

**Qualitative Health & Quantified Cycles:
The Use of Menstrual Self-Tracking Apps in a Neoliberal Context**

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Dedication & Acknowledgements

This work is dedicated to all menstruators who are drawn to and curious about getting to know their bodies, understand them and be comfortable in them.

I want to thank all the people who have inspired me to keep an eye on the horizon. Those who believe and believed in my ‘menstrual work’ when I totally lost it, those who said it is useful, and those who kept repeating this in times when I needed to hear it.

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Abstract

This thesis is an attempt to address the place of menstrual self-tracking apps in a neoliberal context. By employing concepts like affect, embodiment, governmentality and self-surveillance, I have laid out the intersections that can be found between the fields of critical digital studies and the brand new field of critical menstrual studies, and how this can reveal more about menstrual self-tracking app usage, its roles in individual's lives, and the implications in a bigger context of neoliberalism. My focus lies on showing how menstrual self-tracking apps relate to cycle & sexual health consciousness and the promotion thereof in menstruating bodies that move around in a neoliberal context, and how this very focus urges to take situated knowledges into consideration

Keywords: Digital self-tracking. Menstrual apps. Menstrual tracking. Menstrual self-tracking apps. Period tracking. Digital data. Digital health. Health Consciousness. (Self)-surveillance. Embodiment. Situated knowledges.

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Introduction

“Using digital health technologies can be a profoundly emotional and sensory experience, with significant implications for the understanding of human bodies, health and illness states and medical care.”

-Deborah Lupton (2017: 2)

This research was mainly inspired by my personal desire to dive deeper into the field of Critical Digital Health Studies, which looks at the connection and interaction between humans, technology and health (Lupton, 2014). This desire is particularly connected to my own usage of fertility computers and menstrual self-tracking apps, the struggles after quitting hormonal birth control, issues and epiphanies I encountered in my personal journey using these devices and software, as well as by many of my clients who use these devices and/or menstrual self-tracking apps for various reasons, like fertility tracking, birth control, pregnancy achievement, etc. This research focuses specifically on the usage of menstrual self-tracking apps.

In this introduction, I will start by illustrating a short history of my own encounters and interaction with fertility devices and menstrual self-tracking apps, and how I got to the point of using this experience, which shaped me as a human being and how I experience my own menstrual cycle, sexuality and body, as the main fuel for this master’s research.

I am starting with this experience, because people who participated in my research, felt connected to this story, and it was the focal point of attention to start opening and deepening the conversation about the usage of menstrual self-tracking apps, building rapport with my informants and receive information that was valuable for the outcomes of this research.

Secondly, I will lay out the research questions I aim to answer throughout the course of this work.

Thirdly, I will locate my personal story and menstrual self-tracking app usage in the broader spectrum of academic research and scholarship surrounding digital health, and the place

of the menstrual cycle herein.

Lastly, I will provide an overview of each of the upcoming chapters.

How My Own Experience Fits In the Bigger Scope of Menstrual Cycle Research

I started to use a fertility device and menstrual apps as a consequence of challenging experiences with more normative forms of birth control, mainly contraceptive pills; as they are the most widespread form of birth control, and the most prescribed and known form at hand (Grigg-Spall, 2013; United Nations, 2015). These ways of birth control and their consequences on my body¹, sexuality and personal experience of those, drastically changed my way of decision-making concerning my own fertility and menstrual management.

When I observed myself being a passive agent of a drug to suppress my ovulation, and how this influenced me (on a personal, behavioral, emotional, social and physical level), I decided something needed to change. The usage of a contraceptive pill completely changed affective atmospheres (Lupton, 2017: 1), in my case. The way I perceived the world around me (spaces, places, humans around me, situations, etc.) in a visual, aural, olfactory and taste way, was influenced and in my case oppressed by a normative form of birth control. I wanted this to change, and that is why I shifted to using technology and software instead of drugs for managing my fertility. The tools I have been using are menstrual self-tracking apps and a fertility computer.

However, during the 7+ years I have been using these devices and apps myself, many questions arose. These questions were, for me personally, related to body image, personal

¹ I have been one of the people who seemed fairly sensitive for the side-effects connected to contraceptive pills: dramatic drops in libido, the sudden loss of feeling in my leg, and extreme fatigue and exhaustion, ascribed to the Pill by my gynaecologist and doctors.

feelings of empowerment, responsibility, personal agency, body literacy², and reproductive justice³.

For this research, I want to elevate these questions to a more academic level, and with that, investigate what has been written about digital health and self-tracking apps. The main focus therein will lie on menstrual self-tracking apps, their place in a neoliberal context, investigated through lenses of embodiment, affect, health consciousness, governmentality and (self)surveillance. I aim to show a connection between the above mentioned theoretical constructs and the experience and expression of menstrual cycle & sexual health consciousness.

In the next sections I present the preliminary inspirations for this research, followed by an academic container and the questions and subquestions that have formed the foundation for the conducting of this research.

Research Taking Shape

I personally have wondered what ‘health’ means and how it is perceived through the body, especially when it comes to issues of reproductive health, fertility and the menstrual cycle in general.

In my work as a doula and coach concerning menstrual cycle health, and teaching yoga classes for sexual and reproductive well-being, I have seen many clients and students who struggled with similar questions (be it from a more personal and experiential, rather than academic point of view). Having seen actual people struggle with these questions, has convinced me that taking these to an academic plane has value, and that this is a research topic worthy of investigating.

² "The concept of body literacy occurred to me after I read a novel illustrating the disempowering impact of illiteracy. The inability to read diminishes self esteem and opportunities to participate in the exchange of ideas. The connection to the lives of girls and women is obvious—the education of girls is a key strategy in all international development work. It struck me that most educated women in developed countries live with another kind of illiteracy—they are not taught to “read” or understand their own bodies. On the contrary, they are taught to distrust their bodies and accept various artificial means to “manage” them." –Laura Wershler from “Femme Fertile”; via The Fifth Vital Sign.

³ As explained by Loretta Ross and Rickie Solinger from “Reproductive Justice: An Introduction” (2017)

What I see in my own work, is that people⁴ often seem to be on a crossroads when it concerns their menstrual cycle and sexual well-being. There are many options concerning maintaining and promoting menstrual cycle and sexual well-being, and there is, at least in my practice, a tendency for people to have a desire to take personal responsibility for their bodies. This usually comes forth after having used various forms of normative contraceptive methods, like an IUD or the Pill, which did not fulfill their expectations in preventing pregnancy or taking charge of their bodies.

One of the things that has generated a lot of mainstream popularity over the past few years to pinpoint this ‘taking charge’ of the body, are menstrual self-tracking apps. They are marketed as tools that can support menstruators (and their partners) in taking responsibility for one’s body, sexual and reproductive health, and that can optionally be used to either promote or prevent pregnancy⁵.

Many of my students and clients who have also shifted to use these apps, come to my informative classes for Cycle & Sexual Well-Being, in which we focus on body awareness, breath and micro-movement of mainly the pelvic area, with the following goals: they want to ‘feel good in their body’, they want to ‘feel in charge of their body’, ‘change the relationship with their body’, ‘feel more sensual and empowered’. My interest in the sensory concept of ‘feeling’ and the interest for ‘health’ and what that means in a bigger context of neoliberalism, have led me to take this as the starting points on which I will build my theoretical framework in the following chapter.

Lifting Experiences to an Academic Plane

For designing this research and translating personal questions and experiences to an academic plane, I was inspired by Nike Ayo’s article “*Understanding health promotion in a neoliberal climate and the making of health conscious citizens*”, which focuses on elaborating how “the

⁴ To keep my language inclusive, I have chosen to use the words ‘people’, ‘human(s)’ and ‘menstruator(s)’ throughout the course of this work. I have done this to immediately take away heteronormative assumptions that implicate that only women experience the process of menstruation.

⁵ This is for example promoted in apps and on websites created by app developers, like Clue (<https://helloclue.com>), MyFlo (<https://myflotracker.com>), Glow and Kindara (<https://www.kindara.com>).

logic of neoliberalism is deployed” to contribute to “facilitating the modern-day health conscious movement”. She specifically focuses on how neoliberal thought is connected directly to how health is promoted, and the potential implications this can bring. (Ayo, 2010: 99).

I started to wonder how menstrual self-tracking apps and the underlying reasons⁶ to use them can be seen as neoliberal tools on the one hand, and on the other hand can be connected to Foucault’s concepts of governmentality and (self)surveillance. I will further elaborate this in Chapter 1, where I lay out the theoretical framework for this research. What the broader spectrum of academic writings has offered me for this research in particular, are thus mostly articles and questions surrounding the relationship between neoliberalism and digital health promotion (Ayo, 2011), as well as the affective interaction of technology and humans, explained through the lense of affect theory (Lupton, 2017; Levy, 2018).

Therefore, my main interest lies in exploring how menstrual self-tracking apps (sometimes in combination with fertility devices) potentially connects to health consciousness and its promotion in a neoliberal context. Because I am mainly focusing on what I call ‘menstrual cycle and sexual health and well-being’, I have adopted Ayo’s concept of ‘health consciousness’ (Ayo, 2010: 102) and translated it into a more inclusive term that focuses specifically on and implies usage of modern-day menstrual self-tracking apps: ‘menstrual cycle and sexual health consciousness’.

Based on the mentioned interests and their potential intersections, the central research question for this research will be:

How do menstrual self-tracking apps relate to menstrual cycle & sexual health consciousness and their promotion in menstruating bodies that move around in a neoliberal context?

The sub-questions that will be addressed, are:

- What is the place of menstrual apps in a neoliberal context?
- What are the implications that come with app usage in a neoliberal context?

⁶ I aim to focus on individual health promotion and the general image of what health consciousness potentially means in Western society.

- What does digital cycle & sexual health consciousness look like?
- How does the promotion of menstrual cycle & sexual health consciousness feel when using a menstrual app?

In this research, I want to look at the above mentioned research questions with keeping a somatechnics perspective in mind. This term combines both ‘soma’ and ‘techne’ — bringing together the “constitutive interaction of bodies and technologies”. The field “explores how ever changing technologies affect our daily experiences” and on top of that, it addresses questions around bodies, power, identity and subjectivity. Somatechnics as a field investigates how technologies might/do change the relationship to our bodies on a continuous level. (Górska & Olivieri, 2017: 1).

