Domesticating the period-tracking app in everyday life

A case study of *Easy Period* in the Chinese context

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Abstract

Recent years have seen great changes to Chinese women's period-tracking practice, shifting from the method of pen and paper to smartphone applications, and from women-only practice to practice involves men. This study explores such transformations by looking at a specific app named *Easy Period* in China and users practice with it by using qualitative methods (textual analysis and semi-structured interviews). This study is informed by two theoretical frameworks: gender script to explore contemporary social and cultural imagination of its users, and domestication theory to study users' motivations and practices. Notwithstanding the exploration of the app, this research identifies itself as a contribution to the field of audience research.

This study finds that the female body in the app is imagined as a fragmented, abnormal, emotionally unstable, and vulnerable body that needs constant care from men. However, such scripts are negotiated by the users. Women have various motivations and use the app in diverse ways depending on their own situations. Their usage is also a negotiation between traditional Chinese medical culture and the dominant scientific way of knowing and doing. Also, it is found that female users and male users use the app differently. In contrast to the diverse motivations and usage of the female users, male users are mainly using it to perform and maintain an ideal boyfriend or husband identity.

This research is conducted against a background when the first wave of digital menstrual activism in mainland China emerged in February 2020 as a result of the covid-19 crisis. Therefore, it also aims to investigate women's agency, especially their agency in transforming the period stigma, when using such tracking apps. It is found that women demonstrate their reflexivity and agency when engaging with *Easy Period* in different ways, but it is still too early to say they are consciously resisting menstrual stigma in their everyday life.

Keywords: *Easy Period*, menstrual technology, period-tracking, self-tracking, everyday life, gender script, domestication theory, China

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Chapter 1: Introduction

Period-tracking and the context of China[1]

In a modern society full of uncertainty and risk, one's body and self have become what Giddens called projects that have 'to be routinely created and sustained in the reflexive activities of the individual' (1991: 52). Self-tracking[2] practice, the monitoring, measuring and recording of one's bodily functions and behaviors with the aim to make improvements (Lupton 2016: 2), is one example of the reflexive activities. Monitoring one's bodily activity and behavior with sensor-based devices or smartphone applications (hereafter apps) has gone wild since 2007 when Wolf and Kelly initiated the Quantified Self Movement, a movement that promotes 'self-knowledge through numbers' (Sharon and Zandbergen 2017: 1703). Eversince the trendy self-tracking devices allow users to track their own data from almost every aspect of their daily activity (Lupton 2017: 1), such as calorie assumption, body weight, steps, sleep pattern, mood, work productivity, exercise habits, etc.

Under such background, menstruation-tracking apps proliferate rapidly, with over 100 million female users worldwide (Kresge, Khrennikov and Ramli 2019). Women's practices with these apps also get growing academic interest. Examples are researches from Karlsson (2019) and Hamper (2016; 2017; 2020). The majority of the existing researches address these apps as ovulation-tracking tools, seeing them as reproductive technologies that help women to avoid or get pregnant. However, there are also other potential uses such as track one's menstruation, as demonstrated in Karlsson's (2019) work. In this research, I would like to address the underexplored period-tracking rather than ovulation-tracking practices. Also, existing researches are quite Eurocentric, focusing exclusively on the experience of white women. The meaning and practices of

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[1] China in this research refers to mainland China.

[2] I use the name self-tracking to unfold my research, but it should be noted that in the diverse scholarly literature, self-tracking also has many other similar names such as quantified self (Lupton 2016; Schmechel 2016), life-logging (Selke 2016), personal analytics (Ruckenstein 2014), biosensing technology (Nafus 2016), and m-health technologies (Smiths and Treem 2017: 136).

menstruation differ from culture to culture (Montgomery 1974: 137) and cannot be understood as a whole represented largely by white women. Due to the neglect of non-western context, this research aims to address such a gap by shifting attention to an eastern context, China.

I regard China as a valuable context for academic intervention. First of all, Chinese women's period-regulation practices have their uniqueness compared to other cultures, especially western ones. For instance, their period-regulation practices are closely linked to food culture, Chinese Medical Culture and the Taoist philosophy behind (Lin 2013), which will be elaborated in the literature review section in detail. Such uniqueness renders this study a springboard for a more comprehensive understanding of the period-tracking culture. Further, official online menstrual activism starts for the first time in the year of 2020 in China, providing a great opportunity to understand contemporary women's perception and practices of menstruation-regulation.

Earlier this year in the fight against covid-19, female medical workers' need for menstrual products were labeled as 'not-emergency materials' by male decision-makers in China. The public donation of menstrual pads was therefore rejected, and many female doctors and nurses had to take birth control pills to temporarily stop their menstruation, evoking huge anger from ordinary people especially women (Zhou 2020). Accompanying such anger, several students also complained on *Weibo*, the Chinese version of *Twitter* and one of the most popular social media platforms, that their academic essays addressing menstruation were judged by the male professors as improper and shallow. While the above tries to maintain the dirty view of menstruation and keep it invisible, the below no longer buys the story. Hashtags in support of breaking menstruation stigma such as #I'mAGirlIBleed (我是女生我来月经, reads wo shi nv sheng wo lai yue jing), #IAlsoSayNoToPeriodShame (我也拒绝月经羞耻, reads wo ye ju jue yue jing xiu chi), #ThisIsMyMenstrualBlood (这是我的经血, reads zhe shi wo de jing xue), #PeriodPride (月经自豪, reads yue jing zi hao), #EndPeriodShaming started a big wave on *Weibo* this February.

The growing antagonism between the above (e.g. the state news agency, male decision-makers, and male professors, etc.) and the below, provides a rich context for

this research. It is against this background that I want to explore people's period-tracking practices and their understanding of menstruation in today's China.

The case of *Easy Period*

One specific menstrual self-tracking app named *Easy Period* (姨妈来咯, reads yi ma lai lo) is chosen for this research. It is the app itself and its users' practices that are the focus of this research. *Easy Period* is a productive example not only because it is a typical app aiming at tracking period but also due to its uniqueness.

