problematic tech use.

Contemporary technologies generate equal opportunities for improved well-being, as they do for a decreased sense of connectedness and security (Osiceanu, 2015: 1138). Technologies with all their potentialities may offer individuals new causes for concern. For instance, D'Arcy, Gupta, Tarafdar and Turel (2014) site a study that revealed that, on average, "43 percent of users find the use of smart phones stressful; 60 percent of users cannot go for an hour without

checking their phones for messages and email; 30 percent of users check their smart phones at meals, 24 percent while driving, and 54 percent in the middle of the night or immediately upon waking up". In addition, a similar study revealed that on average people can spend as much as "28 percent of their workday on IT-related interruptions" "while a separate study reports that it takes approximately twenty minutes to get back to the original task after the interruption" (Mark, Gudith, & Klocke, 2008: 110).

When thinking about this 'dark' side of technological use, words like technophobia and technostress are often brought into play. Technophobia is defined as an abnormal fear of or anxiety about the effects of advanced technology (Ha, Page, & Thorsteinsson, 2011: 18). This anxiety is directed towards both the effect of the personal use of technological devices and the effect of an increased use of these technologies on society and the environment (Osiceanu, 2015: 1138). Shaw (cited in Ha *et al.*, 2011: 18) proposes three statements that describe technophobia: "a resistance to talking about computers or even thinking about computers; fear or anxiety towards computers; and hostile or aggressive thought about computers". These intense feelings are often "caused by a combination of anxiety and perception of the technology being used" (Nimrod, 2018: 150). Even though these fears are often described as irrational, perhaps due to the length's technophobes will go to avoid all forms of technology, some of these fears are reasonable and justifiable (Nimrod, 2018).

In contrast, technostress refers to the stress that is or can be caused by an inability to adapt to or cope with technological aids in a healthy manner (Tarafdar, Ragu-Nathan, Ragu-Nathan & Tu, 2007: 308). According to Tarafdar *et al*. (2007), technostress can be divided into three main aspects or conditions that increase the likelihood of experiencing technostress: mitigating factors, adverse effects of technostress on work life, and antecedents of technostress. Technostress creators include techno-overload, i.e. information overload that one may experience from techno multitasking, techno-invasion, which is characterized by technological aids constantly intruding on 'real' world experiences, techno-complexity, where users find it intimidating to learn and use various technologies, techno-insecurity, characterized by feeling unsafe or untrusting of various technologies, and techno-uncertainty, which occurs when users feel unsettled due to continual program changes (Tarafdar *et al*., 2007: 309).

In sum, technophobia refers to an often irrational fear of engaging in technology use, caused by general anxiety about the effect of advanced technology and individual perceptions of the technology being used. Technostress refers to anxieties caused by stress inducing occurrences

in technology engagement, for instance techno-invasion, techno- insecurity, techno-overload, and techno-multitasking. In the context of this study, seven out of the eight participants initially reported having healthy relationships with technology in general, while only one participant reported having a negative relationship with technology. Although the majority felt good about their relationship with technology, upon further discussion, they revealed that they did, in fact, experience various forms of technostress and technophobia. It is worth noting that much of these distresses were brought about by engagement with various social media platforms as opposed to mHealth apps. Three participants exhibited behaviours associated with technophobia.

When asked if he thinks that his relationship with technology has affected the way he understands some of his feelings or understand the way he chooses to deal with some of his distress, Lesedi noted:

> I tend to have paranoia, sometimes. When I see something I thought I was thinking about and then I see someone else talking about it, then I think, "Hey I was thinking about this a few days ago and now you are talking to me about this. Were you spying on me?" It makes me very careful in terms of what I do with my phone - whose number I save on my phone, who I connect with online. I'm very careful because I get paranoid. Yeah, I get annoyed when sometimes certain people that I didn't even know they're talking about things that I was typing, and it usually happens with the radio or TV or I'm typing a specific subject like …like a few weeks ago I was typing to my friend about how like the vaccine is actually going to help with the old variant. The vaccine was researched for the whole of 2020 for type A Corona. Then early 2021 it was announced that vaccines will be issued and then early 2021 it is discovered that there isa type B Corona. So, the vaccine that we were told is coming is for type A not type B. Fast forward I hear on the radio that "don't worry the vaccine will work for type B Corona. You don't have to be concerned. We will send you an email. Don't worry we will come to your house to vaccinate you." So, I was worried that eh they are going toforce us to take the vaccine (Lesedi 3 February, 2021).

The ability for fears around technological engagement to possess and engulf our thoughts is neatly illustrated here. The fear that the participant harbours affects his behaviour and thought patterns in a way that "undermines human integrity—invisibly infiltrating, manipulating, seizing control, and mutating its human host to support its own survival and evolution"

(Dinello, 2005: 247). Much like a virus, technology in this regard metamorphoses itself into a thread of unintended and uncontrollable consequences. The participant is led to believe that the virus has the potential to affect any and all engagement, the radio, conversations over the phone or in person, the television. Lesedi alludes to feeling as though the government is spying on him by listening in on his conversations or monitoring his internet searches. It is important to note that he uses the word paranoia to describe his own behaviour, so he is aware that the thoughts may lean toward the extreme. Although this 'paranoia' does not prevent him from using technological aids, it does control what he chooses to share and participate in on various platforms.

In a similar fashion, Mpho's attitudes towards social media have caused her to avoid engaging with it at all on all social platforms, apart from WhatsApp. Mpho, who generally has a calm, soft-spoken demeanour, spoke quite passionately about her disapproval of social media platforms:

> No, I don't follow any of those. Yeah, social media is the least helpful. In my opinion, it's not helpful at all! I wouldn't join any support group or kind of thing on social media - yeah, where you would kind of like be putting out something, and then expecting feedback, yeah. from people on social media, I wouldn't do that to myself (Mpho 3 February 2021).

In an earlier conversation Mpho described herself as an introvert, who prefers her own company and the company of a small select group of people. Her decision to evade social mediaplatforms, i.e., platforms that attempt to facilitate social engagement, is directly related to thispersonality trait. She notes "for me I'm not really an 'out there' person. I don't thrive in socialsituations", suggesting that overindulgence in social media may in fact produce feelings of distress rather than aid them.

Nyasha also spoke quite strongly of her disapproval of social media platforms. She shared that she lives with a number of psychiatric diagnoses: severe generalized anxiety disorder[3],

[3] These conditions are defined by psychological diagnostic system as seen in the Diagnostic and statistical manual of mental disorders IV.
Generalized anxiety disorder is characterized by excessive anxiety and worry, occurring more days than not for at least six months. The individual finds it difficult to control the worry. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning (Edition, 2013: 222).

borderline personality disorder [4]and major depressive disorder[5]. In a group interview I had with Nyasha and Lesedi, Nyasha stated:

> I find that mental health related illness and regular technology consumption don't go well together. And in many cases, it can be the catalyst for adverse mental health. Since the dawn of excessive social media consumption or social media bingeing habits we have seen a dramatic increase in things like sedentary lifestyles, [an increase in] suicide rates in preteens and anti-social behaviour. People get literal withdrawal symptoms when they try to stop using it (Nyasha 12 June 2021).

Although these participants' fears and anxieties around technology fall on the further end of the spectrum of fears, several others expressed experiencing mild discomforts with their engagement with technology.

Amahle notes that she often feels concerned about how her current use of various technologies may affect her in the future, specifically as it relates to her digital footprint. This relates to some of the anxieties apparent in technostress induced by techno-uncertainty that occurs when users feel unsettled due to continual program changes:

> I think that that's actually a major point. There are a lot of conversations about these YouTube families that put their kids on their channels. There's a lot of debate about how that will affect those children in the long run, because the reality is we haven't had a generation of kids raised on such public platforms. So, you're kind of creating that child's digital footprint sometimes before they are even born with the pregnancy vlogs and stuff. So, I think that is a big thing that our generation would have to think about that our elders never had to think about (Amahle, 15 April 2021).