I am keeping in mind that my personal experiences and the work that I have done and currently do in the field is of influence on how I look at these topics from an academic perspective. Mainly because I have heard personal stories and observed real lived experiences, I see as much value in personal stories, as I notice in academic theory.

I believe this research and topic are relevant and can be of use for various fields, such as Critical Menstrual Studies and Critical Digital Health Studies (under which I believe both a somatechnics as well as affective lense can be subcategorized) as it is my aim to provide an interdisciplinary approach to the use of menstrual self-tracking apps as well as the meaning of these apps in the personal lives of individuals, and broader contexts such as neoliberalism.

It is my hypothesis that use of technology in the form of menstrual self-tracking apps as well as fertility devices can promote menstrual cycle & sexual health consciousness in individuals. I am aware, however, in the broader structures of digital health, a lot of critical reviewing might still be missing, as digital health studies, as well as critical menstrual studies, are still very young fields of research (Lupton: 2013; Bobel: 2016) .

Overview of Chapters

The following chapter consists of the theoretical framework and concepts I have found useful for the topic of this research. This framework is interdisciplinary and touches various fields of

scholarship, mainly critical digital health studies, somatechnics, and critical menstrual studies. It will mainly offer a critical view on digital health technologies and neoliberalism, and how these influences and affects menstrual cycle & sexual health consciousness.

Chapter 2 will offer a detailed description of the various methods and technologies that have been used to conduct research and collect data and stories.

In chapter 3, I offer an overview of the results I found thru multi-method research, and a critical view on how I have experienced this research and the used methods.

Chapter 4 combines the theories provided in chapter 1 and the results of my own research, and looks at how these interact academically.

And finally, in the conclusion, I provide my conclusions and suggestions for further investigation and scholarship concerning research on both digital health and menstrual self-tracking apps, as well as ideas to expand the fields of Critical Digital Health Studies as well as Critical Menstrual Studies.

CHAPTER 1 ::

Health Consciousness And The Digitalization Of Cycles: Concepts And Research

“Researching period tracking apps means engaging with humans and mobile phones as well as with their respective blood and data flows.”

-Johanna Levy (2018: 108)

Before I explain the theoretical framework for this research, it is necessary to give a clear overview about what menstrual self-tracking apps are, and how they are understood and defined for this particular research. As mentioned in the introduction, the aim is to look at menstrual self-tracking apps in a neoliberal context, and how this context might enforce health consciousness in individuals. On top of this, I feel the urge to mention that I am aware of my own position as a researcher, as well as a professional in the field. This awareness has led me to look critically at existing sources on digital health and more specifically menstrual self-tracking apps. I paid attention to whether the researchers themselves had had first hand experiences with their research topic, as I believe this also influences how one chooses the theoretical framework that can support it.

I wish to emphasize that for this research, I have taken Haraway’s concept of “situated knowledges” (Haraway, 1988: 575) into consideration. The fields of knowledge that construct the foundation of my research are both rather new and constantly evolving. Haraway’s situated knowledges secure an in-depth understanding of this and prevent me from providing a research that claims to ‘prove it all’. “Situated and embodied knowledges argument against various forms of unlocatable, and so irresponsible, knowledge claims.” (Haraway, 1988: 583). I want to share upfront that by taking this into consideration, this research automatically aims to reveal more depth, honesty and feminist responsibility and accountability as these require “a knowledge tuned to resonance, not to dichotomy (Haraway, 1988: 588).

Over the past 7 years I have been specializing myself in the field of menstrual cycle health, education and well-being, pregnancy prevention and achievement, holistic health care, and academia. I have looked at these topics from a theoretical perspective as a member of the Society for Menstrual Cycle Research, as well as from a personal experiential perspective, and on top of that I have been working with people around their menstrual cycles as a menstrual cycle health consultant.

The aim of this research project is to be aware of all these various positionalities in fields, roles and situations, where they do and do not intersect, and create arguments that find their grounds in embodied subjectivity and with that, in vulnerable and humble academia.

In the section below, I will explain first what menstrual self-tracking apps and fertility devices/computers are and how they are understood. Secondly, I will examine various concepts and theories that support a better understanding of menstrual self-tracking app usage in a neoliberal context: affect, embodiment, (self)surveillance and governmentality, and health consciousness.

Most of these concepts have been found on the intersection of various academic field, such as phenomenology, philosophy, and the humanities, which shows that this topic can be approached from an interdisciplinary perspective. The fields of my main interest here that have adopted these concepts from the above mentioned fields, are those of critical digital health studies, and critical menstrual studies.

I use the term ‘critical digital health studies’ as offered by Deborah Lupton. She states that researchers in this field mostly find their origin in “sociology, anthropology, science and technology studies, media studies or cultural studies” and “have sought to identify the social, cultural, political and ethical dimensions of the digital health phenomenon.” (Lupton, 2014: 1347). It is through this broad lense I wish to look as well.

The field of critical menstrual studies, then, is rather new. I have received permission from Chris Bobel⁷, Associate Professor of Women's, Gender, and Sexuality Studies at the

⁷ This permission can be found in the appedices section under Appendix 3.

University of Massachusetts, to use this term as one of the first scholars, as *The Palgrave Handbook of Critical Menstrual Studies* will only be published in 2019, and there has not been published any article using critical menstrual studies explicitly as theoretical framework. In the call for proposals, the following description of the field was given.

“[...] the handbook situates menstruation as a category of analysis, establishing the field of “critical menstrual studies” as a coherent and multi-dimensional transdisciplinary subject of inquiry and advocacy. The handbook is animated by the central question: what new lines of inquiry, including research questions and social justice engagements, are possible when we center our attention on menstrual health and politics across the lifespan? Attention to menstrual issues across the lifespan surfaces broader societal issues and tensions, including gender inequality practices and discourses of embodiment, processes of radicalization and commodification, and emergent technologies. This handbook, the first of its kind, will at once provide a comprehensive and carefully curated view of the state of the art of critical menstrual studies as well as point toward new directions in research and advocacy. Thus, *The Palgrave Handbook of Critical Menstrual Studies* will provide an unmatched research for scholars new to and already familiar with the field.” (Bobel et al., 2017⁸)

The concepts used in the following pages are to be found in Foucauldian theory, affect theory, and health consciousness theory, all framed in a neoliberal context and part of the broader context of critical digital health studies, and opened to intersect with the brand new, yet to be fully established field of critical menstrual studies.

⁸ The full call for papers can be found thru the following link <https://ilg2.files.wordpress.com/2017/06/call-for-suggestions-input-handbook-on-critical-menstrual-studies.pdf>

Menstrual Self-Tracking Apps and Fertility Devices: An Introduction

Menstrual applications or period self-tracking apps are software that can be downloaded onto mobile devices like smartphones or tablets, and enable their users to engage with their menstrual cycles, blood flow, cervical fluid flow and cervical position, sexual activity, moods, etc. on a regular (mostly daily or monthly) basis. Lupton adds to this that “they are also sociocultural products located within pre-established circuits of discourse and meaning. They are active participants that shape human bodies and selves as part of heterogeneous networks, creating new practices and knowledges.” (Lupton, 2014: 4).

She also stated that these applications as well as other digital health technologies “[...] are represented as offering positive benefits in two distinctly different but intertwined contexts; that of voluntary use in relation to achieving personal goals related to monitoring one’s body data and that of health education and promotion [...]” (Lupton, 2014: 7)

I do want to mention, however, that I am aware that similar formats of period tracking have been around longer, hard copy paper charting and on pc’s (both as software and internet websites where one can self-track their period), but I will not focus on those because this research specifically narrows down to personal mobile devices and software designed for these devices, with the goal to make tracking easy and user-friendly, as people keep these devices close to their bodies.

I have used Lupton’s view, as mentioned above, as a starting point to commence to define what is meant with menstrual apps; mainly in literature and research that is currently at hand, as the topic of menstrual self-tracking apps is fairly new, especially in the course of interdisciplinary research. In the course of this work, I have elaborated how I have interpreted and analyzed the meaning of menstrual self-tracking apps, keeping in mind Haraway’s “situated knowledges” and the concept of embodiment, as presented by Merleau-Ponty⁹: that every body experiencing menstrual tracking is unique, and that this is connected the the specific mental, emotional, historical, cultural, economic, political state of being of a specific body in space and time. This will be explained more elaborately below.

⁹ This concept will be elaborated in the following section.

Fertility devices, also known as fertility monitors or computers, then, are handheld devices that are said (and proven by scientific and clinical research - as far as this is possible, as, in my opinion, every body is different and there are always exceptions) to be able to indicate when one is fertile and when not. On one brand's website, the following is stated as description:

“Every Lady-Comp is programmed with decades worth of natural family planning research data, contains a database of more than 1 million cycles and uses bio-mathematical forecasting calculations as well as the very latest computer programming. It is a personal fertility monitor which learns and adjusts to your individual cycle, accommodating most cycle irregularities and varying cycle lengths. Lady-Comp is a one-time purchase without any recurring costs. Several clinical studies confirm its 99.3% accuracy.”¹⁰

Some fertility devices can be used in combination with an app as well. Kindara and Daysy¹¹, for example, register data in an app by connecting the device with built in thermometer to a smartphone by a cable or Bluetooth. Both of the apps offer a thermometer that needs to be purchased and data is automatically transferred via Bluetooth to the app when collected through the thermometer. For the ease of the course of this work, I have categorized these as fertility monitors that have the potential to collaborate with apps; they are complementary and work together. The Kindara app, however, can be used separately and temperatures can also be filled in manually while using an analogue thermometer.