Easy Period is the 3ʳᵈ popular menstruation tracking app (IOS system only) on Apple Store[3] in China with over 2 million users. *Easy Period* has a lot in common with its counterparts. In this app, users can monitor and record their menstruation dates. Once the date is input, the app will predict the next bleeding date and ovulation date through a pie chart. Also, it will generate a bar and line charts, demonstrating the user's average cycle length and bleeding length. A digital calendar is also embedded in the app for users to make sense of their menstruation process and mark their emotions. See the interfaces below:

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[3] For more information on the ranking information, check this website
https://www.qimai.cn/rank/index/brand/free/country/cn/genre/6013/device/iphone
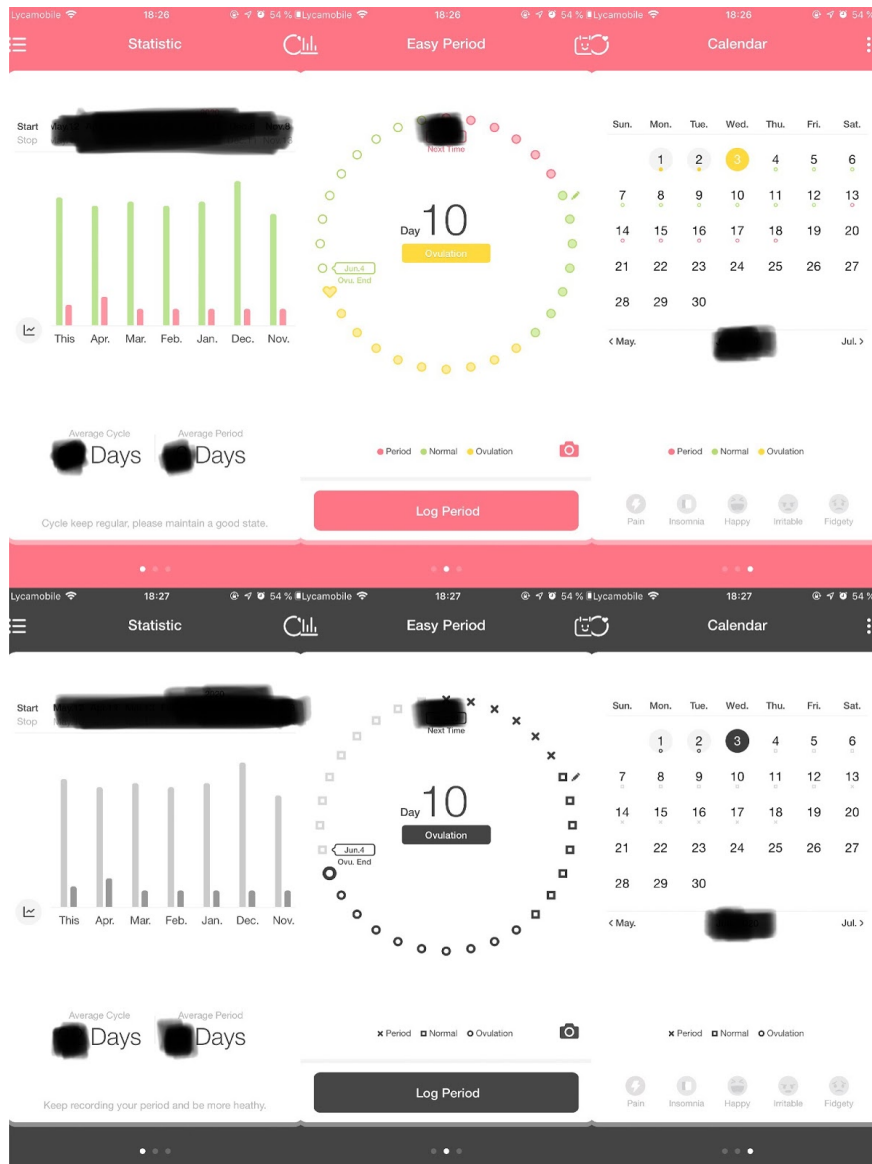
Figure 1: The interfaces of *Easy Period*
(The above is the female version, the below is the male version.)

With these affordances, there is no doubt that *Easy Period* is a typical cycle-tracking app, making it an appropriate choice for this research. Meanwhile, there are also some unique aspects of this app that distinguish it from other competitors in the Chinese market. Firstly, while most apps only provide one version for female users, *Easy Period* has two versions, one for female users and one for male users as already demonstrated in Figure 1. According to the developer, the male version is mainly to help a man in a romantic relationship show his care and love when his partner is bleeding. Male users can either track their partner's bleeding status on their own initiative or wait for the data to be synchronized with him. Secondly, *Easy Period* is the

only one that is promoted under the name of minimalism. Compared to other period-tracking apps on the Chinese market which usually have embedded communities, e-stores, popped-up commercials and news, and a bunch of life suggestions[4], *Easy Period* is highlighted as a simple tool that cuts down all unnecessary information and affordances. Also, the usage is easy, as the app name indicates. While other competitors require users to input complex data sets such as bodily symptoms, mood, sexual activity, etc., *Easy Period* only asks for the input of menstruation dates. These two unique aspects (bringing male users in and highlighting it as a simple and easy tool) render *Easy Period* an extreme case that has the potential to 'reveal more information' (Flyvbjerg 2006: 78) about the period-tracking phenomenon at hand. A detailed explanation and examination of the app interfaces and affordances will be demonstrated in Chapter 4.

Research aims and questions

The aim of this research is to gain an in-depth social understanding of users' period-tracking practices. Firstly, this research aims to find out how menstruation and the bleeding body are imagined and perceived in the app. As Koch (2017: 4) notes, a digital app offers an abbreviated account of established culture as social and cultural meanings can be coded during the design process. Through a close scrutinization on the app itself, I wish to decode contemporary perception on women's monthly cycle by asking **how menstruation and the menstrual body are imagined and perceived in** *Easy Period*.