Siphesihle, however, exhibited behaviours akin to those seen in technostress induced by techno-overload:

[4] Borderline personality disorder is characterized by a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts. Individuals with borderline personality disorder make frantic efforts to avoid real or imagined abandonment. These individuals are also very sensitive to environmental circumstances. (Edition, 2013).

[5] Depressive disorder is charactered by diminished interest or pleasure in all, or almost all, activities, feelings of worthlessness or excessive or inappropriate guilt, and diminished ability to think or concentrate nearly every day (Edition, 2013).

> We have access to all of these opportunities, but it can also be overwhelming and unsettling. You constantly feel like you need to do more, or know more or participate in more (Siphesihle, 12 June 2021).

Slaves to consumption

Mobile phones have "become more and more portable and convenient, providing nearly constant (and ever more efficient) access to the internet and a diverse range of software applications and digital media" (Wilmer & Chein, 2016: 1608). This ease in accessibility means we are constantly open to communicate with others through social platforms, learn through various resources and entertain ourselves through apps that allow gaming and video streaming. The unlimited and enticing nature of this access raises concerns around the notion of habit or ritual practice, in that these new technologies, though virtual, have the potential to have unforeseen consequences on the fabric of everyday life. We are constantly negotiating the appropriate time and space to tap into the virtual, without intruding upon the physical.

Notifications built into smartphones and other technological devices are often designed to intrude on at least three of our five senses, using features such as lights, tones, and vibrations that each beckon us to "extricate ourselves from our current tasks and engage instead with the device" (Wilmer & Chein, 2016: 1608). Even in the absence of these sensory notifications, "internal and external cues (a thought about work or a social relationship, something brushing against your pocket, noticing others on their phones, etc.) provide regular reminders of the opportunity to engage with the digital world" (Wilmer & Chein, 2016: 1608).

The pervasive nature of these internal and external cues encourages an excessive use of technological aids, which has the potential to lead to a kind of addictive use of technology. Whilst the appropriateness of the word "addict" to describe pathological internet users remains a controversial issue, the excessive online behaviour associated with this behaviour includes dependence, obsessive thoughts, tolerance, diminished impulse control, inability to cease, and withdrawal. In order for an individual to be perceived as "truly addicted", the individual must experience serious life consequences as a result of their addictive behaviour, such as the loss of employment or the dissolution of a marriage, and, as stated above, excessive internet usage has the potential to intrude upon work, school, play, family, and romantic relationships.

These concerns are exemplified in Jeff Orlowski's documentary *The Social Dilemma*, which explores the consequences of the growing dependence on social media. This documentary-drama reveals how social media is reprogramming civilization with tech experts sounding the alarm on their own creations. *The Social Dilemma* features the voices of technologists, researchers, and activists working to align technology with the interests of humanity.

Tristan Harris, a former design ethicist at Google, co-founder of Centre for Humane Technologies, and key interviewee in the documentary, rejects the pervasive technological somnambulism seen today, in which the relationship between humans and technology is a simple matter of use aimed at producing a predetermined outcome (Pfaffenberger, 1988). Here, technology appears as a "morally and ethically neutral" agent (Pfaffenberger, 1988: 238). He rather argues:

> If something is a tool, it genuinely is just sitting there, waiting patiently. If something is not a tool it's demanding things from you. It's seducing you; it's manipulating you; it wants things from you. We've moved away from a tools-based technology environment to an addiction and manipulation use technology environment. Social media isn't a tool waiting to be used. It has its own goals, and it has its own means of pursuing them by using your psychology against you (*The Social Dilemma*, 2020).

The documentary-drama brings attention to the ways in which technological creatives manipulate behaviour to develop unconscious habits that can, if unchecked, lead to technology dependency. The issue of technological dependency appears to be a key component to the relationship each of the participants expressed having with their various devices. Liam, who reported spending around five hours a day on YouTube and around the same amount of time gaming stated:

> No, there are very few, if any, technologies that I could rid myself of. It is so embedded within the various aspects of my life that without it I would be completely lost. I'm pretty much dependant on technology. I use it in everything that I do all the time. It helps me with my work, my needs, my wants – everything (Liam, 27 March 2021).

A similar thought is shared in my conversations with the introverted Mpho. She explained:

> I find that I am dependent on my phone. Yeah. Like with the alarm story. If my alarm doesn't go off then you can forget about me waking up on time. Yeah. But if I don't

> care about my phone and it is not charged, you can forget about me keeping up to date with what's on the news (Mpho, 3 February 2021).

Lesedi, however, offers a kind of cyborg reflection on his dependence on technology. He notes that this interaction resembles the "relationship a knight has with his horse", where he is the knight and his technological appendages are the horse. He went on to say,

> I am the knight and then the horse is not only my mode of transport but it is my tool of battle. The more I ride it around and go to battle the more proficient I am (Lesedi, 3 February 2021).

I find this analogy intriguing. It appears as though the participant views his place and contributions to the world through the lens of his use of technology. He states that technology, or the horse, is his tool of battle. This could be a reflection on his career as an IT specialist. Without technology he would not be able to work, and through his experience in therapy he is keenly aware of the purpose that work gives him. His work, his ability to code and to programme, is an important part of his identity, and through it he is able to enact his purpose. In addition, the analogy not only presumes the rider to be in control of the horse, but also presumes that the horse belongs to its rider, reflecting the kind of human-technology interaction most young people claim to have. There is also a relationship of trust that develops between horse and rider, and yet, the personification of technology as a sentient intelligent animal also presumes that the horse may at any moment run away – refusing the rider's authority. This destabilizes the "techno-utopian dream of mastery" presented by pop culture. As Winner suggests (as cited in Dinello, 2005: 247), human beings occupy a "nominal presence in the [technological] network, but they have lost their roles as active, directing agents", and the participant is keenly aware of this. Dinello (2005: 247) echoes this sentiment by stating that under the current human technology interaction man is not at all the master, instead they are prisoners to a system they helped build.

Given Lesedi's work as an IT specialist, he exhibits a unique technological dependency in that he sees it as part of his identity. He celebrates a cyborg identity where technology fuses with his being. On the other hand, as brought out by the above paragraph, he is afraid of its potential to take on a life of its own:

Stone and Stone (as cited in Song, Larose, Eastin & Lin, 2004: 384) propose that perceived online addictive media habits are "the result of prior decision-making that once engaged activate … uses, gratifications and thought processes that became dormant with repeated media consumption". This means that technology dependency often coincides with the active seeking of pleasurable gratifications that leads online users to habitual and addictive behaviour through operant conditioning (Song *et al*., 2004: 385). The online user is thus driven to a pattern of conditioned behaviour, at which point the technological activity is less about the content and more about seeking immediate pleasure gratification (Song *et al*., 2004: 385).

Experts suggest that this boundless access to the digital world or increasingly networked lives may lend itself to a culture of instant gratification, where users seek immediate satisfaction of their needs (Anderson & Rainie, 2012). According to Shaffer (2020), gratification is the underlying reason behind technology dependency and increased social media usage.

According to Swanson (1992), gratifications can be categorized into two essential dimensions: "gratifications that result from the pleasurable experience of media content and are realized during consumption (i.e., process gratifications); and gratifications that result from learning information from media content and subsequently putting it to use in practical affairs (i.e., content gratifications)" (Song *et al*., 2004: 385). In the context of this study, participants exhibited habits of both process gratification and content gratification, which were visible in their mHealth app usage as well as their social media usage.

Liam, who is an avid gamer, said that although he has made use of mHealth apps in the past, his use of technological aids is predominantly as a form of escape. His distresses are remedied by the act of engaging with the various platforms, namely gaming and video streaming on YouTube, rather than being remedied by the actual content of the platforms. Similarly, Amahle feels that her use of social media platforms is less about sharing and receiving information and more about escaping the stresses of her reality. For her, the virtual is devoid of the anxieties she experiences in the 'real' world.