¹⁰ Description from the Lady-Comp website <https://lady-comp.com>

¹¹ For broader understanding, I have to add that I use ‘fertility computer’ and not ‘birth control computer’. On Daysy’s website the following has been said about this: “Daysy is not a “contraceptive app” or “birth control computer.” Due to their certification, popular “contraceptive” apps advertise to be in the same class of medical product as the condom. According to directive 93/42/EWG, medical products that serve as birth control or protection from sexually transmittable diseases, such as the IUD or condom, are automatically assigned to class IIb. However, this classification gives no indication of the efficacy of a method of birth control. The classification only indicates the risk to the user’s health in terms of possible side-effects such as infections, intolerance, adhesions, thrombosis or the possible transmission of HIV. Since an app alone cannot prevent pregnancy or STDs, being named a contraceptive and thus placed in Class IIb is very misleading. Daysy indicates fertile and infertile days with 99.4% accuracy and completely side-effect free.” (<https://daysy.me/accuracy/>)

Menstrual Self-Tracking Apps in Current Research

As already mentioned above, most of the accurate and elaborate research on menstrual self-tracking apps that is currently available, can be found in the field of (critical) digital health studies (Lupton: 2014); most of which started roughly in the early 2010s . Other fields where this topic received attention are the fields of anthropology, gender studies, women’s studies, and digital health studies.

The approaches however, vary greatly. Where some researchers focus on the concepts of (inter-) corporeality and affect (Lupton, 2014, 2017) others look through the Foucauldian lense of governmentality and (self-) surveillance (Lupton, 2014; Sanders, 2017). Yet another group of researchers puts the emphasis on health consciousness, body awareness, but also responsibility and accountability, which seem to be prevalent topics when placing the use of apps in a greater context of neoliberalism (Ayo, 2012; Levy, 2018).

Below I will discuss each of these various concepts, that recurred in already existing research, in depth, and elaborate how they add to this current work.

Embodiment & Affect

From an interdisciplinary theoretical perspective, I want to connect the very existence, quality and materiality of apps, as well as their interaction with humans to the concept of affect, as this is a term that is often brought up in research and views on menstrual self-tracking apps. I’d like to link this concept to Merleau Ponty’s “embodiment”, with a specific focus on habits (Moya, 2014: 542; Lupton, 2017: 2), as menstrual self-tracking usage is, in my view, a habitualized practice of affective interaction of human and non-human actors on a regular basis¹². Moya elaborates this as follows: “This corporealization of habit agrees fully with the idea of Merleau-Ponty that the body is a correlate of the world: “Habit expresses the power we have of dilating our being in the world, or of altering our existence through incorporating new instruments”” (Merleau-Ponty, 2012 in Moya 2014: 542). I interpreted menstrual self-tracking apps as an example of an instrument to alter the experience of existence.

From an affective theory perspective, apps in general can be seen as manifestations of

¹² I connected these theories and made my own argument.

affect, combined with other actors that move around in “affective atmospheres” (Lupton: 2017: 1). Lupton has conceptualized affects as “[...] relations between humans and nonhumans, perceived and felt through the body. Affective atmosphere is understood as an assemblage of affect, humans and nonhumans that is constantly changing as new actors enter and leave spaces and places.” (Lupton, 2017: 1). Here, I want to add, inspired by Blackman, that bodies are open, rather than static and closed biological and physiological systems, and that they “participate and co-participate in the flow or passage of affect” (Blackman, 2012:2 in Smith, 2016: 112). Affect in this sense, can be defined as “the transformative forces that mediate social experiences, objects, events and relations [...]” (Blackman and Venn, 2010: 15 in Smith, 2016:2012). Affect points to the sensations and the intensities of those that flow “between actors and actants in diverse social contexts and configurations.” (Henriques, 2010 in Smith, 2016: 112).

Bodies and experiencing life through them, can, according to researchers like Levy and Lupton, be easily connected to using digital health technologies. They state in their works that using such technologies “can be a profoundly emotional and sensory experience” (Lupton, 2017: 2), and this, in turn, can contribute to or have implications for the comprehension of human bodies, but also about health care and medical care, health in general, and how illness is interpreted. (Lupton, 2017: 2).

Levy makes this even more concrete by sharing about her own research on period apps, where she specifically mentions the importance of touch. She discusses the interaction between humans and non-human actors, in this case mobile phones, on which the apps are downloaded, viewed from a perspective where the focus lies on recording things that happen in the body by moving fingers over a screen. She states that touch specifically is an important corporeal and sensory aspect of period tracking. Following Pink et. al., she understands “the use of mobile devices as an affective and corporeal sensory undertaking” (Pink et. al., 2016 in Levy, 2017: 6). I see this mentioning of touch as an habitual thing as well, as it involves regular sensory interaction of human actors with mobile devices to understand, interpret, and interact with their inner cycles, in an externalized way of interacting in the affective space that exists wherein they and their mobile phones are interdependent.

Governmentality, Self-surveillance & Neoliberalism

When focusing on menstrual self-tracking apps from a Foucaultian perspective, the concept of governmentality comes in in various scholarly works. Foucault's work around this term focused on his interest in the various ways human beings "engage in self-constituting practices", as he saw governmentality "as a method of social control and political rule (Lupton 199, in Ayo, 2012: 100) in which the formation of such subjectivities were brought about. Moreover and key to this concept of governmentality within the context of contemporary neoliberalism is that such social control is neither deemed as being overtly coercive nor forceful but rather as operating as autonomous individuals wilfully regulating themselves in the best interest of the state" (Lupton 199 in Ayo, 2012:100).

Lupton argues that digital health technologies, under which menstrual self-tracking apps also can be categorized, offer new ways to view this issue of surveillance. She also states that both subjectivity and embodiment as concepts are under siege and are implicated by these new ways of undertaking surveillance (Lupton, 2014: 12).

Smith takes it a step further and mentions to see "bodies as objects of information" and connects the term "liquid surveillance", as introduced by Bauman and Lyon (2012; Smith, 2016: 209). He states that they introduced this term "to elucidate how information held in the material body gets dissolved into gaseous flows by the extractive and circulative mechanisms that comprise the surveillant assemblage. The term is deployed to illustrate how bodily activities are liquefied (i.e.) reduced to information) as a result of their being exposed by surveillance systems, and how they are converted into datafied flows that are susceptible to dataveillance codifications." (Smith, 2012: 117).

Lupton also warns to be cautious and keep in mind that "Many of these self-tracking apps seek to impose order on otherwise disorderly or chaotic female bodies, using data to do so. Here again quantification and the supposed benefits of neutrality offered by big data are promoted and valued over people's own embodied knowledges of their bodies. The rhetoric used to promote the apps and in the text of the apps themselves suggest that the apps allow women to achieve a greater level of knowledge about their bodies' signs, symptoms and sensations using 'data science'." (Lupton, 2014: 15-16).

Even though I understand these connections and concerns, I have chosen to look at surveillance from another perspective. The reason for this is that my own research has shown other results from which I can draw different conclusions than Smith or Lupton have offered. I have chosen to be focusing more on the individualized experience of this surveillance, for focusing on dataflows and proxy eventually has the danger to take out the body and person entirely, and this is not the purpose of this research.

The reason I believe that from a feminist viewpoint, adding a more individualized approach, focusing on the voluntariness of app usage, can provide more refined and sophisticated range of epistemologies, and show, once more, the strength of feminist accountabilities and wide varieties of situated knowledges as mentioned by Haraway (1988). In further work, Lupton has mentioned that Albrecht (2008) and Best (2010) described ‘participatory surveillance’, which sees the usage of self-tracking apps as a voluntary act, which “involves the voluntary turn of the gaze upon oneself for one’s own purposes. Participatory surveillance in relation to self-tracking technologies tends to be implicated with self-reflection and examination (Lupton 2013d). In this respect it adheres to Foucault’s (1988) concept of technologies or practices of the self: those activities that are directed at self-care, self-management or self-improvement.” (Lupton, 2014: 13).

From here, the connection to health consciousness and improvement can be made.

Health Consciousness and Body & Self Awareness

The concept of governmentality as described above “provides a useful tool for demonstrating how health promotion works, not by making social and structural changes which impede upon the health and wellbeing of the population, but rather, by inciting the desire within autonomous individuals to choose to follow the imperatives set out by health promoting agencies, and thus, take on the responsibility of changing their own behaviours accordingly.” (Ayo, 2012: 100)

Various accounts of research on digital health have shown that the intention to use technology, especially in a neoliberal context, has the aim to create more health consciousness and body awareness among those who use the technologies.

Lupton and Ruckenstein have stated that both digital as well as other technologies can be

interpreted as “an important route to understanding their bodies, selves and social relations (Lupton 2013a, 2013c; Ruckenstein 2014).”. The ways in which this happens, however, is mostly in quantified ways, as menstrual self-tracking apps (and other health related tracking apps as well) require data to be filled in, and then interpreted and analyzed, both by the app and the person who uses them. The benefits of app usage have been mentioned in various accounts, in the context of participatory surveillance and have been described as “generative, contributing to various forms of subjectivities, embodiment and social relations.” (Lupton, 2014: 18). On top of that, self-tracking has been said to have the potential to “help people feel more in control of their lives and may assist them to achieve their personal goals” (Ruckenstein 2014, in Lupton, 2014: 18).

In the context of menstrual self-tracking apps, it has been mentioned that these might deliver reproductive health-related information, such as ovulation, menstrual cycles and fertility, and that it can help to manage fertility as well. The cautions in these practices, also from an individualized perspective, have evolved mainly around the idea that using self-tracking technologies brings forth the idea that people are potentially encouraged to “think about their bodies and their selves through numbers” as a result of these apps being “both subject and product of ‘scientific’ measurement and interpretation”, influencing the body and the self. (Lupton, 2014: 14).

CHAPTER 2::

Bringing Inner Cycles Outward: Methods, Technologies and Tools Used¹³

Before I started this research, I already knew it would be messy. As my background is in anthropology and I have worked extensively with the practice of participant observation, and open-ended interviewing, I understood that qualitative research is the most valuable when it comes to personal stories and experiences, as well as the sensory aspects of being human, inter-human relations and interacting with non-human actors. Multi-method researching¹⁴ has given me the opportunity to work with various ways and perspectives of looking at the topic of menstrual self-tracking apps.

Below I will explain how each method has been used for this research, how they interact with one another, complement one another, and how this has been beneficial in providing a fertile ground for “situated knowledges” (Haraway, 1988).