Secondly and most importantly, I am interested in users', regardless of their gender, period-tracking practices. Historically, the way to track one's bleeding status has gone through an increasingly outsourcing process. In the past, women usually tracked their period according to their own bodily symptoms or/and memory, then with paper and calendar (Hamper 2020: 8), and nowadays based on sensor- and algorithm-based smartphones (Gambier-Ross, McLernon and Morgan 2018: 2). Such development is by no means a linear process as old and new ways of period-tracking practices nowadays

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[4] Some examples could be found in appendix 1.

coexist. However, the digitalized transformation is pronounced and deserves an in-depth study. How digital period-tracker succeeds in being gradually integrated into users' daily life? What women do and feel with this trendy digital tracking tool? These are some questions this research tries to understand. Women's practices are the key focus, however, I also hope to shed some light on the male usage of this app as their practices are largely invisible in existing literature[5]. Therefore, the second research question is **how the period-tracker in general and *Easy Period* in specific is domesticated, and how users use and make sense of *Easy Period* in their everyday life?**

By linking the stances from both the production side and the user side, this research also aims to have a more comprehensive understanding of the period-tracking phenomenon in the social and cultural context of China. In short, based on the case of *Easy Period* and motivated by these research goals, the research questions in this study are:

1. How are menstruation and the menstrual body imagined and perceived in *Easy Period*?

2. How the period-tracker in general and *Easy Period* in specific is domesticated, and how users use and make sense of *Easy Period* in their everyday life?

3. What are the social and cultural implications of the *Easy Period* in contemporary China?

Outline of the research

The thesis consists of six chapters. I open with this brief introduction, followed by a literature review chapter discussing the diverse beliefs and practices of menstruation in Chinese context, the relationship between women and menstrual technology, and the gendered self-tracking culture and the non-media-centric approach (Krajina, Moores and Morley 2014). The literature review chapter is mixed with theoretical frameworks

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[5] By saying male, I am aware that trans men and non-binary people also have period and may use these apps, however, their practices are not explored in this project.

this study deploys, which are gender scripts (van Oost 2003) and domestication theory (Silverstone, Hirsch and Morley 1992). The third chapter will specify how I approach this project, illustrating the methodology and methods adopted in this research. A combination of textual analysis and semi-structured interviews will be applied to answer the research questions. Also included in this section is the detailed information on how the interviews were conducted and how research ethics were followed. The fourth and fifth chapter are the analysis part which will respectively provide a close examination of the app and users' practices. In the sixth chapter, the conclusion chapter, I will first answer the three research questions, and then reflect on the contributions and limitations of this study and give suggestions for future research.

Chapter 2: Literature review

In this section, I will first introduce folk perceptions and practices of menstruation in China. The Chinese culture shares some similarities with many other cultures in terms of the menstrual beliefs and practices. For example, menstruation and the bleeding women are often treated as dirty and dangerous. However, it also has its uniqueness. Contemporary menstrual beliefs and practices could be seen as a hybridity of Buddhist, Taoist and Neoliberal discourses. After elaborating the Chinese context, I will provide an overview of the relationship between women and menstrual technology in existing literature. In this section, I propose to treat period-tracking apps as a type of technology with certain gender scripts (van Oost 2003), and to study both the technology itself and people's practice with it. Finally, literature about the gendered self-tracking culture, non-media-centric approach (Krajina, Moores and Morley 2014) and domestication theory (Silverstone, Hirsch and Morley 1992) will be discussed.

Contextualizing menstruation and period-tracking in China

According to existing literature, the Chinese perceptions on the bleeding body could be summarized into three main categories: dirty, cold, and self-responsible.

A dirty body in need of control

Without doubt, menstruation is not simply a biological issue, but is socially and culturally constructed: it is constructed as dirty in most cultural contexts around the world (Lorber and Moore 2002: 198). Influential researches on this phenomenon start from anthropology, among which Mary Douglas is a pioneer (Furth 1986: 43). As Douglas (2001: 35) proposes, what makes a matter dirty is not the dirt itself but the relationship between this matter and the whole well-ordered system to which the matter is supposed to belong. She gives an interesting case to illustrate this: shoes are not perceived as dirty on the floor, but dirty on the dining table. What makes the shoes unclean is not the shoes themselves, but the pre-existing order (ibid.: 37). In a similar

vein, as the matter discharging from the inner body to the outside body, menses signal a transgression of bodily boundary and a threat of order, thus becoming a source of impurity and pollution (ibid.: 35). The negative meaning associated with menstruation, therefore, has its root in humans' obsession with order.

The dirty and pollution view has strongly inspired and guided successional researchers in China (Jin-lian and He-shuang 2012: 55). Through a close examination of the classic medical literature, scholars (Dikötter 1995; Wilms 2005) find menstruation is constructed as dirty, dangerous and weak since ancient China. After the Tang Dynasty (618AC - 907AC), a Buddhist view which sees menstruation as dirty and polluted becomes dominant (Wilms 2005: 199). Later on, menstrual blood is further identified as a dangerous and harmful to men (Dikötter 1995: 41-43). For instance, in his medical monograph, Li Shizhen (1518-1593), one of the most famous physicians and pharmacists in ancient China wrote, 'her evil juices are full of stench and filth, hence the gentleman should keep his distance; as they are not clean, they will harm his male essence and invite disease' (ibid.: 41). After the 20th century, menstruation is represented as 'a pathological process which symbolized female weakness', and the bleeding body as an emotionally unstable body who often disrupts the existing social order with her brute instinct (ibid.: 41-42). Generally, menstruation is thought as a dirty and pollution substance that has the power to bring out the uncivilized and inferior side of female nature, and therefore in need of discipline and control. Such a view is still quite popular, though being challenged gradually, in today's China.

A cold body in need of balance

There is no doubt that contemporary perceptions and practices regarding health issues are strongly influenced by modern medical science. However, in China, what is equally powerful in influencing popular medical beliefs and practices is *Traditional Chinese Medicine* (中医, reads zhong yi, hereafter TCM) (Zhu and Woerdenbag 1995: 103). TCM refers to a medical knowledge system (Zhou and Qu 2019: 494) and a series of therapeutic practices, for instance, acupuncture, Chinese herbal medicine, moxibustion,

and massage, originating from China five thousands of years ago and widely applied in Japan, Korea and other south-east Asian countries (Xia et al. 2017: 245).