In contrast, both Mpho and Bonolo characterized their engagement with mHealth apps as a way to learn how to cope with their distresses better. Bonolo noted that she began using Fabulous, which she described as a "self-help app that uses behavioural science to help peoplereach their daily goals by emphasising on the importance of routines and good physical health"to get more productive every day. Mpho also felt that the mHealth app she used was very

educational and provided her with the knowledge and skills she needed to better mitigate her anxious feelings.

Chamath Palihapitiya, C.E.O. of Social Capital, who is among the distinguished interviewees of *The Social Dilemma,* weighs in on this culture of instant gratification by stating:

> We curate our lives around this perceived sense of perfection because we get rewarded in these short-term signals: hearts, likes, thumbs up and we conflate that with value and we conflate it with truth. And instead, what it is, is fake brittle popularity that's short term and that leaves you even more, and admit it, vacant and empty than before you did it. Because that enforces you into a vicious cycle where you're like what's the next thing that I need to do know, because I need it back. Think about that compounded by two billion people and then think about how then people react to then to the perceptions of others (The Social Dilemma, 2020).

It appears that as a generation, millennials have been herded into adopting addictive behaviours around technology use, leading to a kind of technological dependency. This dependency, coupled with instant gratification, either process or content specific, is developed through consumption. Millennials are subconsciously always looking for the next thing. Such habits leave millennials in a constant state of deficit. These thoughts are echoed in a group interview with Lesedi and Noma, where Noma suggested:

> Our generation, with everything that we experience we somehow find a way to marry that with technology. For whatever reason, whether it's good it's bad or work related or relationship related. There's always this drive to find a technological aid to help us in that journey (Nobantu, 12 June 2021).

Similarly, in a conversation with Enzokhule I asked: "Do you feel, like when you're going through something, your immediate response is to find something online that can help you figure out what you're feeling, figure out what you should do?"; to which she responded: "Yeah. That is it exactly" (April 13 2021).

This dependency on technological aids was unknowingly put to the test. On the 4th of October 2021, unsuspecting app users were plunged into a kind of social media blackout which saw WhatsApp, Instagram, and Facebook crash worldwide for six hours. During this time, users of these apps where unable to send or receive messages and explore their usual content. Brooke Erin Duffy, a professor of communications at Cornell University, noted that the "outage

brought our reliance on Facebook — and its properties like WhatsApp and Instagram — into sharp relief" (Isaac and Frenkel, 2021). Isaac and Frenkel (2021) point out that when the "outage began on Monday morning, Facebook and Instagram users quickly turned to Twitter to lament and poke fun at their inability to use the apps". Given that the participants of this study all fall under the category of millennials who have always been tethered to technological aids, I wondered how such a phenomenon would affect them. I wondered if they might use different apps to satisfy their techno needs, or whether they may relinquish themselves from their devices altogether and explore the 'real' world. Although this black out occurred outside of the data collection period, I reached out to my participants to glean their experience, while also reflecting on my own.

I spend a large portion of my day aimlessly scrolling through Instagram as a way to distract myself from the mundane feelings of my daily routine. If I become too fixated on the task at hand, my mind tends to wander to an anxiety filled land of 'what ifs' and negative self-talk, so to combat this I use my supportive apps as a means of intentionally dealing with anxious feelings when they arise as well as to evade them when doing tasks that may produce triggers. When the blackout began, I was initially blissfully unaware, listening to music on YouTube while I prepared dinner for my family. My cousin walked into the kitchen with panic on her face, screaming "I think something is wrong with Instagram!", and I was quickly ripped out of the peaceful bubble I had created for myself. It was only when I realized that WhatsApp had crashed alongside Instagram that I began to panic, because WhatsApp is the fastest and most convenient way for me to keep in contact with my friends and family. In the six hours that these apps were down I realized just how much time I spend escaping my own thoughts and feelings by retreating into the virtual. It was like I was meeting myself for the first time. Similarly, Amahle expressed how so much of our time disappears into our passive use of social media platforms that when they disappeared for several hours: "The world literally felt like it was at a standstill during that time" (Amahle, 22 October 2021).

Other participants of the study had slightly less 'apocalyptic' feelings toward the blackout. Noma, who is a budding software developer, found the event to be rather intriguing:

> As a software developer I was thrilled to know what happened and how long it was going to last. I played a scenario in my head on how things were going and how they would fix it (Noma, 19 October 2021).

The event encouraged her to think deeply about the various networks at play in the successful running and development of mobile apps; particularly, how socio-political actants can influence technological engagement. Essentially, the outage highlighted "the staggering level of precarity that structures our increasingly digitally mediated work economy" (Issac and Frenkel, 2021). In contrast, Siphesihle noted that she did not feel any strong feelings towards the occurrence:

> I had no thoughts or any intense feelings. I was able to go through the day as usual. However, I do believe that if the crash had lasted for longer, I would be petrified on how I'd be able to communicate with my friends and family. And the long crash would create free time which I would otherwise spend on Instagram (Siphesihle, 20 October 2021).

Throughout the study, my participants and I often mulled over what a zero-technology world would look like and how that would affect the kinds of selves we enact through our cyborg engagements. Although this pretended 'black-out' did not completely keep us off our mobile devices or the various apps not owned by Facebook, it did bring stark awareness to the real attachment millennials have to their preferred apps, and how, once these attachments are severed, there is a pressing need to find new ways to engage with the world. This chapter dismantled the techno-utopia portrayed in mainstream media to reveal a relationship between man and machine fuelled by fear and perceived loss of control. Technophobia and technostress were used to elaborate participants' fears around technology use. In addition, the chapter explored the frightful intimacy that young people have with their technologies. Our devices are programmed to intrude on at least three of our five senses, using features such as lights, tones, and vibrations - each intrusion coercing us to abandon the 'real' world and engage in the virtual. These cues, unbeknownst to the user, create 'addictive' patterns of behaviour that leave us feeling void when we are apart from our technologies for long periods of time.

Chapter 5

The age of digital pacifiers: app use as a form of escape

Figure 5

Thus far I have examined the nature of the relationship that young people have with their technological aids. The previous chapter drew attention to the more fear-provoking aspects of the cyborg experience, while recognizing the all-consuming attachment we have to our devices. The following chapter expands on this attachment by exploring the ways in which young people use their apps to escape the 'real' world, in often maladaptive ways. In a number of candid discussions with my participants, we dreamed up fairy tale lives where we could escape our realities. We reminisced at the prospect of evading our work responsibilities, stressful relationships, and the discomforts brought on by the global pandemic.In these makeshift worlds we were just people, doing the things that brought us joy. Although the thoughts in these discussions seemed fantastical, they called my attention to the very real need to 'escape' felt by the participants. This led me to posit what some of the things they feel they need to escape from are and they ways they choose to escape. I ask whether this behaviour adaptive or maladaptive. This chapter is divided into three sections. It explores the use of supportive technologies for the sole purpose of escaping reality. It does so by hypothesising that supportive technologies act as pacifiers for young adults, which in turn has affected our self-soothing behaviours in both adaptive and maladaptive ways.

Escapism in app use

The use of technological aids has resulted in a shift in our general awareness. When the individual becomes tethered to their mobile device, in true cyborg fashion, they inadvertently adopt a change in awareness called online vigilance. Online vigilance refers to the constant awareness of the virtual, and can be categorized by three components. The first, salience, relates to the constant preoccupations of thoughts about past, present, or future online interactions (Johannes, Veling, Dora, Meier, Reinecke & Buijzen, 2018: 4). The second component is reactibility, which refers to the ways in which the user responds to "incoming smartphone stimuli, that is, the sensitivity to notifications and speed with which they are checked" (Johannes *et al*., 2018: 4). The final component is monitoring, which refers to the frequency with which a user checks their various devices or apps, unprompted by incoming notifications (Johannes *et al*., 2018). Although online vigilance in not innately pathological, asnoted in the subsection *slaves to consumption,* the mobile nature of technological aids together with unlimited access to the virtual world raises new concerns around the notion of habit and the unforeseen consequences of these habits on the fabric of everyday life.