I have analyzed qualitative data and quantified them where this was possible and useful. By doing this, I attempt give a balanced analysis of both theory and practice, as well as experience and data, to ensure feminist accountability as suggested by Haraway (1988), nevertheless, however, accountability also lies in acknowledging that biases are inevitable.

Literature Study

I have investigated existing scholarship and research in the fields of digital health, affective theory, critical digital health studies, medical anthropology, critical menstrual studies, and gender studies to find out which theories are already developed and which ones could form an inspiration and solid theoretical ground for my own research.

Since this topic is rather ‘new’, there hasn’t been written about it so extensively yet, especially not from an interdisciplinary perspective. The most valuable scholarship I have found

¹³ A note concerning all methods used: All people who collaborated with me during this research have revealed their real names, identities, geographical locations and contact information with me. For privacy reasons and protect sensitive stories, all names will be anonymized and pseudonyms used throughout the course of this work.

¹⁴ This was inspired by a book written by P.W. Handwerker, that is called “Quick Ethnography: A Guide to Rapid Multi-Method Research” (2001).

in the field of digital health studies, more particularly in the works of Lupton, Smith and Levy. This literature study has shown me, as in depth-as possible, what has been published mainly about digital health, digital self-tracking, menstrual self-tracking and the various contexts in which they can be seen and placed. It has also shed some light on where there is still space for research to be done. This work is an attempt to provide a useful addition to the research that is already conducted. It also opens one of the first works that aims to add to the still developing academic field of critical menstrual studies.

Online Survey

To both reach more people and gain a set of useful data rather quickly, I have decided to use a mainly qualitative online survey¹⁵, in which app users could share their experiences. With this survey, I was able to reach a broader group of people that is diverse concerning geographical location, cultural and ethnic background, as well as gender identity. I must add that I am assuming that the people who have filled out this survey have been most likely from a certain economical background, as to be able to fill out the survey, one must be literate, be able to manage a computer, read and write in English, have a mobile smartphone (to download the menstrual tracking app to) and have access to a decent internet connection. The person filling out the survey also needed to be living in a country where there is access to Google forms, as this is the platform I used to create the survey.

The questions I have asked in this survey have helped me understand how people view app usage, how they feel about their bodies in connection to both these apps and technology in general, what they found most or least useful in app usage and the information it gave them — mainly about their bodies, cycles and contraception.

It was my aim to get as personal as possible, and to give people the opportunity to write from their own experience and give space for these experiences to be shared as freely as possible, written from their own context and frameworks — therefore I chose to let people write most of their own answers in paragraphs instead of letting them tick off answers I had provided.

¹⁵ The full survey can be found in Appendix 1.

Participant Observation

I have used this method in three ‘spaces’ -- online (supportive) forums that are built-in in menstrual apps, as well as closed Facebook groups; and during interviews I participated in a space where the interviewee showed me how they provide information and data to the specific app that they are using -- these were physical spaces (either the home of my participant, a park or a quiet coffee house); and the last space was again online, through Skype or What’s App video call.

In all of these spaces except from the first ones, I was able to also observe body language. In the online spaces like forums I could observe language besides content of the things shared. By using participant observation as a method, I was able to observe people’s body language in physical spaces, and analyze what language was used in online groups to speak about the topic of menstrual self-tracking apps. I believe both body language and written language reveal a lot about people’s attitude towards life, how they move through it, and how they approach life in general (Freedman, 2018).

Auto-Ethnographic Practices

Since I started using apps as well as fertility devices before the idea of this research was even brought into the world, I see my personal experiences and the rather big set of data collected over the years, as a valid contribution to this research. I will weave some personal stories into this work to illustrate certain arguments.

I have used this method specifically because I noticed that my own experiences, and especially the revealing of those during interviews (after having analyzed them academically and having noticed which parts could be valuable) served as recognition points for people to open up about their own experiences as well. Revealing my own experiences built trust and confidence and paved the way for other people to relate and share their own stories, concerns, questions or epiphanies connected to menstrual self-tracking app usage and related topics.

Open-Ended Interviews¹⁶

Apart from a qualitative survey, I have conducted open-ended interviews, to give people the chance to share their story with me and have as little guidance as possible, so that their story completely evolved and is shared in the ways they wanted, from their own contexts, locations and frameworks.

I have only suggested to share what my informants saw as most valuable for them to share concerning menstrual apps, their experiences with them and how they feel about them. All interviews have been recorded with full consent of my participants, and will only and exclusively be used for this research. After transcription, audio files were destroyed from the recording device.

This method was used because I am familiar with it and have noticed before, during my Bachelor's research in Cultural Anthropology, as well as for interviews I conducted for my own blog, how much value there is in an interview that is more like what I'd call a 'casual conversation', where there is no pressure to reveal things, but it happens automatically in the course of the conversation — because our brains make links anyway.

There were ten people who identified as woman who were open for an open ended interview with me. Five of them took place via a medium (either Skype or What's App video call) and five of them took place live -- two interviews outside in a park, one at a person's home, and two in a quiet coffee shop.

Field Notes & Memories

Whereas field notes are considered a legit research tool, I have not found a justification for memories being seen as a valid research tool. Nevertheless, I have used them for my research.

My field notes consisted of notes that I took in various contexts, in expected and unexpected spaces where the topic of menstrual apps came to be mentioned. I carried (and still carry, as it is my habit) a notebook and my phone's notebook with me all the time (for various

¹⁶ I have called these open-ended interviews but most of these ended up being unstructured conversations that were recorded, while I as a researcher and my interviewee flowed from one topic to another -- all was explicitly or implicitly related to menstrual self-tracking apps.

purposes: writing poetry, lyrics, contact information, books, movies, etc.) and I write down all that is useful for various aspects of my current or future life. When I, for whatever reason, forgot my notebook or left it in another space, I drew from my memory and later wrote down what I needed to record, either in my little notebook or the notes section on my smartphone.

The contexts in which I have collected field notes are the following: during open-ended interviews, in casual conversations with people at the yoga studio where I work, after a (yoga) class I taught and where the topic of menstrual apps was mentioned, when I found an interesting Facebook/Instagram page/post and needed to remember it for later, in casual conversations with close friends/family/friends of friends, and e-mails with questions on menstrual apps that I received in my professional inbox.

I have used this as a method as I encountered the same issues or things coming up in various situations and spaces with different people. I have not used this to generalize anything, but to bring the attention to the fact that apparently, synchronically, things, questions and analogies come up for various people around the same topic.

In-Depth Analysis & Study of Websites and In-App Information

I have critically analyzed and studied all the websites and in-app information of well-known and popular fertility devices and apps that recurred in my survey, interviews and conversations with people. The brands of these apps and devices include: Lady-Comp, Daysy, Kindara, Clue, MyFLO, Natural Cycles, Glow, Eve. by Glow, Ovia and Period Tracker Lite.

In this analysis I looked at design, colors and lay-out used, the ways and language used to communicate information, terms used that might point to gender binaries and discursive narrative, and the scientific base of information provided. Here, also the concept of Haraway's "situated knowledges" (Haraway, 1988) was valuable for me to take into consideration, as it allowed me to look at these apps and how they are built, how in-app communication happens, etc. from a critical multi-dimensional perspective, and secure an attitude of critical yet humble, responsible and accountable feminist observations from my side as a researcher.

In the following chapter I will move to the results that came about after using Multi-Method Researching (Handwerker, 2001). I will discuss the results of every method used, and connect this to theory in Chapter 4.

CHAPTER 3 ::

Menstruators & Mobiles: Experiences of Menstrual Self-Tracking App Usage

“I wanted to *feel* my body’s natural cycles and have better health.”

-anonymized informant

During the research I wondered whether there would ever be at least one meaningful answer to analyze and use as resourceful data to make sense of the meaning of menstrual self-tracking apps. What was the case however, was that all the answers I received were the result of practices that, in one way or another, gave meaning to my informant’s lives, and thus all information collected had something valuable to say about menstrual self-tracking apps. Every research method used revealed other results and provided me with different, new or overlapping information.

Below, I will give an overview of my research results and mainly describe them. In Chapter 4, my results and findings will be weaved into the broader spectrum of scholarship that was discussed in Chapter 1.

Categorizations: Focus on Menstrual Cycle Measurement Methods

Before moving to the results, it needs to be emphasized that I needed to take decisions on which apps to include in this research, both to be able to distinguish between various apps, and to make it accessible.

This research, which has been conducted from February until June 2018, related to the most popular apps found in the Apple App store and Google Play store, using search terms like ‘fertility’, ‘fertility awareness’, ‘period’, ‘period tracker’, ‘menstruation’ ‘period calendar’, ‘contraception’, ‘conception’, and ‘ovulation’.

The apps that I eventually have chosen to review by usage and to research in-depth have been the following: Kindara, daysyView, Natrual Cycles, Clue, Glow, Eve, Ovia, MyFlo and Period Tracker Lite.

It is important to mention, as an auto-ethnographic account of transparency, that I have been

using the app Kindara since 2015, to record data¹⁷ from my Lady-Comp, which I started using in 2012, and supplement this data with the options provided in Kindara (cervical fluid consistency, vaginal sensation, position/openness/firmness of the cervix, spotting, intercourse, notes, and self-added tracking tags like moon phases, emotions, and travel).

In their communication, most of these apps offered an option for or even promised health promotion, menstrual cycle awareness, insight, information and education, and pregnancy prevention and/or achievement. Lupton categorizes apps of this kind as self-tracking apps (Lupton, 2014:9), and I share her view in this.

However, in my own personal period tracking research, which started before I enrolled in the university programme, I have observed various sorts of such apps, which I have categorized in two different groups: Sympto-Thermal Method apps and Calendar/Rhythm Method apps. This categorization is done according to my own experience, active use, research and interpretation of the apps, as well as my knowledge about methods of birth control, backed up by a contraception fact sheet created by the World Health Organization (WHO, 2018). I call these methods: Methods for Menstrual Cycle Measurement.

I will use this categorization, focusing on menstrual cycle measurement methods, throughout the following chapters, because it has been the most relevant way of categorizing according to stories and experiences of my informants, both in interviews as well as in the survey that has been conducted.