The philosophy lying behind TCM knowledge system is the traditional Chinese philosophy Taoism (Furth and Shu-yueh 1992). According to Taoism, an ideal body is a balanced body with a proper amount of *yin qi* (阴气) and *yang qi* (阳气). *Qi* (气), literally means air, is a kind of life-sustaining energy in Taoist philosophy. *Qi* has two circulating types, *yin qi* and *yang qi*. While *yin qi* is usually linked to women, moon, dark, negative, cold, water and empty, *yang qi* stands for men, sun, light, warm, fire and full (Lin 2013: 298; Magner 1992: 48). The pair of *yin qi* and *yang qi* in a singular body is a deterministic power for the existence and sustaining of life. That is to say, in the female body, the dominant life-sustaining energy is *yin qi* yet it needs supplements of *yang qi*, and vice versa. The balance of *yin qi* and *yang qi* is also of vital importance for all the creatures in the natural world, functioning as an overarching cosmological principle (Furth 1999: 7).

Guided by such *yin-yang* theory, a popular belief on menstruation in China is that a menstruating woman, a body of cold, should avoid cold substances and be supplemented by warm things. Take food consumption as an example, food is divided into two categories based on *yin-yang* theory. Some are labeled as cold, such as cold water, wax gourd, banana, watermelon, iced food, etc., while some are considered as warm such as brown sugar, ginger, dry date, chili, garlic, and so on. As the female body is linked with *yin* and cold, during menstruation she is supposed to consume more warm food to rebuild the blood (Furth and Shu-yueh 1992: 30) and restore the *yin-yang* balance in her body (ibid.: 37). In addition to food, women in her period are also advised to avoid contacting cold things such as washing hair, standing beside the freezer, taking a cold shower, etc., and to keep warm by, for instance, wearing more clothes, doing foot soak with warm water, etc., to drive the cold away.

Different from modern medicine which is based on sophisticated scientific experiments, the *yin-yang* theory and related practices are developed mainly based on physicians' personal observations and accumulated medical experiences and thus is often judged as unscientific (Xia et al. 2017: 246). Due to the unscientific nature, its

value is constantly weighed against western medicine. Some trust more in scientific medical knowledge and greet the knowledge and practices informed by TCM with skepticism, while some have strong beliefs in TCM. In the particular case of menstrual health, the seemingly unscientific Taoist view is usually believed to have more significant values than western biomedicine among Chinese women (Zhou and Qu 2019: 494). In a nutshell, a menstruator is popularly considered as a cold body in need of warm supplements.

A neoliberal body in need of scientific treatment

The traditional language of *yin-yang* theory has been co-existing with scientific medical knowledge since the 1910s (Lin 2013: 302). With a series of wars of aggression happening in the 19th century, feudal China is forced to open its door to western countries. What accompanied the colonization was the introduction of modern medical science and the prevalence of printed media. Heavily discussed in newspapers and magazines supported by scientific knowledge, menstruation, a previously marginalized communication taboo, has been gradually reconfigured and normalized as a natural and healthy biological process since the 1910s (ibid.: 240-251). Under the newly introduced scientific discourse, menstruation is not only destigmatized, but also increasingly measured and quantified. For instance, a whole cycle consists of different stages such as menstruation and ovulation period; the healthy cycle has a total length of 28 days; a normal bleeding length ranges from 2 to 7 days, etc. (ibid.: 302). Besides, medical professions also established a new scientific menstrual language which highlights individual responsibility and personal hygiene, marking a rupture with indigenous beliefs and practices guided by Buddhist and Taoist philosophy and creating 'an alternative epistemology for the ordering of the female body' (ibid.: 306).

Except for scientific knowledge, consumer culture is another remarkable power to reconfigure the meaning of menstruation (Chun-yan 2007). After the economic reform in 1978, the so-called *Reform and Opening Up* (改革开放, read gai ge kaif ang), China abandoned the planned-economy policy and established a market economy system. Ever since neoliberalism, a philosophy of government that highlights individual

responsibility for their own wellbeing (Lupton 2018: 10), gradually becomes an increasingly influential ideology that shapes Chinese people's everyday life (Rofel 2007, in Tan 2017: 173). Different from previous times when menstrual products were only accessible to upper class women (Chun-yan 2007: 268), under the zeitgeist of neoliberalism and consumer culture, ordinary women are encouraged to manage their period by consuming menstrual pads and other self-care products and services. According to CBN Data and Dayima (2018), women's consumption of menstrual self-care products, under which period-tracking apps can be categorized, has been stably rising in the past decade.

To summarize, in contemporary China, the meaning of menstruation is fluid. Menstrual discourse is neither consistent nor single, but a hybridity of and oscillation between various discourses: the Buddhist view of menstruation as dirty, the Taoist view of the menstruating body that is cold and needs warm balance, and neoliberalist view which emphasizes the individual responsibility to take care of one's menstrual health.

Menstrual technology, gender scripts and women

After discussing the discursive construction of period in China, let's move to the materials formed around women's period. Historically, various artifacts have been invented to manage the monthly cycle, including hygiene products, medicines, and tracking tools. In this section, I will start with the review of the politics of menstrual products/technologies in Feminist Technoscience by connecting it to the theory of gender script (van Oost 2003). Following this, I discuss the active female users by illustrating how women gain and make new meanings from the established menstrual technology in recent studies. After discussing the relationship between women and menstrual technology, the proposal of understanding male users' practices comes into sight.

Menstrual technology and gender scripts

Menstrual products are rarely seen as something technological. One reason is that technology is usually perceived as progressive, revolutionary, and masculine (Harding

2008: 107). As materials used to absorb nasty and smelly bodily fluid in invisible places, in popular imagination, menstrual towels, tampons and menstrual cups are not relatable to the term technology. However, such a limited view of technology is rejected by Vostral (2008). She disagrees to see menstrual products as merely mundane objects but insists to treat them as a subgroup of technologies. This position reflects a central critique of the stereotypical link between technology and manliness among feminist scholars (Wajcman 1991; McGaw 1996; Harding 2008). As McGaw notes, when considering technology, people tend to immediately picture hardware such as 'complex mechanisms, sophisticated electronics, or mysterious molecular combinations', in other words, the masculine dimensions of technology (1996: 15). However, feminine technologies[6], artifacts specifically associated with and used by females, for instance, tampons, brassieres, kitchen utensils, household cleaning products, and sewing needles (ibid.: 16), are often seen as unrelated to technology. As technology is so ignorantly and narrowly defined, she calls for a reconceptualization of technologies by paying particular attention to what she calls 'feminine technologies'.