In contrast, online vigilance can also take the form of positive social awareness that encourages

the tethered self to lean into virtual social networks and social support systems. In addition, the constant access to content that the user may find pleasant, distractions from unkind experiences, and gratification of social needs can be beneficial (Karapanos, Teixeira, & Gouveia, 2016; Mascheroni & Vincent, 2016; Van Koningsbruggen, Hartmann, Eden, & Veling, 2017). To

illustrate, a number of the primary participants of the study noted that their social media platforms aided in bridging the geographical barriers, created by the pandemic, between friends and family:

> Being able to talk to my friends and family over WhatsApp was so important during the lockdown periods. I would have struggled without that connection and virtual support system (Mpho 7 March 2021).

As such online vigilance has the potential to impact positively on well-being by encouraging social connectedness as well as negatively impact it by encouraging "constantly monitoring and checking online streams of information which can induce absentmindedness and possibly distract from a pleasant moment" (Johannes *et al*., 2018: 4). The salient theme of online vigilance is that millennials are a generation of mind wandering cyborgs, and when their mind wanders, they instinctively journey into the virtual. Philosophers posit that a wandering mind is an unhappy mind, because true happiness exists in embracing the present moment (Killingsworth& Gilbert 2010: 932). Similarly, a study suggested that youngsters were more likely to have their mind wander "when they were tired or stressed, when they were in stimulating-to-chaotic environments, and when they were involved in boring or unpleasant activities" (Kane, Brown, McVay, Silvia, Myin-Germeys, & Kwapil, 2007: 618). This behaviour was less apparent in individuals who expressed feeling "happy and competent, when they concentrated, and when they were involved in enjoyable activities" (Kane *et al*., 2007: 618).

The mind wandering cyborg generation

As a species we spend a lot of time reflecting on our surroundings, reminiscing over things that have happened in the past or thinking about things that may happen in the future. According to Killingsworth and Gilbert (2010: 932), this "stimulus-independent thought or mind wandering" is an innate part of the brain's functioning. People spend an average of thirty to fifty percent of their day mind wandering, where mind wandering refers to a mental shift of focus from one's ongoing activity to completely unrelated thoughts (Levinson, Smallwood & Davidson, 2012. 375). It is a form of task-unrelated thoughts that can be understood as a general form of absentmindedness (Mooneyham & Schooler, 2013; Smallwood & Schooler, 2015).

Although the tendency of the mind to wander is innate, excessive mind wandering may lead to maladaptive behaviour. Studies show that there is a correlation between maladaptive daydreaming and problematic internet usage, particularly with gamers and social media users (Pietkiewicz, Nęcki, Bańbura & Tomalski, 2018: 839). When maladaptive mind wandering and technological aids align, individuals will use these platforms as a way to avoid dealing with real-life difficulties (escapism). They use fantasy to experience things that may not be attainable in real life or as a way to live out alternative identities (Pietkiewicz *et al*., 2018: 839). Escapism offers the user a way to leave or avoid reality. This is not to be conflated with the use of these technologies as a way of coping with unpleasant feelings associated with real life difficulties. According to Demetrovic *et al*. (2011), coping implies attempting to improve upon one's feelings of distress by redirecting emotions to a desirable activity, whereas escapism is the use of technology to avoid dealing with feelings of distress. The need to escape from the stress of one's reality through the use of supportive technologies is a principal theme of this study. Participants often engaged in supportive technology use, prompted by a general online vigilance, to evade dealing with the difficulties of the 'real' world. I wish to draw attention to one participant in particular.

I have known Liam, first acquainted through a mutual friend, for about five years. In those five years our interactions were always limited to a cordial greeting followed by the socially acceptable life update. Once our interaction came to an end, he would skilfully fall into the background of the social interaction, and proceed to bury his face into the screen of his mobile phone. It is only through our interactions in this research process that I now recognize this behaviour as an attempt to evade the distress that may arise as a result of the social environment. In an early interview, Liam admitted feeling as though he has not adequately attempted to address the feelings of distress brought on by his severe social anxiety:

> I sort of just try and escape them. I haven't found a way to deal with them just yet. Right now, the way I "deal" or cope with it (distress) is to escape because it's the easiestand most accessible and the only way I know how (Liam 2 May 2021).

The word 'escape' became a key component for describing his current engagement with supportive technologies:

> I don't know what I like to do except to escape, and has a result whenever I do a job, I don't like I get extremely depressed because there's nothing to counteract that feeling of doing something I don't like. Plus, the amount of time I get to escape is cut down,

> so on top of doing a job I don't like it while I'm doing it these thoughts and feelings that I'm not able to escape from comes surfacing. If there was a job that could allow me to escape at the same time, I'd be doing that, but I don't have that and maybe that's how I define passion; when you're passionate about something then you don't see it as work or you have the overwhelming sense that the work is worth it. I don't have that, so I choose to do nothing or rather escape from doing something (Liam, 29 March 2021).

Procrastination

There is a pervasive notion that technological advancement equates to increased productivity. Technological aids are designed to provide the user with quick, efficient solutions to even the most mundane problems. However, the potential ramification of the false image of productivity promoted by the use of technological aids "is the establishment of an environment conducive to wasting time" (Lavoie & Pychyl, 2001: 432).

Silver and Sabini (as cited in Lavoie & Pychyl, 2001: 432) posit that procrastination often occurs in rationalized short periods of withdrawal from the ongoing task, where the individual "justifies engaging in some minor pleasure instead of committing to the intended task". The individual makes this rationalization based on the idea that the "amount of work that can be completed in the few minutes required to engage in a more pleasurable activity is minimal" thus justifying a brief switch in activity (Lavoie & Pychyl, 2001: 432). "This cycle of 'rational' task postponement can continue until the individual perceives that a 5-minute interval will be costly to the completion of the intended task" (Lavoie & Pychyl, 2001: 432). With this in mind, technological aids, notably activities that occur online such as managing e-mails or scrolling through social media, are particularly alluring because engagement is quick. It provides instant gratification, and can be discontinued at will.

Although the internet penetration rate in South Africa is still rather modest compared to developed countries, at approximately 10 percent of the total population (Thatcher, Wretschko & Fridjhon, 2008: 2242), studies show that this is significantly higher in certain sectors, particularly "in the employed, skilled, urban population", often highlighting young adults as the most "at risk" of engaging in problematic internet usage (Thatcher *et al.*, 2008: 2243). Throughout the study, participants noted that engagement with their various technological aids

almost always occurred in a multitasking fashion, constantly switching attention from work related technology to task postponement app uses. Both Liam and Siphesihle used the word 'procrastinate' to describe some of their use of supportive technologies. Liam noted:

> I use apps and games to procrastinate (Liam 29 March).

Similarly, Siphesihle admits:

> I usually use it [social media apps] to procrastinate tasks. I usually just scroll through pages that are interesting to me (Siphesihle 2 June 2021).

Given the techno rich environment millennials are navigating, it is easy to see how engagement with technology involves a great deal of multitasking or flowing between various apps and devices in one sitting. Users could switch between various social media apps, exploring each to their satisfaction before moving on to the next one. Users could use one device to listen to music, while using another to complete their work, given the recent switch to almost exclusively remote learning. They could also find themselves watching television, while listening to music and completing a short questionnaire on their mHealth app. A suggestion is that students spend a considerable proportion of their time online multitasking, specifically 76 percent of total media use time; about 28 hours a week (Jeong & Fishbein, 2007: 365). The study showed that most popular types of "multitasking combinations involved the use of: (a) audio media (e.g., music) with traveling, homework, grooming, and social interaction; (b) TV with eating and homework; and (c) the Internet with homework. The study also explored the main activity when respondents multitask" (Jeong & Fishbein, 2007: 365).

I often found that participants had their television on or music playing on YouTube during our interview in the background. Amahle suggests:

> Even when I'm busy with work and stuff like I always need some background noise I can't just always sit in silence. Even now I'm watching/listening to a movie as I'm typing this (Amahle, 5 July 2021).