In academic scholarship, I have not found any account of clear differentiation between menstrual self-tracking apps per se. This, to me, showed lack of accuracy and differentiation for the research, because the kind of app really makes a difference in interpretation, goals and benefits expressed by users. Lupton has differentiated between “sexual and reproductive self-tracking apps” because she states that certain apps “represent sexuality and reproduction in certain defined and limited ways that work to perpetuate normative stereotypes and assumptions about women and men as sexual and reproductive subjects” (Lupton, 2014: 2). She ends with suggesting to ‘queer’ these apps more (Lupton, 2014: 2); my suggestion to differentiate

¹⁷ Which, as mentioned in the Introduction of this work, measures Basal Body Temperature and records the start of menstruation, and estimates fertility, ovulation based on algorithms.

according to methods rather than gender identity or bodily function is also an attempt to move closer to her suggestion.

I do want to emphasize that I made this categorization, simply because it made sense to me, and that another researcher might have done it differently, and that I am aware of the biases it might cause, as software is constantly updated (both in content, layout and usage options) and in the future, new ways of categorizing might be available. On top of that, I am very aware that my - mainly professional - background has had influence on how I observe this research topic, my informants, the apps I have investigated, and that this has led to a unique blend of conclusions.

My knowledge on these apps before this research has mainly evolved around has been the result of very personal stories, struggles and reasons of people who used these apps.

For this research, I categorized menstrual apps as said, according to two types of categorized menstrual cycle measurement methods that are also categorized as birth control methods by the World Health Organization (regardless of the fact that people were actually using their app as birth control or not) -- one of them approved by the WHO as 98% safe, the other considered 75% safe (WHO, 2018).

By dividing apps in the methods described below, I aim to take off the focus off of gender identity and heteronormativity.

The two types I distilled out of the menstrual self-tracking app maze I found myself in are the following:

- Apps that work according to the Sympto-Thermal Method (also commonly known as the Fertility Awareness Method but that I refuse to use as it implies the focus should lie on fertility)
- Apps that work according to the Rhythm/Calendar Method

For this research it has been relevant to categorize as such, because my informants have connected app usage to both birth control and pregnancy wishes, as to the desire of gaining more insight in their cyclical bodies.

Apps that work according to the Sympto-Thermal Method require its users to physically interact with their body, and then fill out the collected data into the app. The information that needs to be collected as a consequence of touch-interaction with the body is the following: basal body temperature needs to be taken by a digital thermometer or fertility computer/device (the temperature meter touches the same part of the body each day of the cycle -- the most common way is under the tongue), the texture and sensation of the cervical mucus needs to be obtained by inserting a finger in or holding against the vagina, and optionally, the position and the sensation of the cervix needs to be determined by inserting the finger in the vagina until the cervix is located and can be observed by touch. These three observations are also known as the primary fertility signs of the body (Werschler, 2006: 52).

This method thus requires two types of sensory experiences: an interaction with one's body and the fertility signs it provides, but also, an interaction of the body with technology, i.e. the mobile device and the app. Without reading the signs of the body, the app is useless, as it requires signs of the body to work 'accurately'.

Apps that work according to the Calendar or Rhythm method, only require to fill out the beginning and end of the menstrual bleeding. According to this information, the app will predict the next period. In a sense, this is also interacting with the body, but the difference here is that the body does not need to be touched. It only requires a visual observation (as in: seeing menstrual blood), and this is enough to interact with the menstrual tracker app.

Some of these apps, however, also have the option to fill out basal body temperature and cervical fluid and sometimes cervical position, but in the app it is stated that they are currently not charted. Even though it is possible to give the app accurate data that are considered primary fertility signs, they are not charted as such and thus cannot be used as legit sympto-thermal method. It is also possible to track things like moods, cravings, exercise, tests (pregnancy or ovulation), intercourse, productivity, and others. All of these are not considered primary fertility signs, so I have categorized these apps under Rhythm/Calendar method apps.

When observing apps according to the above mentioned methods, these are the results:

- Sympto-thermal method apps¹⁸: Kindara, daysyView, Glow, Natural Cycles
- Rhythm/Calendar method apps: MyFlo, Clue, Eve, Ovia and Period Tracker Lite.

Collected Data

- In total, 72 people responded to the survey
- I interviewed 10 people in an actual interview personally
- I spoke casually with about 50 different people about menstrual apps and their views in various contexts: at my work at the desk of a yoga studio, with my family, with friends, with students in my yoga classes, with clients during or after a consult.
- E-mail communication with app developers I have met at a conference organized by The Society for Menstrual Cycle Research in 2015 and 2017; these companies were: Clue, Kindara, Daysy and Justisse.

Quantified Survey Results

94,4% identifies as female

68,1% has a partner

Demographics

3 continents

18 different countries

Ages:

25-34 : 68,1%

35-44 : 20,8%

Used hormonal contraception:

¹⁸ Note: Glow, Eve and Ovia could potentially be used as Sympto-Thermal Method apps as they have the option to fill out and review primary fertility signs.

Yes: 86,1%

No: 13,9%

Form of hormonal birth control used (multiple options possible):

The Pill: 83,3%

Hormonal IUD: 22,2%

Hormonal Shot: 6,9%

Patch: 4,2%

Other forms:

Calendar/Rhythm method: 26,4%

Symptothermal method: 13,9%

Menstruators' Stories

The majority of the people who filled out the survey reported to have used some form of hormonal birth control. By asking the question “why did you quit hormonal birth control?” I hoped to find out more about people relationship to their bodies, and the meaning and value they gave to it.

There were four reasons that people mentioned the most: 1) To achieve better health; not being on hormonal birth control was connected to better overall health and menstrual cycle & sexual health consciousness; 2) Worries about the effects of hormones on the body; people expressed their concerns about synthetic hormones and the fact that they did not know what these would cause in their bodies; 3) Wanting to conceive; 4) Feeling the body and ‘natural cycle’; people expressed their desire to know how their bodies would function off of hormonal birth control. Having a ‘natural cycle’ that ovulated and is not suppressed by synthetic hormones was connected to ideas about health, and was considered more healthy than being on hormonal birth control.

A verb expressed a lot to explain their reasons was ‘to feel’, which points out that the decision to stop and shift to another method was perhaps not something that people solely

thought out, but did as a response to how they corporeally felt.

Below are some of the answers people gave to the above mentioned question:

“Because of side effects & because it *felt* unnatural to me.”

“I wanted to *feel* my body’s natural cycles and have better health.”

“It *felt* wrong to continue to put synthetic hormones in my body. I could *feel* it was having a negative impact on my natural state of being.”

“I wanted to *feel* my true feminine cycle.”

“It started to *feel* contra nature not to menstruate.”

“I had been thinking of quitting hormonal birth control for a long time, because I had come to the realisation that I had never actually experienced my own cycle and my adult body without the extra hormones. Also, I had been dealing with depression and heard from multiple women about their experiences in quitting the hormonal contraceptive pill and how quitting seemed to alleviate or even remove so many of their problems. Then one day my body started bleeding in the middle of my cycle while I wasn't expecting it at all (while I was experiencing a lot of stress), which had never happened before, and I took it as a sign of my body telling me to listen up. I instantly *felt* that I needed to stop taking the pill that day.”

“First stop because it never *felt* natural. Second stop because we wanted to have children”

“*Felt* unnatural, side-effects, strange to do this.”

“I disliked the pill so I went for the Mirena. But my breasts hurt so much, all the time. Also no libido, and I felt very unstable mood-wise (sad, paranoid). Also I noticed a dull ache in my cervix, which *felt* like my body telling me to get that thing out. I did research and found out about FAM, so wanted to do that instead.”

Another question that provided insight about feeling, was the question “How do you feel about menstrual self-tracking apps?”. There were two answers that brought clarity on what is at stake for people to start using menstrual self-tracking apps: on the one hand there was a desire to get their bodies and cycles better, while on the other hand, there was a concern about privacy and the

fact that it was unclear about what would happen with their information.

“I was not very keen. I have issues with privacy and data collection and don't like the idea of putting all that personal information in.”

“Thought always it was a very smart useful invention. Great to see technology used for women's need for once.”

“I was interested but mistrusting as I had grown up being told the only way to be safe was hormones and that it was easy to get pregnant any time.”

“Two friends of mine used it and showed it to me. Thought it would be handy to track it, as I wasn't paying very much attention to the duration of my cycles. My other reaction was, oh my god, all the data of many women online to be (mis)used. A bit of an intrusion on my privacy.”

The mostly mentioned main reasons for using a menstrual self-tracking app were the following (listed in order of most frequent appearance in the survey, interviews and casual conversations) :

1. Insight in the menstrual cycle
2. Be more prepared for menstruation/ovulation (instead of experiencing it as an unexpected visitor)
3. Birth control
4. Keeping track of menstrual cycle, ovulation and fertile window, and menstruation (to see where things went 'wrong' if something was off, or knowing when would be a good time to try to conceive)
5. Gaining body and cycle confidence

Another question that brought clarity and insight in what people value about the app, and the connection with their own feelings was: “How do you feel about the app that you are using?”

What was significant to me, is that people longed to get more insight in their own menstrual cycle, and that they liked it that their cycles were visibly quantified into data so that it could be interpreted, however, the fact that this data could potentially be available to others, was

approached with concern and sometimes seen as a problem, or something they disliked about the app they were using. This did not, however, stop people from using their app altogether. The wish to get to know their own bodies seemed to be bigger than the concern of who got to see their data. Another answer that caught my attention, is that people valued the fact that some of the apps were more queered than others.

“It's great and practical and it doesn't emphasize on women.”

“Clue is my main app. I adore it. Queer friendly, not feminine, useful information, accurate, great e-mails from producer but not a ton of alerts etc that get annoying.”

“OK, but of course feel vary of ways they use my data - although maybe it's OK to have more data about periods so that we know more. Unsure.”

“Pretty good, but I feel as though they put design above comprehensive data collection.”

“I don't get any push notifications (like). I use it to log data about cervical fluid, mood, period, when I had sex. It tells me my predictable fertile window (but use my own body as main reference!).”