Following these scholars, Vostral's (2008) study treats disposable napkins and tampons as technologies, which is quite inspiring for my research and becomes the starting point of my study. Equally inspiring is her critique of the gendered implications scripted into these technologies. As she states, 'menstrual hygiene technologies are hidden artifacts that have enabled women … to get on life as menstruation were not occurring' (ibid.: 10-11). She argues these technologies are produced based on the norm of a non-bleeding body, in other words, the male body, and women need to deny their female identity as bleeders and learn to use such technologies in order to 'pass' in the society as a non-bleeder. For her, menstrual hygiene technology, endorsed by medical, educational and commercial authorities, strongly shapes women's body, practice, and identity through the inscription of misogynist ideologies.

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[6] In the following part, I use the term feminine technologies to refer to the stereotypical feminine connotations of some technological products, not to adopt an essentialist and binary view of technology. The same applies to the term masculine technology.

In addition to hygiene technology (e.g. menstrual towels, tampons, and cups), menstruation-related technologies also encompass medical one. The bleeding body has a long history of being treated as the inferior Other in need of medical intervention. As a bodily state that is never experienced by men and therefore is seen as an abnormal bodily event, menstruation has become medicalized since the early 19th century (Lupton 2012: 139). One typical example to intervene menstruation is menstrual suppression technologies that deliberate delay or stop the monthly cycle, for instance, oral contraceptives. Oudshoorn (1994: 136) reveals that such pills are created out of an ideological understanding of menstruation that it should appear monthly and that a normal cycle should be 28 days, reducing the diversity of women's cycle into a universal category:

> Pincus [the father of oral contraceptive pill] could have made a menstrual cycle of any desired length by changing the prescription of how to use the tablets. He chose to make a 'normal' menstrual cycle that subsequently became materialized in the pill. This diminished the variety in menstrual patterns among women: all pill-users have a regular four-week cycle. The pill thus literally created similarities in women's reproductive functions.

Additionally, menstrual technologies also include tracking tools such as menstrual calendar and digital period trackers. Schlünder (2005, cited in Schmechel, 2016) mentions menstrual cycle calendars were invented in the 1920s and initially promoted by male gynecological doctors rather than women themselves. Back then, menstruation was the 'last phenomena which had not yet been completely explored on the basis of scientific rationality' (ibid.: 277). Menstruation and the female body were thus turned into the othered body to be tracked and known, contributing to the medical curiosity dominant by men.

When discussing the relationship between women and menstrual technologies, the above scholars believe menstrual technologies are designed with certain social norms and expectations on women and therefore are inherently patriarchal (Wajcman 2004:

53). What these studies fail to see is women's agency in engaging and even transforming such technologies. Overemphasizing the shaping power of technology could be risky to fall into the pitfall of technology determinism as these patriarchal values may be denied or adjusted by users. However, what I found inspiring in these studies is that they touched upon what van Oost (2003) calls gender scripts in menstrual technologies.

The concept of script is originally developed by sociologist Akrich (1992). She acknowledges that the technological products are significantly influenced by the producers, through whom the imaginations and assumptions of potential users are transferred in the technologies. These imaginations and assumptions are what she called scripts, including users' 'tastes, competences, motives, aspirations, political prejudices, and the rest' (ibid.: 208). This concept is further developed into gender scripts to denote the gendered imagination of users from the developers of technological products. According to van Oost (2003: 195), gender script refers to 'the representations an artifact's designers have or construct of gender relations and gender identities – representations that they then inscribe into the materiality of the artifact'. The inscription of gender scripts into the technologies are not always consciously conducted, but sometimes happens in an implicit way as designers, especially male designers, often start from their own privileged position when imagining users. As a result, the stereotypical gendered expectations are often androcentric (ibid.: 196).

The co-construction between menstrual technology and women
Van Oost (2003) admits the gender scripts are not stable, but always open for users' negotiation and challenge. Thus she suggests paying equal attention to the users in order to provide richer insight into the study of the relationship between gender and technology (ibid.: 208). Delving into the context where these technologies are used, a more nuanced understanding of the relationship between menstrual technology and women is emerging in recent studies.

Gaybor (2019) studies reusable menstrual technologies such as menstrual cups and reusable menstrual pads in Argentina. She finds the adoption of reusable menstrual

technologies is a gradual negotiation process where users and technologies are in constant dialogues. Reusable menstrual products are designed with certain ideal inscriptions that might shape users' body, practice, and identity, but they are reinterpreted with unforeseen uses and meanings in women's everyday life. For example, new menstrual technologies are designed to keep menstruation invisible, but women's usage renders the topic of menstruation more visible. Users actively share their using experience with their friends and discuss menstrual politics with other women through online communities. Through such engagement, women raise critical questions about the social norms imposed upon the bleeding body, leading to the destigmatization of menstruation. Thus, the daily usage of menstrual cups and reusable menstrual pads shows 'the potential of women's agency in transforming the technology' (Wajcman 2004: 54, cited in Gaybor 2019: 125) by using them in unexpected ways.

Among the critical studies of period-tracking apps, a Danish-based research by Karlsson (2019) also studies how women use period-trackers in their everyday life. She found period-tracking apps are actively used by women as a shame-free space to engage with their menstruating bodies. For instance, from the women's perspective, the app functions not only as a tracking tool but also as a communicative tool, helping them to communicate with their female friends. Talking about the stigma loudly with each other vanishes the period shame. Also, knowing the bleeding date in advance is a way to cope with premenstrual syndrome (hereafter PMS), reducing the possibility of unnecessary negative emotions and conflicts with others. In general, women found comfort and reassurance when actively using these period-trackers.

In a nutshell, these researches together show that menstrual technologies and women are co-constructing each other (Wajcman 2007: 293). On the one hand, the menstrual technology with certain gender scripts has its power in shaping women's bodily experience and identity (Oudshoorn 1994; Vostral 2008; Schlünder 2005, cited in Schmechel, 2016). Meanwhile, according to Gaybor (2019) and Karlsson (2019) women have their own agency in reinterpreting and giving new meanings to these menstrual technologies. Taking inspiration from these researches, when studying

women and menstrual technologies, it is necessary to scrutinize the politics of the technology itself, but more importantly to see how it is used by users.