Digital pacifiers

The use of a pacifier or dummy, a common form of non-nutritive sucking in infants, is often introduced by parents as a means to calm a distressed child. When the child is noticeably

agitated, the pacifier is offered as "a form of amusement and a panacea, and the child develops a strong attachment to the sucking object" (Degan & Puppin-Rontani, 2004: 114). The act of offering an infant an object to quell or pacify unwanted distress symptoms is further extended to parents' use of technological aids. Parents giving young children access to mobile devices, such as mobile phones, tablets, and computers, is considered a norm in modern parenting. In 2015, a study conducted in the United States suggested that three-fourths of four-year-olds had their own mobile device, more than 90 percent used smart tablet devices prior to age one, and 43.5 percent of one-year-olds used mobile devices on daily basis (Chen, Chen, Wen, and Snow, 2020: 1). A similar study conducted in South Africa revealed that 94 percent of infants and toddlers in the country exceeded the recommended screentime for children their age, with infants between three to twelve months spending a median of thirty minutes on the screen a day and infants aged eighteen months spending on average twenty-five minutes on screens a day (Draper, Tomaz, Biersteker, Cook, Couper, De Milander, Flynn, Giese, Krog, Lambert & Liebenberg, 2020). The question is thus: what are parents' reasons for offering very young children access to these devices despite the advice of healthcare professions to limit screen time?

According to Chen *et al*. (2020: 2), although parents felt offering their young children access to technological aids would assist in their cognitive development, the overarching use of screen time was as a means of escape. In high conflict households between adults, young children were allowed more screen time as a means of distraction (Chen *et al*., 2020). Parents with high stress work lives use screen time as both a form of entertainment for themselves after a long day as well as an escape from the stresses associated with parenting (Chen *et al*., 2020: 2). Similarly, parents will offer a restless infant a mobile phone in order to calm them in public or use noise machines or white noise sounds on various apps to help lull them to sleep (Chen *et al*., 2020: 2). Although promoting controlled access to supportive technologies may have developmental and educational advantages, the current literature suggests that parents are more inclined to use technology as a pacifier. This leads me to believe that the millennial generation, the digital natives, are the first to be raised with the use of technological pacifiers as a means of mediating distress.

Millennials seem to continue the use of technological aids as pacifiers, as seen in their engagement with social media platforms and various gaming devices. Technologies offer immediate and "often-gratifying escape from ongoing tasks" (Atchley & Warden, 2012: 229). In a three-week study conducted by Vorbau, Mitchell and O'Hara (2007) of mobile video users

in the U.S. and in the U.K., one of the twenty-eight volunteers (thirteen from the U.K. and fifteen from the U.S.), noted that their "iPod is [their] pacifier … [and that] it helps [them] to withdraw and relax" (Vorbau *et al*., 2007: 6). Vorbau *et al*. (2007: 6) noted that in the moment the statement seemed comical, considering the participant who made the comment was 35 at the time, but it represented a fairly accurate characterization of how people are using mobile apps in general today – "as entertainment during the in-between moments of their day". Five out of the nine primary participants of my study noted using various apps in this way. When asked to reflect on her use of her support technologies, Amahle noted:

> TikTok, just as kind of like a nice distraction. To just like get away from everything I use TikTok every day. Mostly when I have nothing to do. I'll just go on TikTok and watch videos or something (Amahle, 15 April 2021).

In a candid discussion about how the Covid-19 pandemic has affected our technology usage, Lesedi reflected:

> I am also using my phone a lot more. Specifically, YouTube. I use it to listen to audiobooks on my way to work. I don't just sit and relax. I leave home at about 5 am to travel to work and I get to work around 7am but I only officially start at 8am. So, I spend those three hours listening to audiobooks (Lesedi, 24 April 2021).

Similary Amahle expressed that:

> I think when covid started, like life just stopped. It felt like there was nothing to do but stay at home and you were forced to do work so that you feel a bit more productive even though that was the only thing you could do. And that was when I started being a lot more active on twitter and stuff. Like because I could not go outside, I had to turn my attention to something else indoors while which was spending my time on Twitter. I got bored of twitter then that's when I downloaded Tiktok – best decision I've made (Amahle, 16 June 2021).

This form of supportive technology affirms the assertions posited in Chapter Four on the ability of technology to intrude upon the 'real' world. As a generation, millennials rarely we sit in discomfort without seeking solace. Tristan Harris suggests, in his interview in *The Social Dilemma*:

> we're training and conditioning a whole new generation of people that when we are uncomfortable, or lonely, or uncertain, or afraid we have a digital pacifier for ourselves that is kind of atrophying our own ability to deal with that (The Social Dilemma, 2020).

Self-Soothing

What can we understand by the term self-soothing, particularly as it relates to young adults? Self-soothing can be understood as a form of emotion regulation "which includes extrinsic and intrinsic processes involved in monitoring, evaluating, and modifying emotional reactions" (Gračanin, Bylsma, & Vingerhoets, 2014: 1). It is a tool that one uses to tolerate distress by engaging in pleasant or distracting activities as a way to calm oneself. The aim of self-soothing is thus to diminish primarily negative emotions and the corresponding physiological manifestations of such emotions, to regain a sense of homeostasis in the body (Gračanin *et al*., 2014: 1).

According to Gross (1998), this process of emotion regulation can be divided into two major categories: antecedent focused and response-focused emotion regulation. "Antecedent focused emotion regulation refers to cognitive processes and behaviours that are present before an emotion response has been initiated" (Gračanin *et al*., 2014: 1). Here the individual adapts their environment or behaviour in anticipation of a situation that may produce negative emotions or feelings of distress. "Response-focused emotion regulation, in contrast, refers to the process of dealing with one's emotions after the onset of the emotion process" (Gračanin *et al*., 2014: 1). Here the individual responds to negative emotions and their physiological manifestations after they present themselves in the body. With this in mind, the act of self-soothing can thus be "considered as a response-focused emotion regulation strategy, because it modulates one's negative emotional experience and/or excessive physiological arousal linked to emotion, whether it is positive or negative" (Gračanin *et al*., 2014: 1).

In essence, when individuals experience strong negative emotions or strong feelings of distress, they are likely to engage in a number of either adaptive or maladaptive behaviours to mitigate these feelings. These emotion regulation behaviours may be reading a book, participating in physical activities, socializing with family and friends, smoking a cigarette, drinking alcohol, or taking drugs. Along these lines, the uptake of supportive technologies by the participants of

this study act as a form of emotion regulation behaviour, particularly response-focused emotion regulation. The question is thus whether this form of response-focused emotion regulation or self-soothing behaviour is adaptive or maladaptive? In response to this, I wish to postulate on the major self-soothing activities, mediated through supportive technologies, which participants of both the in-depth interviews and the online questionnaire engaged with.

On music as a self-soothing activity

Four out of the nine primary participants and ten out of the twenty-six questionnaire respondents reported listening to calming sounds as a way of soothing anxious feelings. These sounds or music were accessed using either Headspace, Calm, or YouTube. Rowell (as cited in Yehuda, 2011: 86) posits three therapeutic functions attributed to music as expressed by the Greeks: the first suggests that music has the potential to restore both the soul and or the body to a state of homeostasis by soothing negative emotions; the second suggests that music has the potential to create the sensation of pleasure through movement; thirdly it induces a sense of "catharsis that purges the soul of emotional conflict". Music has the capacity to reach into the most dormant spaces of our minds and enhance our emotional awareness in profound ways.I reflect:

> I have never gone a day without listening to music. Listening to actual music on YouTube or listening to mediation sounds is the only way I know how to start my day. It is often the only thing that can get me out of bed in the morning and the quickest way to lull myself to sleep. There's an almost sacred bond one develops with their favourite songs. Right now, my go to song has been Free Mind by Tems. I particularly love the part of the song that goes "This is the peace that you cannot buy; Finding a way, when you cannot see; Man will desist it he cannot pray; I need to find release". This has been a kind of mantra (Lebo 5 July 2021).