“I like that it is now inclusive of queer and trans folk!”

“Needs more features and ways to look at data.”

“I like the way how to handle the app. It is very clear and easy and I think that Clue does not misuse and sell my data. At least, I hope.”

To make the connection with technology and menstrual self-tracking apps in a neoliberal context, I asked how people feel about interacting with and using technology (i.e. their mobile phone) to collect information that concerns their body. This automatically opened the conversation more about data, but also about the connection with their own bodies in relation to technology.

The answers to this varied from people being critical and concerned about what would happen to sensitive and private information in big databases, to people realizing for the first time that they had not thought about it that they were in fact interacting with technology. They were so used to have their phones on them always, that it had not occurred to them that this could be something to be questioned. For some, this question on the survey or in the interview sparked their minds to start thinking about it, and realize they had actually never thought about it that way. While others found it very positive to be able to get to know more about their bodies by using technology.

A few things caught my attention: Some people are, as said concerned about information and data about their bodies being shared online and not really knowing who has access to it, whereas other say things like “If it were anything else about my body I'd be concerned about security but it's just my period so I don't really care.”, which seems to point to a separation of someone's period and a body as whole, and how both a body and periods are validated by that person.

Others however, expressed that using technology to collect information that concerns their body as something “natural”; so here the interaction of the body with technology is considered as natural.

“Very good question! I am fully aware I share the MOST private information with a online platform, and yes I'm concerned that this information might be used for purposes I have no knowledge of or that my info is being sold to god knows who. I share information I don't even share with real people so yeah, crazy right! What I get in return: I use the app to optimise our chances to conceive, that's the main reason, so by using the app I can keep an eye on my cycle and where I am in my cycle, compare it with other months I logged data, and so on. But mainly trying to conceive comes down to those intimate moments with my man, and we try to have those as often as we can, as long as it feels 'natural' and not forced because an app tells me to have sex now.”

“Somehow unnatural. Though it's a small job, It feels like a big job”

“It is the only body app I use. I don't like sharing too much data about my body but this is handy for me.”

“Weird at first, but grateful for it now to see patterns and help explain my issues”

“A bit suspicious about what happens with that data”

“I think it's one of the most effective ways to get 'modern-minded' women to stop and think about and listen to their bodies.”

“I use my phone a lot so really nice.”

“It’s insightful.”

“I do everything on my phone so I like that instead of using old fashioned paper diary.”

“Handy. Saves time and I always have it at hand.”

“Empowering to collect data about my own body”

“Great! It is so nice to finally have a place to log my symptoms”

“I think it's great that we have this possibility. My grandmother used a calendar when she had 4 babies and ten years after the last one, another one came. Now you have a good idea when you are fertile and when not.”

“I feel the technology is something that can be used to enrich and develop our lives further, it can help us out in many ways. But we should always be aware and critical of and responsible in how we use it. I don't necessarily feel one way or the other about interacting about this information with technology on my phone, but I do feel like I'd want this information to not end up being shared with third parties and what not. Privacy would be an important issue for me here.”

“I think it’s really helpful for people to learn more about their bodies and if technology can help with this, then that is a good thing.”

“I think it’s very practical way for people to be introduced to something that is so beneficial, but with older methods of tracking can take some time to understand and also is more time consuming.”

“No problem, as long as it's discrete.”

“One of the things I feel technology is good for.”

“I find it very convenient since I always have my phone on me.”

“I’m a fan, makes it easy to show my doc when things started, how long an issue has been going on. Helps me realize something isn't in my head.”

“Human memory is notoriously unreliable, and given how dependent we are on our phones anyhow, and that paper/pencil things can be lost more easily, I think it's great.”

“I don't like it. I find it invasive and unnecessary. I have real concerns about data protection.”

“If it were anything else about my body I'd be concerned about security but it's just my period so I don't really care.”

“I love it! It is easy, always with me, and useful for reference when speaking to my doctor.”

“It’s handy for me. I sleep at my boyfriend’s place a lot, I always have my phone with me, so I can always make notes or check where I am in my cycle again.”

“I am OK with combining body and technology. On the other hand I don't like using online apps with my bodily information for privacy reasons (feels even more intimate than Google knowing I like Teslas). I wish there was an app or software to be used offline, that's mine, 100% transparent, no publicity. Like a diary feeling and no obligated software updates..”

Summary of the survey

I created this survey to get quick and immediate insight in what people's stance was in menstrual self-tracking usage, mainly when it concerned the redefining of their relationship to their own body as a consequence of menstrual self-track usage, as well as the connection of that body to technology usage in the form of an app that can be downloaded on their mobile phone.

The most important insights the survey provided me with about menstrual self-tracking apps were the following:

1. People often went on to use menstrual self-tracking apps after quitting hormonal birth control, not specifically always as birth control, but to gain more insight in their menstrual cycles and keep track of when they were where in their cycles -- with this insight I conclude that more people were using apps according to the rhythm method rather than the sympto-thermal method, as described earlier.
2. Technology in the form of menstrual self-tracking apps was often seen as an adequate tool to create health consciousness, mainly to more insight in the menstrual cycle, which was then assumed and experienced to lead to more body awareness and confidence.
3. The fact that technology was used to get more insight in the individual's cycle was seen as positive, whereas the use of technology and the subsequent collection of personal data that would be added to a bigger database created concern and worry about what would happen with this data. Nevertheless, the concern was smaller than the desire to gain more body knowledge, as most people reported to continue to use their app, even though the concern for what would happen with their data was there.
4. There was an understanding of the fact that these apps could be used as birth control, but a clear distinction between the Sympto-Thermal method and Rhythm/Calendar method was not always made.

Conversations with Bodies

During the course of my research, I tracked my own menstrual cycle by using a Lady-Comp, with which I took my own basal body temperature every morning, in combination with two menstrual self-tracking apps: Clue and Kindara.

Since I had been tracking for quite a while, it was not a great task for me to track my menstrual cycle in this way. I tracked basal body temperature, cervical fluid and the texture and location of my cervix. For the research I started to use all the mentioned apps for one month, and I remained using my Lady-Comp in combination with Kindara and Clue. The reason I started adding Clue to my daily tracking was because this is a Rhythm/Calendar Method app and I wanted to use both methods for the auto-ethnographic account of this research.

Most people who participated in my research know me personally, or (have) follow(ed) my work via my company's newsletter¹⁹, my professional Instagram page, and both my professional page and personal profile on Facebook. I assume this has helped with building trust, as people already 'knew' me and/or my work before participating in the research.

I decided to not exclude my own experiences from my own research, as I noticed that when people would hear/read about my own experiences, they would feel more confident to share their own stories. What happened a lot as well, is that people saw me as an 'expert' on menstrual health and well-being. So what would happen often is that people would start the conversation with something like "You know..I have this thing.. And I want to know whether it is normal..".

Most of the people I interviewed started with either sharing their own negative experience with some form of hormonal birth control, or sharing issues of their sexual lives, or issues they encountered during their periods with me.

The same thing happened in Facebook groups and on Instagram: whenever I would post about this research, someone would feel called to share their story. In closed Facebook groups it would happen both as a comment under a post, so other people could see it -- and sometimes people would reply and praise the person for sharing their story, or share a similar story in

¹⁹ The name of this company is Cycle Seeds and monthly newsletters are sent to everyone who subscribed.

recognition. Other times, I would receive private messages on both platforms in which people would say things like “This is so good, there is not enough research on menstrual cycles.” while others would share a personal story on their periods, hormonal birth control, difficulties they faced while trying to conceive and asking for my advice, or questions on how to communicate with their partners about their menstrual cycles and their experience thereof.

I discovered that even though we had our own bodies, our experiences as menstruators and menstruators interacting with technology were rather similar. As mentioned above, disappointing or negative experiences with hormonal birth control, the desire to be freed from this, and the relief that came when finding out about menstrual self-tracking apps, were all common denominators when I interacted with my informants. Recognition and the openness to talk about these experiences opened the space between my informants and myself to talk about other cycle related topics as well: stories about menstrual pain, period sex anecdotes, leakage stories, trying to conceive, pregnancy, birth and the blood that flows during this process, and sometimes miscarriage and abortion stories would be shared.

Another topic that was talked about a lot is the changes in relationships with partners and the improvement of sex lives between menstrual self-tracking app users and their partners; what was mainly mentioned was in that when one was becoming better in understanding, one also became more fluent in expressing what one was feeling in the body and what felt okay and what not.

After these detours towards related topics had happened multiple times in various interviews with different people, I realized that this was not merely about menstrual self-tracking apps anymore. The appearance of this technological tool and the fact that it was so easily available and accessible, seemed to make it more available and accessible to talk about the cycles it was recording too, and the memories and stories that were directly connected to these cycles. This, in turn, was connected to relationships to bodies, body and health consciousness; talking about bodies, menstrual cycles and the experiences thereof, was considered health, and thus the mere having of conversations about these very topics, added to health consciousness.

In-depth Analysis of Websites and In-app Information

This did not form the greatest part of the research, and I will not lay this out in great detail, as people's personal stories form the greatest source of knowledge base for the findings of this research.

The aspects I was specifically curious about on both websites and in apps, were communication, language, layout and color palette. I wanted to know how people were called in to buy/use the app, and how information was communicated to them, and whether this was done by using heteronormative language and color standards. On top of that I wanted to know whether the information provided pointed towards body awareness and health consciousness, and whether people were encouraged to take responsibility over their bodies as a tool for individual freedom in a neoliberal context.

Most of the apps that were analyzed showed heteronormative language -- words like 'woman' and 'female' was used often, and color palettes were various shades of pinks and purples (Period Tracker Lite, MyFlo, Glow, Kindara, Natural Cycles) while others were more neutral, showing greens, yellows and blues (Clue, Ovia, daysyView). The ones that were more neutral, also used more gender-neutral language. Clue was the most inclusive, neutral and queered. What I noticed in both interviews and the survey, was that queer-identifying people were more drawn to the usage of the more neutral looking apps, as they seemed to be more focusing on color palettes and heteronormative layouts, to which they did not feel drawn.