Menstrual technology and men

Configuring users' identity is a major process of technological innovation, and gender is one of the most pivotal aspects (Oudshoorn 2003: 209). Users' gender is often assumed when some technologies are designed. Some are aligned with women, for example, contraceptive pills (Oudshoorn 2003), and some with men, for instance, motor-car (Chen 2020). Dominant discourses often link technologies with progressivity and masculinity. When women start to engage with the technologies which are previously dominant by men, stereotypes and stigma may follow. Take Chinese female drivers as an example (Li and Luo 2020), they are often mocked by the public as less competent than male drivers and as the main culprit when traffic accidents happen. Popular perception of women's engagement with masculine technologies is often one-dimensional. In response, great efforts have been devoted to research women's agency in the process of using these masculine technologies. For example, women's uses of motor cars are found as more colorful and complicated than popular narratives (Lezotte 2019; Chen 2020). The study of female usage of masculine technologies is growing. However, rarely did researchers study the opposite. How men use feminine technologies like the beauty camera, menstrual napkin, and in this case, period-tracking apps remains unclear.

Technology developers imagine users but how the product is used is not always as they imagined (van Oost 2003: 208). Though some technologies are designed for or mostly used by women, they are also appropriated by men. For example, in the Chinese context, menstrual pads are often used by male college students during their military education and training. As a compulsory module for freshmen in Chinese universities, the 2-week training usually happens in September or October before the academic year officially starts ('military education and training' 2020). As the training usually begins in scorching days, male student soldiers often use menstrual towels as insoles to absorb sweat from one's feet (Li 2017). Similar scenario can be found in the case of period-

tracking apps. Initially targeted on female users, later on, these apps are also used, and even encouraged to be used, by men. In short, male usage of feminine technologies abounds, but such practices are underexplored. Under such circumstances, studying how male users use them should not be ignored. Male users may use it differently from their female counterparts, but it is exactly such differences that tell rich information about the gender dynamic behind.

Gendered self-tracking: towards a non-media-centric approach

Period-tracking apps could be seen as an example of menstrual technology. It can also be treated as a digital self-tracking tool. Having reviewed the politics of menstruation and menstrual technologies, it is worth introducing another research focus of this study: the self-tracking phenomenon. In this part, I will first demonstrate how existing studies of gendered self-tracking culture have been devoted too much on the representational/textual aspect, and suggest to look beyond this media-centric approach by demonstrating the non-media-centric approach. Then I try to define the concept of 'everyday life' by introducing Silverstone, Hirsch and Morley's (1992) domestication theory.

Gendered self-tracking culture: from a media-centric to non-media-centric approach
Scholars like Schaupp (2016) and Schmechel (2016) argue that self-tracking practices are male-dominant as they are often connected to 'scientificity and rationality' (Schmechel 2016: 272). However, feminist scholars have criticized contemporary self-tracking culture is subjecting women to 'increasingly forms of surveillance and judgement' (Elias and Gill 2018: 66).

Elias and Gill (2018) see beauty apps that aim to enhance women's appearance (e.g. selfie-modification apps) as a part of the trending self-tracking culture. They raise critical questions on these apps from a feminist-Foucauldian perspective, arguing contemporary beauty culture is increasingly intruded by the quantified rationality. It is found that beauty apps are encoded with a narrow beauty standard (e.g. only a particular waist-to-hip ratio is considered as beautiful and desirable in the app) and 'cultural filters

of postfeminism' that encourage women to participate in self-surveillance practice (ibid.: 68). Going beyond the beauty politics, the two scholars suggest that with the growing smart mobile technologies and neoliberal postfeminism culture which highly emphasizes individual responsibility, a trend of intensified self-surveillance of women's bodies is growing. As they put it, 'in the regime of 'the perfect', women's bodies have come under hitherto unprecedented degrees of scrutiny'(ibid.: 73).

Similarly, feminist scholars have shown the dominant gender hierarchies are maintained in the apps, as vividly shown in Lupton's (2015) research of sexuality- and reproductivity-tracking apps. Lupton studies a large amount of apps related to sex, ranging from apps that tell sex jokes or provide position suggestions to educational platforms on sexually transmissible diseases available on *Google Play* and *Apple Store*. By closely examined the texts in these apps, she finds that these apps highlight sexual performance for the male users, for instance, they are encouraged to be active and competitive during sex, while emphasizing reproductive risk such as sexually transmitted diseases when it comes to the female users. These apps tend to medicalize the female into a subject that should take responsibility to avoid risks by constantly monitoring her reproductive health.

Some researchers go beyond illustrating the cultural norms reproduced in these gendered self-tracking tools but focus on a more concrete level, exploring the strategies used to maintain such norms. Lupton and Thomas's (2015) Australia-based study of pregnancy-tracking apps illustrates that pregnant women and unborn children are depicted playfully through 'ludification' and 'gamification' strategies. By adopting these fun and playful strategies, social expectations for pregnant women, for instance, taking care of the baby and maintaining physical attractiveness during the pregnancy are reproduced in a less visible way. In a similar vein, Till (2014) argues, through the strategy of gamification users are turned into free digital labors in the self-tracking process. As the tracking process becomes free and fun, users can hardly distinguish the exploitative purpose of companies. As a result, self-trackers then simply contribute to the fulfillment of a profit-making dream of companies.

In the study of fertility and period tracking apps, Fowler, Gillard, and Morain (2020) explore the terms of service and privacy policies of 15 popular menstruation-tracking apps and find these documents tend to obscure information about privacy and the accuracy of the promised period-prediction, leaving the potential reproductive risks to the users. Novotny and Hutchinson (2019) similarly investigate the terms of service and privacy policies of *Glow*, a well-known fertility and period-tracking app. It is found that though *Glow* promises empowerment for women (e.g. increase fertility literacies, achieve or avoid pregnancy) by providing quantitative information, the vague and unclear data collection and privacy policies actually erode user agency as the app allows *Glow* and third parties to get access and sell users' data. *Glow*, therefore, leans to the company itself rather than empowering users.