Similarly, Amahle reports listening to rain sounds on YouTube to quell anxious feelings. Natural and green environments have often been associated with stress relief, stemming from the assumption that human beings subconsciously feel at peace in nature and therefore actively seek it. For this reason, mHealth apps often incorporates meditative music which simulate the sounds of nature in an attempt reduce nervous feeling. Of the supportive technologies seen in this study; Calm, Headspace, YouVersion bible app, and YouTube use natural sounds as

meditative techniques suggesting that listening to natural sounds may be a simple and easily accessible intervention that is capable of positively affecting the major human stress systems.

Negotiating self-talk

As a species, we tend to engage in forms of internal monologue in attempts either to make sense of the world around us, or to resolve internal conflict. According to Oleś, Brinthaupt, Dier and Polak (2020: 1), self-talk is an ubiquitous human phenomenon which varies from person to person. This phenomenon may take the form of reciting "positive and/or negative self-statements (Kendall *et al*., 1989); silent self-talk (i.e., inner speech) (McCarthy-Jones and Fernyhough, 2011); and out loud self-talk (i.e., private speech)" (Oleś, 2020: 2). The functions of this phenomenon include emotion regulation, increasing self-awareness, self-motivation, self-evaluation, and self-reflection. Studies suggest that regular engagement with self-talk plays a vital role in cognitive processes that allow us to make sense of and cope with painful experiences (Oleś, 2020: 2).

The participants of the study often noted engaging in some form of intrapersonal dialogue or self-talk, which then informed their use of various supportive technologies. Where participants engaged in self-critical intrapersonal dialogue, they often looked to mHealth apps to remedy or sooth their concerns.

Bonolo's decision to make use of the mHealth app Fabulous was motivated by self-talk which helped her evaluate her academic success. To remedy the concerns raised in her self-talk, she made use of the app to create a routine that would improve her chances at attaining academic success. The app helped her improve her overall productivity. In the same fashion, Liam engaged in self-reflective self-talk which revealed to him "unhealthy behaviours in [himself]", which he looked to mHealth apps to remedy.

In the case of maladaptive dialogues, or internal dialogues that participants found undesirable, unpleasant, or annoying, supportive technologies were used to either counter the negative dialogues with positive dialogues through the use of affirmations, or supportive technologies were used as a way to tune out the self-talk. At the time of the data collection process, Noma was in the middle of a lengthy job application. After several weeks of not hearing back from the employers, her anxiety levels began to rise which resulted in a lot of maladaptive self-

dialogue. She often asked herself questions like: “Will I even get the job?”; “Maybe there is something wrong with my application?” After a month of no correspondence from the employer, Noma downloaded the calm app to help sooth some of the anxious feelings brought about by this self-talk.

In March 2021, my family experienced a lot of unexpected grief. I was constantly overwhelmed with maladaptive internal dialogues which I had no idea how to remedy. The negative self-talk turned into a kind of virus I couldn’t seem to shake. The more intrusive the thoughts became, the less ‘functional’ I became. I spent all of my time in-doors buried into the cocoon I had created on the couch watching series endlessly. When it finally became apparent to me that these thoughts were not going to go way on their own, I searched the internet for some assistance. There I stumbled upon positive affirmations, which are a form of radically positive forms of self-talk. I adopted a few easy affirmations, for instance, “I am worthy of peace of mind”, in an attempt to redirect my negative self-talk into positive self-talk.

Self talk, procrastination and self soothing, at first glance, appear to be part of a strictly internal process. First originating in the mind and then enacted accordingly. The question I wish to posit is thus to what extent our technological appendages are part of our cognition? At the start of the study, I proposed a number of research questions two of which read as follows; If supportive technologies are viewed as a form of prosthesis how does this affect views of human nature and issues surrounding the mind-body dichotomy? And in what ways do supportive technologies extend human capabilities, and how does this influence binaries around bodily function? Through observing my participants intimate engagement with supportive technology, I wish to respond to these questions by suggesting that, rather than acting as prosthesis, extending certain capabilities to remedy some internal biological conflict, technology engagement is rather a continuation of cognitive processes which co-shape perception, world views and self-identification.

Like Clark and Chalmers (as sited in Aydin, 2015: 74) I wish to assert that “skin and skull” do not determine the boundaries of our cognition and as such separations between body, mind and stimulus are unjustified. Technological engagement does not simply fulfil some internal desires but actively participates in the creation of the desires and choices to satisfy it. In ourengagement “thoughts are exosomatically embodied” (Aydin, 2015: 74). My mind wanderings are seamlessly enacted in my choice of technological engagement. A technophobic view may believe that cognition has been corrupted by a kind of serpentine creature with an almost ghost

like presence, or perhaps suggest that we have, unknowingly, allowed technology to marry our thinking so much so that we, as millennials, cannot discern what thinking might look like otherwise.

In contrast, an optimistic techno native may suggest that technological engagement has allowed for a kind of transcendence that does not limit our thinking to an inside outside or mind body dichotomy. Through it our cognition is seamlessly woven into our environment allowing for an absolute entanglement with the 'other', the inanimate and the object. Recognizing that becoming is not, and cannot be, an individual endeavor, we become just as we interact with our environment. To be in the world is to be involved in a "subject and object-shaping dance of encounter, co-shaping meaning" (Haraway, 2013: 4).

This chapter explored the idea that young people often use technological aids to escape distressful feelings rather than to aid them. We spend hours aimlessly scrolling through social media platforms or find ourselves locked into the newest video game just to avoid thinking about the distresses we are faced with in the real world. The fantasy of the virtual world allows the user to live out alternative identities. The chapter postulates, that the desire to disappear into our technological aids is a continuation of our guardians' attempts to quell or pacify unwanted feeling of distress by giving young children mobile devices, such as mobile phones, tablets, and computers. As young adult we take this digital pacifying a step further by using various technologies to aid self-soothing techniques, where self-soothing refers to a form of emotional regulation which includes extrinsic and intrinsic processes involved in monitoring, evaluating, and modifying emotional reactions.

Discussion

As stated in the introductory chapter, my research question for this project has been as follows:

> How do the prosthetic possibilities of supportive technologies enable individuals experiencing daily distresses to enact ways of being in the world that challenge traditional notions of marginality and otherness?

The aim of this study was to explore the ways in which individuals embody cyborg realities, through engaging with technological aids, and how these interactions have the potential to bring to light new ways of thinking about and experiencing daily distresses. This interaction was observed through the overarching cyborg lens, embedded in posthumanist thought. A cyborg lens allows one to dismantle the binaries that exist between man and machine in order to fluently interrogate their interactions. The intention of the study was to begin to offer Anthropological perspectives on the relationship that young people have with their technological aids, in hopes to better understand human-machine entanglements and their influence on the management of uncomfortable feelings and emotions. The study also aimed to start the process of detaching Anthropology from its history of technological determinism in similar ways to that of Science and Technology.

The study sought to understand participants perceptions of and engagement with technology, in order to observe how the potentialities of supportive technologies can infringe upon the fabric of real life. Through this thesis, I have drawn on the work of various scholars, such as Haraway, Hayles, and Braidotti, as a means to foreground the importance of interrogating the complexities of the cyber realities of millennials living in South Africa and the entanglement of this engagement with the cyborg myth. Young South Africans are exploring the techno-space within the bounds of a society "where inequality and generational lineages are shaped by race and the legacy of apartheid" (Reiersgord, 2021: 2) . To illustrate the implications of this, millennials across the world have been labelled the techno-native generation, however race and income are determinants for the level of access a young individual living in South Africa will have to technology. In this sense, they offer a unique techno-native experience from that of millennials living in first word countries.