Auto-ethnographic Sidenotes

As I have been using menstrual self-tracking apps for quite a while now, I find it, as said, valuable to mention my own experience, but even more importantly, how these personal experiences helped me to conduct this very research.

In many accounts (online on social media platforms, during interviews as well as during casual conversations), my own experiences and expertise created a safe space and set the bar is on what kind of information was 'okay' to be shared.

Even though my professional role helped me a lot to collect valuable data, I did struggle to differentiate and switch between my roles as a researcher, authority/professional in the field,

and fellow menstruator. Sometimes, as already mentioned, I would be in my role of researcher and people would ask me for advice -- which I was sure to be able to give -- and then I would wonder until where my status and role as researcher went, and where my role as consultant started, and where I could stay humble enough to see myself as a fellow menstruator with similar experiences informants could identify with, and whether it was okay to mix these three for the sake of receiving valuable data. Eventually I accepted that being able to switch between these roles, meant that I gained a multiple perspectives, and a rich data set. I realized that when I was aware when the switch took place, I could identify my various locations and “situate” my “knowledges” (Rich, 1984; Haraway, 1988), which is the strength of the auto-ethnographical account in this research.

I felt it was my responsibility to always remain aware of the fact that my various locations and roles influenced the ways I communicated with my informants, and that the fact that when I was there as a researcher, I was in fact, part of the manifestation of a neoliberal system (the university) while that was also exactly what I was trying to locate and research.

However, this was not always something I could openly share about with my informants, as some of them had never even heard of the term neoliberalism and why it was relevant in the context of menstrual self-tracking apps. I only shared about neoliberalism when someone asked me to explain how it connected to menstrual self-tracking apps, because I noticed that many of the people I spoke just wanted to share their own stories, as the menstrual cycle was not a topic they talked about that often with someone who was so deep in the material as I am. I gave people the space to share their stories, and the emphasis was more on them sharing those than that I was elaborately explaining the concept of neoliberalism and why it was important, and how it potentially connected to their own stories. I felt that if I would do that, I would influence my data too much with theoretical context and take away the power of the personal story of individual menstruators.

To conclude: I used my personal experiences and stories as a way to build rapport with the people who wanted to participate in my research. In this way, I created the safest bodily, emotional and mental environment to receive the most direct and valuable information for this

research. By using my own vulnerability and personal account, I gained people's trust to open up and be vulnerable as well.

CHAPTER 4 ::

The Quality of Cycles & The Unquantifiability of Research: Connecting Theory and Fieldwork

When observing both theory and research results, it can be stated that it the quality of menstrual cycles and what they potentially mean to an individual experiencing it in relation to a menstrual self-tracking app, cannot be measured or molded into one general conclusion, and yet, this is in itself is the strength of this research.

For this chapter, I lay out how the quality of the experiences of menstrual cycles in relation to menstrual self-tracking apps, depends on each individual menstruator's experience of their body and lives, and that this has a consequence for how menstrual cycle & sexual health consciousness and promotion are experienced by these very menstruators.

Menstrual self-tracking apps were the red thread in this research, and each story shared weaved another dimension into the broader understanding of these apps, and showed that it is the differences in interpretation and usage that create a unique flavor and texture. For the elaboration of this argument, I draw on Haraway's "situated knowledges" (Haraway, 1988) below. I will focus first on what defined the quality of menstrual cycles for this specific research, connect it to the concepts mentioned in Chapter 1, followed by a critical review on what it means to do research in the field of menstrual self-tracking apps and the implications it brings.

The Quality of Cycles

An argument that came about quite often, as stated in Chapter 3, was the desire to gain more insight in the menstrual cycle. This adds to experiencing a certain quality of the cycles, and the ways this was interpreted and what this knowledge manifested in the daily lives of menstrual self-tracking app users. Below I am elaborating the quality of menstrual cycles connected to concepts of feeling, affect and embodiment.

Feeling, Affect & Embodiment

By employing the concepts of affect and embodiment, and connect these to the expression and concept of feeling as revealed in many accounts in my research, I aim to lay out how the

experience of the quality of one's menstrual cycle in relation to menstrual self-tracking apps is brought about.

I have mainly taken the concept of feeling one step further, as my research showed that both the touching of one's own body as well as the touching of one's partner's body have increased after app usage. My suggestion here is that the usage of a menstrual self-tracking app, and thus the interaction of a human with technology, does not only improve feelings of menstrual cycle and sexual health consciousness, but also improves and affects the amount and frequency of feeling in the sense of touching - oneself, especially when using the Sympto-Thermal method, but also when it comes to touching other people, i.e. a partner.

Menstruators might use a menstrual app as birth control, what is put in as data and the interpretation of it by both the app and the cognitive interpretation of the human being themselves, plus the bodily sensations of primary fertility signs, all influence the decision on how much touch there is between partners. If one does not have the desire to become pregnant, intercourse might not happen without a barrier, and skin does not touch directly, whereas the combination of the data in the app plus corporeal sensations indicate a non-fertile window, another experience of human touch might happen.

This account of touching can be connected to the habitual embodiment as mentioned in chapter 1. By repeatedly and habitually letting the body engage with menstrual self-tracking apps, habitually, other forms of shared embodiment and touch are possible to happen.

What also was revealed, is that the usage of apps might influence the corporeal interaction between human beings. Some of my informants mentioned that they would share about their app usage with their daughters and teach them about bodies, sexuality and menstruation with the help of a menstrual app.

I realized that this was not merely about menstrual self-tracking apps. The appearance of this technological tool and the fact that it was so easily available and accessible, seemed to make it more available and accessible to talk about the cycles it was recording too, and the memories and stories that were directly connected to these cycles. This, in turn, was connected to relationships to bodies, body and health consciousness; talking about bodies, menstrual cycles and the experiences thereof, was considered health, and thus the mere having of conversations

about these very topics, added in their own unique ways to menstrual cycle & sexual health consciousness.

Quantified Does Not Equal Quality

In the course of this research, the division into two different kinds of menstrual self-tracking apps has been mentioned: the Sympto-thermal method and the Rhythm/Calendar method. More people used menstrual self-tracking apps according to the latter method, which does not require physical touch per se. The first mentioned method does require to record real bodily signs, that can only be obtained by actively touching the body, that need to be filled out.

When opening up these methods to a broader perspective, and look at Lupton , who states that medicine becomes more digitalized an technologized, and considered trustworthy, there still is a hesitant attitude towards individuals recording their own real bodily signs by themselves, that are in turn datafied in a self-tracking app.

“In this digital age, it has been contended by a number of sociologists that medicine and health care have become increasingly represented and experienced as a digitised information science, creating a new medical cosmology and new forms of technological embodiment. The human body has become conceptualised in terms of computerised images and data as new ways of accessing and monitoring the body have developed (Haraway 1991; Waldby 1997; Nettleton 2004; Miah and Rich 2008; Mort and Smith 2009; Rich and Miah 2009; Halford and Obstfelder 2010; O’Riordan 2011).” (Lupton,2014: 1353)

Lupton argues as well, that “medical practices that were once embodied in the flesh [...] have increasingly become rendered into software” (Lupton, 2014: 1353). My critique here lies in the fact that menstruator’s cycles seem to be of less quality and trustworthiness when tracked by an individual when observed the larger scope of theorizing and research, this in turn is also connected to the bigger sets of data proxy and the idea that this would mean that in that sense, individuals are ‘controlled’ (Smith, 2016; Sanders: 2017), whereas the individuals themselves, report the datafication and quantification of their menstrual cycles as processes and tools that add to the quality of both their cycles and the experience thereof.

The Unquantifiability of Research

After this research and after having struggled to find answers to questions posed at the beginning of this work, it has to be said that the strongest argument that can be made to generalize or conclude this very research with, is the following: there is no general answer and the strength is in the diversity of answers.

The potential of menstrual self-tracking apps to relate to health consciousness was expressed by every single person that participated in this research, however, it might mean something else to each menstruator. To enforce this argument, I want to refer to Haraway once more, as she stated that exactly these various “Situated and embodied knowledges argument against various forms of unlocatable, and so irresponsible, knowledge claims” (Haraway, 1988: 583). Furthermore, she states that it impossible to see everything when researching a certain topic: “Subjectivity is multidimensional, so therefore, is vision. The knowing self is partial in all its guises, never finished whole, simply there an original; it is always constructed and stitched together imperfectly, and therefore able to join with another, to see together without claiming to be another. Here is the promise of objectivity: a scientific knower seeks the subject position, not of identity, but of objectivity, that is, partial connection.” (Haraway, 1988: 586)

The separate stories of each individual menstruator have given depth and insight in the various ways of interpreting and experiencing the usage of menstrual self-tracking apps. It is about the eventual community that is made up of individuals, that gives the body and strength to objectivities. Haraway states exactly this: “Situated knowledges are about communities, not about isolated individuals. ” It is about “[...] the joining of partial views and halting voices into a collective subject position that promises a vision of the means of ongoing finite embodiment, of living within limits and contradictions [...].” (Haraway, 1988: 590)

Menstrual Self-Tracking Apps and Menstrual Cycle & Sexual Health Consciousness

To answer the main question of this research: “How do menstrual self-tracking apps potentially relate to health consciousness and its promotion in menstruating bodies that move around in a neoliberal context?”, the most relevant argument that needs to be mentioned is that of situated knowledges, the partial locatedness that is everexistent, and the openness to recognize this. It is

the recognition that each menstrual self-tracking app user is limited in knowledge, the recognizing that each app is potentially biased and each researcher trying to get a grip on the interaction between both, is located in an infinite well of possible of intersections, and that it is up to them to create the boundary and what to focus on. And in doing this, realize that no matter what approach one will take, it will be biased, and nevertheless somehow give meaning on the local level that is the life of the menstruators and app users themselves.

The Implications of Digital Cycles

Situated knowledges as described by Haraway are exactly what explains the root of the implications for digital cycles and the contexts (in interaction and created by individuals, as well as their place in a bigger neoliberal context) they find themselves in.

For this particular research, this means that a neoliberal context implies that the menstrual self-tracking apps are designed as they are designed, and that the usage goes as far as the options that are available in the app, but that the individual freedom lies in the ways menstruators interpret their digital cycles, and the meanings they give to them in their day-to-day lives.