These researches mainly concentrate on the textual aspect in these gendered self-tracking apps, which are undeniably of great value to guide my study because they see how the representations in the app matter in terms of maintaining existing power dynamics (Hall 1997). However, at the same time, their overemphasis on the texts shows uneven attention to the audience's response. In a conversation between Morley, Krajina, and Moore (2014), Morley (ibid.: 688) observes in media and communication studies, the definition of media is too much linked to the textual and symbolic aspect, which is a fantastic starting point for media scholars, but it is time to move on to broaden the definition by including the everyday practice around media. Moore (ibid.: 690) similarly states:

> There's a common misconception that media studies are simply about studying media, but I've been arguing that media studies are, or certainly should be, about much more than this, that it's always necessary to situate media and their uses in relation to a range of other technologies and practices… we have to 'de-centre' media in our investigations and explanations of social life.

In his book *Media, Place and Mobility*, Moore (2012: 108) also strongly argues that 'everyday living is one of the things that need to be centred in non-media-centric

media studies'. Only by including the social domain and the individuals involved can we understand what media 'do' (Hepp 2020: 102). In a digital era where media, of which self-tracking devices and apps are examples, is everywhere, research on the mundane and banal everyday life increases (Pink et al. 2017).

Everyday life and domestication theory

But what is 'everyday life'? It is such a taken-for-granted and obvious term as if there is no need to give it a deliberate think. However, as a sociological and philosophical concept, everyday life carries different meanings for different scholars (Sandvik, Thorhauge and Valtysson 2016: 151). For phenomenologists, it is lived reality from the point of view of the individual (ibid.: 152). For symbolic interactionist like Goffman (1959), everyday life is a stage where people manage their impressions and perform their identities through the interaction with each other. For domestication theorists like Silverstone, Hirsch and Morley (1992), it is the context where media technologies are domesticated and actively used. In this research, the definition of everyday life is mainly inspired by Silverstone, Hirsch, and Morley's domestication theory (1992).

Originated in anthropology and consumption studies (Haddon 2011: 312), domestication theory is initially developed by Silverstone, Hirsch, and Morley (1992), aiming to explore how information and communication technologies (ICTs) such as televisions, telephones, videos, and computers are domesticated in the context of the household. They suggest four phases in the consumption of ICTs to grasp the dynamic between users and technologies. Appropriation refers to the ownership and possession of the ICTs. It is a stage usually linked to the motivations and decisions that lead to the acquisition of technologies. Objectification means the spatial location of the ICTs in the home, revealing the classificatory principle of the family. These classificatory principles will tell rich information about the household culture, and by implication, the broader social and cultural values. Incorporation captures the ways in which technologies are used in daily life. Compared to the objectification phase when focus is put on spatial aspect, that is, where the technology is displayed, incorporation phase deals with the temporal aspect, namely, how the technologies fit into the users' daily

routine and time structure. The conversion phase draws attention to how the media technologies are mobilized to perform the user's identity to others outside the family (Haddon 2011: 313).

For Silverstone, Hirsch and Morley (1992), the concept of 'everyday life' has double meanings. First of all, it equals the *context* and *background* where media technologies are used, in their case, the household. In other words, everyday life provides a site for social relations and practices. Secondly and more significantly, it is also a space for users to *actively* use media technologies. The second meaning is inspired by de Certeau's conceptualization of everyday life (1984) which highlights the individual reflexivity and agency (Silverstone, Hirsch and Morley 1992: 15). In his well-known book *the practice of everyday life*, de Certeau (1984) rejected to see everyday life as simply a context where trivial things happen. He argues everyday life should not be treated as 'merely the obscure background of social activity' (ibid.: xi), but a site for 'the weak' to resist against 'the strong' (ibid.: xix). For instance, when Spanish colonizers try to impose their own culture on the indigenous Indians, the latter in their daily life often uses the 'rituals, representations and laws' provided by Spanish in unexpected ways, which deflected the power of the above (ibid.: xiii). 'The tactics of consumption, the ingenious ways in which the weak make use of the strong, thus lend a political dimension to everyday practices' (ibid.: xvii). In short, in this research, everyday life is not only a context where media technologies are adopted and used, but also a site for individuals to negotiate and even resist certain meanings and affordances.

The original framework of domestication theory was mainly adopted by scholars to investigate the usage of ICTs in households. Later on, researches go beyond the domestic space. For instance, Vuojärvi et al. (2010) explore how the laptop is domesticated in the campus. In recent years, the range of ICTs has expanded badly with the development of the internet and smartphone, leading Haddon (2016: 18) to suggest that researchers need to think about other spheres that the classical domestication framework might fail to address. In the existing studies of menstrual technology and gendered self-tracking technology, little attention has been paid on how these

technologies are domesticated. Adopting the framework of domestication theory will contribute to this gap.

Research gap

The positions that my research will take and the academic gaps I wish to contribute to are concluded here. First of all, this study expands the territory of the studies on period-tracking by bringing in a non-western context. Moreover, I will capture the complex and dynamic context of everyday life to explore how users engage with menstrual/self-tracking technology. In addition, this research tries to understand the underexplored male users' practice with feminine menstrual technology. Finally, this study adopts a theoretical framework that is new to the study of menstrual technology and self-tracking culture, hoping to have a more comprehensive understanding of it.

Chapter 3: Methodology and method

A qualitative case study inspired by social constructionist approach

To gain a nuanced and deep understanding of the period-tracking phenomenon, I choose to focus on one specific case, using a qualitative approach. This allows me to closely engage with the data (Bazeley 2013: 4) and to grasp the complexity of the interplay between cultural values and practices around the phenomenon of period-tracking. Different from the quantitative approach which sees humans as variables, a qualitative approach sees them as 'real people' (ibid: 5). In my research, I refuse to see participants in my research as decorporealized and decontextualized variables, but as subjects who actively contribute to the production of context-dependent knowledge and meaning.