The participants in the study reflect a cross-section of people who occupy a distinct place in South African cyber culture. The young adults of this study are part of a category of individuals who were growing up during the end of the apartheid era and the transition of South Africa into a democracy. This means that their techno-native nature had to be navigated amidst racialised inequality and disparities

in social and economic wealth and well-being. The participants of the study each held intimate connections, bothpositive and maladaptive, with their respective technological aids, developing a distinct way ofknowing and participating in the world that is funnelled through technology. The participants each experience mild to severe forms of distressful feelings on a regular basis, which they remedy with app engagement. Where severe feelings of distress were present, participants engaged with mHealth apps. The mHealth apps that were used in these instances were *Calm*; which can be described as an app that aims to help users with irregular sleep as well as to promote mediation practices; *Headspace*, which educates the users on mindful mediation techniques; *7 Cups* that offers users access to trained counsellors and psychologists, and lastly *Woebot*, which takes the form of AI chatbot conversations which simulate 'real' behavioural therapy, and evidence-based mindfulness.

The study has attempted to avoid using psychiatric diagnostic language to describe feelings of distress so as not to shift the focus of study towards a medicalized lens; however, the use of mHealth apps, specifically, implies that participants lean toward biomedical strategies to aid severe feelings of distress. The mHealth apps acted as a convenient, cost effective, and non-judgmental replacement for seeking out the assistance of a trained psychologist or psychiatrist, placing the participant in the position of both client and 'counsellor'. The apps allowed the participant to mirror their thoughts and feelings back to themselves, where they could begin to interpret and assess them. Although the *Woebot* app provided the jargon and the evidence based behavioural altering tools, it was up to the participant to make sense of their own feelings and to choose which AI-suggested tools would best suit their needs.

The process, although somewhat effective, furthers a hyper individualised narrative of health seeking, which goes against the grain of South African ideologies around health and healing. In addition, the individualized nature of this form of health seeking promotes reclusive behaviours that may further isolate persons who experience distress symptoms. Although the South African healthcare system favours psychology and psychiatry premised on the Western epistemological paradigm, these ideologies cannot accurately and authentically represent and reflect indigenous realities, in particular African experiences. If we accept that our understandings of bodily function

and therefore perceived wellbeing are framed around the "knowledge production and psychological formulations based on certain philosophical conceptions and psychological presuppositions about the human being, experience and reality" (Baloyi & Ramose, 2016: 13), then we accept that the psychiatric methods used to inform the strategies available in mHealth

apps belong to a single way of theorizing, conceptualizing, and producing knowledge: that of Western psychology. Although this system has been proven to alleviate distress feelings in a variety of multi-cultural settings, it is important to note that there are many other 'psychologies' globally "which are premised on epistemological paradigms and traditional values of the people concerned" (Baloyi & Ramose, 2016: 13). As such, I question the true efficacy of mHealth apps in a diverse society such as South Africa.

Alternative to this was the use of social media to remedy feelings of distress. This form of engagement took two forms: first as a means to escape or distract oneself completely from feelings as they arose, or as a pre-emptive measure. The second was to use social media to sooth oneself by engaging in pacifying or pleasure inducing behaviours. These forms of distress mitigating technological behaviours occurred most often among the participants of the study. Participants who used social media platforms, such as Instagram, Tiktok, and Snapchat, to distract themselves from uncomfortable feelings often struggled to decern the immediate source of these feelings, noting general societal concerns such as political unrest, youth unemployment, and social pressures to conform. It seemed as though the unfiltered access to the world, provided for by our devices, meant that we are always alerted to both what is pleasing as well as the atrocities going on around us. Young people presenting behaviours associated with anxiety have a range of developmentally influenced worries about political issues. Mobile devices have significantly increased news consumption, which has inadvertently increased perceptions of the world as threatening and has increased exposure to news stories involving violence. This increased exposure and hyper awareness has resulted in an indulgence in pleasure inducing or distress evading behaviours. Lastly, current techno-interactions of young people have exponentially increased reclusive habits. Although human-technology interactions imply that we are becoming increasingly networked and therefore ever connected, these connections rarely extend past the virtual.

I delineated the above arguments across three ethnographic chapters.

The first, Chapter Three*: "Technology of the self": Millennial journeys through self-identity*, explored how the tethered self, or cyborg self, engaged in evolved acts of 'care of the self' mitigated through supportive technology use. The self that is tethered to digital space is a re-embodiment and a prosthetic consummation of the body into the virtual (Turkle, 2006). mHealth apps and various social media sites used by the participants of the study were used as self-interrogation platforms to monitor general health and well-being in an attempt to grow closer to a happier healthier version of the self. mHealth apps were used when participants

experienced more severe feelings of distress, dealing with grief, aiding diagnosed mental health issues, managing feelings that arose from job insecurity, to curb addictive behaviour, and as such were used less frequently than other technological aids. To illustrate, Lesedi noted that he only made use of the *7 Cups* once every three to four months, and only for about a day, when he was faced with severe feelings of distress. Similarly, Mpho made regular use of the *Woebot* during her father's ill health as a means to navigate the uncomfortable feelings she experienced on account of his difficult recovery.

The study revealed that access to new technologies brings about new ways of performing the self. The exponential increase in access to digital resources and new technologies means that the process of performing the self is often realized through technological mediums. Technology now forms the permeable membrane through which one's 'authentic' being interacts with the world and forms relations with others. Participants reported using various social media platforms to explore, express, and experiment with their identity. They allowed their technology interaction to inform their taste in art, music, and their fashion sense. It provided them with a seemingly judgement-free environment to flow in and out of emerging interests and an opportunity to share those interests with the world.

The second, Chapter Five: *The age of digital pacifiers: app use as a form of escape*, affirmed that engagement with supportive technologies provided opportunities for aiding distress in the way of encouraging self-reflective and self-interrogation behaviours as seen in mobile health app use. For example, Lesedi made use of the AI chatbot function of the mHealth app *Headspace* to "see beyond where [he was]." (Lesedi 3 February, 2021). The AI chatbot poses "self-reflective questions" that allow one to reflect one's feelings and begin to view one's circumstance through a different lens. The participant admitted that the response may often come across as generic, but they were always able to help him "think differently about the situation [he] was in " (Lesedi 3 February, 2021). This is similar to Mpho's self-interrogative practice with the app *Woebot*. Mpho expressed the feeling that the app was "helpful in ways that it made [her] think about things in a different way" (Mpho, 3 February 2021) .

However, this constant self-interrogation behaviour did inadvertently develop a kind of technological dependency, characterized by new methods of self-soothing. Participants soothed their distress by completely escaping into the virtual world, through gaming and aimless scrolling through social media platforms. This was the most frequent form of distress mitigating behaviour, with participants reporting using technology to escape 'real' life for several hours of the day. Similarly, participants noted listening to music and watching television on a daily

basis to evade distressful feelings that arose from paying attention to one's self-talk or "inner voices". Self-talk refers to the internal monologue that an individual will engage in to make sense of the world around them. The constant need to use technological aids to soothe our distress means we're training and conditioning a whole new generation of people who when we are uncomfortable or lonely or uncertain or afraid, find a digital pacifier for ourselves (The Social Dilemma, 2020). Essentially, we are atrophying our own ability to self-soothe.

Lastly, Chapter Four, *A fear of the cyborg: The dark side of technology usage,* showed that as the techno native generation, we feel compelled to entangle ourselves with cyborg realities, but even while intentionally exploring the porous boundary between the 'real' and the virtual, a tiny terror gnaws inside us. "Like a viral infection, technology develops into an autonomous, invasive force that expands and fulfils its dangerous potential" (Dinello, 2005: 246), evading our control. Participants noted feeling fearful about the security of their online activity and the potential for present engagements to impact negatively on future endeavours.

Our use of supportive technologies, be it social media or mobile health apps, is changing the way we create and perform our identities, and therefore how we engage with the world around us. When faced with uncomfortable feelings or internal conflict we instinctively turn to the virtual for guidance, escape, or support. If we accept that our increasingly connected lives, and the cyborg identity that comes with them, allow us to enjoy consequence-free 'identity play' and the possibility to escape the limits of the 'real' world, what then is the cost of our freedom?

How does it contribute to new knowledge?