Self-tracking in itself and the focus on self-surveillance are pointed towards personal health-improvement (Sanders,2017: 51) but the ways in which this manifests in the embodied lived experience of each individual performing self-surveillance and self-tracking, are unquantifiable.

There also is a discrepancy between the implications of digital cycles that are theorized and the implications encountered with usage and interaction of a cyclical body with technology in the form of menstrual self-tracking apps. Whereas theorizations focus on structural implications regarding power relations, bigger neoliberal contexts or heteronormative underpinnings, menstrual app users reported implications that disturbed or affected their day to day lives, interactions with their mobile phones, and human-to-human interactions that were connected to their menstrual cycles.

Conclusion

This thesis has aimed to enhance the fields critical digital studies and critical menstrual studies by exploring the potential roles of menstrual self-tracking apps in a neoliberal context. It also looked at how these apps give meaning in individual's personal lives. Apart from the questions that have been asked in previous research, mainly by Lupton and Sanders, concerning big data and the role of these apps in a more neoliberal context, I urge to suggest there is more research needed on this specific topic.

I suggest to not disconnect theories on power dynamics from actual experiences from menstrual self-tracking app users. My critique regarding a lot of research is that it somehow seems to claim that certain power dynamics are always at stake and need to be problematized and criticized, whereas individualized experiences and stories show that the quality of the experience of their menstrual cycle, body and relationships with other people as improved in ways that are unique for each person and situation.

Some scholars have argued that digital self-tracking apps/devices are undertheorized (Sanders, 2017: 54) but this very research has shown me that it is exactly the theorization of these apps that makes it problematic, as the people and their lived experiences with these apps who make up the existence of these very apps are then completely left out of the picture. The theorizing that has happened up until now has looked at these apps from a more top-down perspective.

I advocate for more interdisciplinary approaches and with this, a certain humility in the understanding that situated knowledges are always at stake, and that overtheorizing might potentially take away the meaning of day-to-day experiences of menstrual self-tracking app usage, that, by users, is described as an overall beneficial experience that has improved their health and how they feel about their bodies. By problematizing and theorizing, there is a risk of bypassing these experiences

I also urge to reflect on the digitalization of cycles that is happening more and more, and how this can potentially add to reproductive health care and research on the menstrual cycle in general. My scope of interest also lies in finding out how menstrual self-tracking apps could

potentially prevent people from experiencing side effects of hormonal birth control methods, as the datafication of menstrual cycles could map out what is at stake.

People in my own research have used their apps as a tool of empowerment when going to a doctor and felt more comfortable in sharing their concerns than before using an app, as they were able to map out their cycles and experiences in quantified data that seemed more accessible to share than just random symptoms. In this sense, it could be a potential tool to trump white coat supremacy in menstrual cycle health care and put the power back into the bodies of those who menstruate. Rather than guessing what could be up with a cycle and treating the symptoms a menstruator is experiencing with normative solutions like birth control pills, researching and understanding in depth what is going on could add to more menstrual cycle & sexual health consciousness, both in menstruations as well as their health care providers.

It is my hope that research on this topic will continue, both in the above mentioned fields, but also in the medical branches of scientific research, as the personal stories of people have shown me that menstrual self-tracking apps can collect valuable information about people's bodies that can be taken into consideration when people are in need of medical support regarding their menstrual cycles. I urge for an open yet critical attitude in incorporating the very experiences of menstruators into the conversation, as they are the first-hand experiencers of menstrual cycles.

Appendices

Appendix 1: Survey on Menstrual Self-Tracking Apps

Below the complete survey and the instructions I wrote for my participants can be found below.

// PLEASE READ THE FOLLOWING CAREFULLY BEFORE YOU START THE SURVEY //

Dear,

welcome to this survey that I have created for my research on menstrual apps, which I am conducting to complete my master's degree in Gender Studies at Utrecht University, the Netherlands.

This research is more qualitative than quantitative, and I will approach the topic from both a Gender Studies and (Medical) Anthropological perspective.

It would be amazing if you could fill out this survey as honest and complete as possible.

Your personal information (name and e-mail address) will not be shared with anyone else. I will treat what you share with greatest care.

By filling out this survey, you agree that I might use parts of your story in my thesis. I will always use pseudonyms to protect your privacy.

Note: it might be good to read through the questions first, and keep them in mind during the next interaction with your menstrual app.

Thank you so very much for your cooperation.

If you have any questions concerning this survey or my research, please feel free to send an e-mail to i.j.l.verstappen@students.uu.nl

Iris Josephina L. Verstappen

master student in Gender Studies at Utrecht University, the Netherlands

Questions I have asked in the survey. The ones with an asterisk were required to be filled out.

1. E-mail address*
2. How would you describe yourself? Options: Female / Male / Non-binary / Queer / Prefer not to say / Other
3. Country of origin*
4. Age* Options: Under 18 / 18-24 / 25-34 / 35-44 / 45-54 / Other
5. Do you have partner?* Options: Yes / No / Other
6. Age of menarche?*
7. How would you describe the relationship with your body, and more specifically, your menstrual cycle?*
8. Have you used any form of hormonal contraception?* Options: Yes / No
9. If you answered yes to the previous question, which form(s) did you use? Options (multiple answers possible): Hormonal Contraceptive Pill / Hormonal IUD (Intra-uterine device; Mirena) / Hormonal Shot (Depo Provera) / Hormonal Patch / Hormonal Implant (Implanon) / Other
10. Which other forms of contraception have you used?* Options: Abstinence / Condoms / Diaphragm / Cervical Cap / Rhythm Method or Calendar Method / Sympto-thermal methods like the Fertility Awareness Method / Copper IUD / Spermicide / Fertility Computer (like LadyComp or Daysy) / Menstrual app
11. If you quit hormonal birth control, when did you quit?
12. Why did you quit hormonal birth control?
13. When did you first hear about menstrual apps?*
14. How did you feel about menstrual apps back then?*

15. Which apps do you currently use?* Options: Clue / Period Tracker Lite / Kindara (with or without Wink) / FLO Living / Natural Cycles (including thermometer) / Eve / Glow / Fertility Friend / Daysy (in combination with Daysy fertility computer) / Conceivable / Ovia / Flo Tracker / Period Calendar / My Calendar / Cycles / Maya / Pink Pad / Other
16. If you used other apps in the past, why did you stop using them?
17. What is the main reason you use a (combination of) menstrual apps?*
18. How do you feel about the app(s) you are using?*
19. Are there any things you particularly like or dislike about the app that you are using?*
20. How do you feel about interacting with and using technology (i.e. your phone or a fertility computer) to collect information that concerns your body?*
21. If your app is programmed to give you suggestions about your body, how do you feel about that?* (Description: F.e. how you should feel, what moods you might soon be in, what physical symptoms you might experience, whether your libido is higher or lower, etc.)
22. What has using a menstrual app taught you?
23. Would you recommend other people to use a menstrual app, and why?*
24. How (if at all) has the relationship with your body changed after you started using a menstrual app?*
25. What does your partner/family/community think about you using a menstrual app?*
26. Does this influence how you feel about your app, if so, how?*
27. Is there something else you feel you need to share?

END OF SURVEY

Thank you so much for completing this survey.

I would like to kindly remind you about the following once more:

Your personal information (name and e-mail address) will not be shared with anyone else. I will treat what you share with greatest care.

By filling out this survey, you agree that I might use parts of your story in my thesis. I will always use pseudonyms to protect your privacy.

If you have any questions concerning this survey or my research, please feel free to send an e-mail to i.j.l.verstappen@students.uu.nl

Iris Josephina L. Verstappen

master student in Gender Studies at Utrecht University, the Netherlands

Appendix 2: Open-ended Interview Questions

When I conducted the interviews for my research, I have used the following questions as guidelines to set the tone for the interview. Sometimes I did not even need to ask a question to start, because people knew what we would be talking about. In these cases I let the conversation/interview unfold and ask question where I felt them necessary to be asked.

I also checked beforehand whether my interviewee has already filled out my survey as well before they had an interview with me.

1. Which app do you use and what is your experience with it?
2. Why did you start using a menstrual app and what do you use it for now?
3. How does your partner/family/network respond to you using an app?
4. How do you feel about your cycle becoming digital, and creating a data-proxy of your inner cycle that might be available for others to use?
5. Is there anything else you want to share about menstrual self-tracking apps and your experiences with it?

Appendix 3: Personal e-mail contact with Chris Bobel from The Society for Menstrual Cycle Research on May 29, 2018

From: Iris | Cycle Seeds <info@cycleseeds.com>

Date: Tuesday, May 29, 2018 at 3:57 AM

To: Chris Bobel <Chris.Bobel@umb.edu>

Subject: Critical menstrual studies

Dear Chris,

I am currently writing my thesis on menstrual app usage, and I would love to mention the term 'critical menstrual studies' in my theoretical framework.

If I remember correctly, you coined that term together with Breanne, no? What is the best way to reference you, and this term? Because the book isn't out yet..

I looked at the proposal page [here](#).

I want to create an interdisciplinary framework where I let critical digital health studies intersect with critical menstrual/menstruation studies.

Let me know what the best way is to mention you and Breanne's work.

Sending love,

Iris Verstappen

From: Chris Bobel <Chris.Bobel@umb.edu>

Date: Tue, May 29, 2018 at 3:00 PM

To: Iris | Cycle Seeds <info@cycleseeds.com>

Subject: RE: Critical menstrual studies

Hi Iris,

Actually, Sharra Vostral coined the term and together, we defined it (crafting the language in the Call you reference). Originally, Sharra and I were going to co-edit the Handbook, but she withdrew from the project so she could finish her new book coming out this Fall. Since we did not publish a document you can just cite this email from me (on this date) re who developed the concept and you can quote the Call for Proposal language to flesh it out (but I don't know how to cite such a document in academic writing).

Exciting what you are doing, Iris!

CB

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Personal e-mail contact with Chris Bobel on May 29, 2018; approving the use of the term Critical Menstrual Studies (full contact can be found in Appendix 3).