My ethnography provides new information about the cyber realities of young South African people who are becomingin an increasingly virtual world, and how this impacts the way they understand and mitigate distresses. When the techno native generation, the natural born cyborgs, are faced with anxious feelings about societal pressure, political disruption, cultivating identity, and belonging in a both virtual and 'real' society, they seek comfort in their cyber realities.

The autoethnographic approach has been of great value in foregrounding the pervasive nature of technology use across the millennial generation. I use reflections of my own experience to further interrogate the research objectives of the study. Participating in autoethnographic work requires one to live consciously, emotionally and reflexively. It asks us to interrogate why we think and behave the way we do, and how this can impact the nature of our research. Given

that I fall within the specifications of the sample population of this study I felt it important to examine my own thoughts and emotions around the use of technological aids to mitigate distress. In doing so, I uncovered many layers of techno-dependency, digital self-soothing, and the fact that I had unknowingly masked my fondness for technology. Through my self-interrogation I discovered that, much like the other participants of the study, I heavily relied on my devices and apps to help guide me out of my discomforts.

Limitations

Ethnographic research is a never-ending endeavour. Although I allowed myself, through the willful participation of my interlocutors, to form deep and meaningful relationships with them, I cannot pretend to propose a complete understanding of their cyborg identities. I believe that the multifaceted and ever- evolving nature of this engagement make for an unreachable endeavour. However, a deeper apprehension of the process of negotiation could be realised with more time, and thorough face to face interactions.

The Covid-19 pandemic posed real challenges to physically engaging with participants. This meant that the level of depth of interaction required for ethnographic enquiry could not be reached. Although, a number of devices were put in place to try to negate this - namely, auto-ethnography and virtual interviews - it still did not provide the vivid participant portrayals one would hope to see in an ethnography.

I present a caveat in relation to the sample size of the study. The study's findings are not representative of the experiences of all South African millennial supportive technology users, as they are based on a small sample, with the aim of gathering a deeper understanding of the experiences of a few individuals. The findings therefore cannot be used to make generalisations about the whole population.

Final thoughts

In terms of researcher bias, I am a young woman who makes intimate use of technological aids in a wide variety of ways. As opposed to attempting to write out my perspectives, I took it upon myself to lean, as it were, into my own musings to further interrogate the cyborg realities of my generation.Anthropology recognizes that research, of any kind, is as much a study of the self as it is the study of others. Through our selection of methodological approaches and theoretical

frameworks, we inadvertently blend our own perspective into the study. By leaning into this thinking, the research permitted me to shape and understand my own cyborgness before attempting to understand and contribute to the investigation of the cyborg nature of others. The work eventually permeated my entire life. I learnt from my participants worldviews, and evolved as an ethnographer and as a person. Through my interactions with my participants, I began to interrogate my self-talk and the influence it has had on how I interpret distress as it manifests in my body. I have become more conscious of how I choose to quell uncomfortable thoughts and feelings, and how this affects my work, my personal relationships, and the expression of my identity. I have also become more keenly aware of how those around me have enmeshed their real worlds with the virtual in ways that support their intimate needs.

To conclude, the work supported in this thesis holds anthropological value, given that it sheds light on the contours of the social, cultural, and virtual worlds in which the next generation of human, the cyborg human, is reared. Furthermore, it provides an account of the virtual realities of young people from their own perspectives by navigating and exploring the expression and remedying of uncomfortable experiences through technology use. Such practices, as I show throughout this dissertation, nevertheless lay the groundwork upon which people can activate their identity, capacities, and cultivate their version of a more bountiful future.

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Appendices

Appendix A

PARTICIPANT INFORMED CONSENT

INFORMED CONSENT DECLARATION

(Participant)

Project Title: Assessing the use of mobile health applications to mitigate mental distress from a posthuman perspective

Lebogang Kibane from the Department of **Anthropology**, Rhodes University has requested my permission to participate in the above-mentioned research project.

The nature and the purpose of the research project and of this informed consent declaration have been explained to me in a language that I understand.

I am aware that:

1. The purpose of the research project is to explore the ways in which individuals can embody cyborg realities through engaging with supportive technologies, and how this interaction has the potential to bring to light new ways of thinking about and experiencing daily distresses. The study's main research question is thus:

"How do the prosthetic possibilities of mHealth apps enable individuals living with mental distress to experience ways of being in the world that challenge traditional notions of marginality and otherness?"

2. The Rhodes University has given ethical clearance to this research project and I have seen/ may request to see the clearance certificate.

3. By participating in this research project I will be contributing towards the creation and dissemination of knowledge pertaining to the use of mobile health technologies as well as understandings of how their prosthetic capacities offer new ways of being in the world that challenge traditional notions of marginality and otherness

4. I will participate in the project by engaging in in-depth interviews over an extend period of time.

5. My participation is entirely voluntary and should I at any stage wish to withdraw from participating further, I may do so without any negative consequences.

6. I will not be compensated for participating in the research, but my out-of-pocket expenses will be reimbursed.

7. The researcher intends publishing the research results in the form of Master thesis. However, confidentiality and anonymity of records will be maintained and that my name and identity will not be revealed to anyone who has not been involved in the conduct of the research.

8. Throughout the production of this thesis I will receive written works pertaining to our discussions in order to fact check and ensure that I am happy with the way my thoughts and opinions have been represented. I will also be given the option to request a soft copy of the final thesis before it is submitted for final review as well as after it has been submitted to keep a copy.

9. Any further questions that I might have concerning the research or my participation will be answered by

   Dr Patricia Henderson (Supervisor) at patriciachenderson@gmail.com

10. By signing this informed consent declaration I am not waiving any legal claims, rights or remedies.

11. A copy of this informed consent declaration will be given to me, and the original will be kept on record.

12. Request to take pictures, video and voice recording for this study.

I, ...have read the above information / confirm that the above information has been explained to me in a language that I understand and I am aware of this document's contents. I have asked all questions that I wished to ask and these have been answered to my satisfaction. I fully understand what is expected of me during the research.

I have not been pressurised in any way and I voluntarily agree to participate in the above-mentioned project.

……. …… …….

Participants signature **Witness** **Date**

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Appendix B

Table of complete responses to online self-administered questionnaire

Participant No	*Age*	*Race*	*Ethnicity*	*Gender identity*	*Apps Used*	*Does the app offer relief from distress*
P1	24	Black	African	Male	7 cups	Yes
P2	38	Black	Zulu	Female	Woebot	Sometimes
P3	31	Coloured	Mixed	Female	WebMD, Very Well Mind,Healthline, Quora	Sometimes
P4	22	Black	African	Female	The Pattern, Spotify Podcasts	Sometimes
P5	32	Black	Sotho	Female	Headspace	Sometimes
P6	30	Black	Xhosa	Female	Samsung Health	Yes
P7	24	Black	South African	Female	Headspace	Yes
P8	20	Black	African	Female	Headspace	Yes
P9	20	Black	Xhosa	Female	Tiktok and Snapchat	Yes
P10	20	Black	Xhosa	Female	Calm Harm	Yes
P11	23	Black	Shona	Female	Vision board, YouTube, Tiktok	Yes
P12	19	Black	Sotho	Gender non-confirming	ActionDash	No
P13	23	Black	Pedi and Tswana	Female	Calm and Headspace	Yes
P14	19	White	South African	Female	Headspace	Sometimes

P15	25	Black	Xhosa	Female	Gratitude and Calm	Sometimes
P16	26	Black	Zulu	Male	Reddit	Sometimes
P17	25	Black	African	Female	Instagram	Yes
P18	20	Black	Sotho	Female	Fabulous	Sometimes
P19	25	White	South African	Male	Headspace	Sometimes
P20	26	Black	Zulu	Female	Samsung Health	No
P21	20	Black	Zulu	Female	Headspace	Yes
P22	31	White	South African	Male	Calm	Sometimes
P23	18	Coloured	Coloured	Female	YouTube and Snapchat	Yes
P24	21	Black	Tswana	Female	Tiktok	Yes
P25	20	Black	Sepedi	Female	Gratitude	Sometimes
P26	19	Black	Tswana	Female	Instagram and Facebook	Yes