By focusing on the particular case of *Easy Period* and its' users' practices, this research aims to have a thick understanding of the period-tracking phenomenon. Case study is often blamed for failing to deal with the issue of generalization, but having an in-depth understanding of one specific situation is also of great importance to the purpose of inquiry (Patton 2002: 230). And whether the finding could be generalized to understand other situations depends on if the project records the full complexity of the phenomenon (Bazeley 2013: 410). Therefore, a detailed examination of one case does not mean the research is stuck in it. Instead, through a single but strategically selected case, the study results still have the ability to 'enter into the collective process knowledge accumulation in a given field' (Flyvbjerg 2006: 227).

This study is also inspired by social constructionism (Burr 2015). Social constructionists take an anti-essentialist standpoint, insisting any man-made category on which we human beings rely to understand the world should not be taken as objective and natural, but a product of the negotiation between different social and economic social groups (ibid.: 3-4). Extending the idea of social constructivism to the study of technological products, what we consider as neutral and objective technologies are usually with great social and political implications. Decisions made by a particular group of people and informed by particular social context are built into the design of

specific technology (Wajcman 2015: 27), making it a political tool to perpetuate dominant ideologies.

Technology is a sociocultural artefact not only in the sense of being produced with certain assumptions and norms but also in the sense of being used by humans 'in specific social, cultural, political and historical context' (Lupon 2018: 2). Notwithstanding the emphasis of social power in constructing the world, social constructionism does not deny human's agency. Instead, the practice of people is a key enquiry of this approach (Burr 2015: 9).

Taking inspiration from social constructionism, an approach that admits any knowledge and understanding are historically and culturally specific (ibid.: 4), means the knowledge this study contributes to is a historical and contingent product. It is produced at a specific historical moment from a specific standpoint, therefore is by no means universal and context-free.

Empirical material

To answer my research questions, the empirical material will be collected. Empirical material first is from the textual aspect of the app to explore the gendered imagination on users. The app is a valuable text for analysis. Though there are limited literal texts, the design and the affordances strongly tell gendered imagination on the menstruating body. For example, the interfaces of the two versions are designed differently. The female version is set with bright colors but the male version is overall a dark style and with square and cross elements. Also, the function, such as setting a password for the app, encouraging men to use, etc. are also aspects worth exploring. As these design and embedded functions carry rich implications not only about the menstruating body but more importantly about the different perceptions and social expectations of Chinese women and men, they should not be ignored. To gain a richer understanding of the app, I also tried to contact the app developer. Though I did not have the opportunity to interview him, luckily we had several short dialogues through texting on *Wechat*, some of which will be quoted in the analysis part.

Secondly and most importantly, empirical material also comes from 11 in-depth interviews with users, which will be discussed in detail in the following section.

Doing semi-structured interviews

To investigate how users use *Easy Period* in the fabric of everyday life, the method of semi-structured interview is also deployed. Loosely structured interview allows respondents to express their personal experience as well as inner feeling and attitude (Byrne 2012: 211) towards period trackers. Participants are recruited through two ways. Firstly, I posted on my social media such as *Wechat*, a Chinese messaging and social media platform, and *Weibo*, on which I specified the inclusion criteria: a Chinese woman and man who has been using *Easy Period* for at least 3 months. As one of my research aims is to explore how users use the app and the data displayed in the app, one should have been using it for a while so that they could have some data at hand for self-reflection. After posting these criteria on my social media account, a total of 4 interviewees were recruited, including 3 females and 1 male. Secondly, I checked the app developer's *Weibo* account and in the comments area I found a group of users interacting with the developer. By clicking on their profile, a private message which briefly states my research aim, method, and confidentiality promise was sent to 53 users. Finally, 9 users agreed with my interview, including 8 female and 1 male users[7]. Through these two ways, 13 interviewees in total were recruited[8]. They are all heterosexual middle-class women and men.

Before the formal interview, 2 pilot interviews were conducted. After each pilot, the original interview guide was changed slightly. The first interview guideline did not take enough attention to the ethical issue because some questions would lead to a discussion of their menstrual health condition. After reflecting on the ethical issue, the interview guide was redesigned[9]. The biggest change after the second pilot is the way I formulate the interview questions. The interview guide was designed in the English

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[7] Please check appendix 2 to see the detailed recruitment process.
[8] Please check appendix 3 for the detailed information of each interviewee.
[9] This will be described in detail in the section of Research Ethic.

mindset which has a great impact on the formulation of the questions. After the second pilot, I found some questions are easy to comprehend in the English context, but difficult to answer when translated into Chinese. For instance, when I asked 'what does the usage of this function [the female and male versions] mean to you?' to the pilot interviewee, she was confused, and responded, 'what does it mean to me? (confusing)... this is a really strange question. What does this mean to me? I don't know how to say'. Therefore, I changed these what-does-this-mean-to-you questions into two small questions: 'what did you gain or lose from this function' and 'why do you think this gaining or losing is important for you?'. After finishing these two pilots, I started the remaining 11 formal interviews[10].

As most interviews were conducted online, mostly by video calls and some voice calls through *Wechat* and recorded by Sony Recorder (voice only), rather than face-to-face, how to gain trust and build a friendly conversation environment is a big issue for me. I believe one of the best ways to achieve this is by showing my sincere gratification, respect, and care to the participants. The approximate interview routine is that firstly I give credits to them by expressing how I am grateful for their participation in this research, and secondly have some small talks before the real interview starts. Back to middle and late March this year, the period when I conducted all the interviews, the covid-19 condition in China was a heavy topic that concerned almost every Chinese. Therefore, the small conversation usually started with the covid-19 condition in the city which the interviewee comes from or lives in. During the whole process, I found my own Chinese identity during a huge pandemic helped a lot in building closer connections with the interviewees. Covid-19 is a disaster for many Chinese, but it became a bond, linking the interviewees and me in this specific situation.

Besides, being a stranger to female interviewees also helps to gain trust from them. Before conducting the interview, I saw myself as a stranger to interviewees and was worried about how to not offend them, but I was impressed by their openness when talking about their period tracking practices and some popped up personal stories

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[10] Please check appendix 4 for the finalized interview guide.

regarding their menstruating experience. At the end of one interview, I told my interviewee how I was touched by her openness, she responded, 'I don't know, maybe that is the trust between two female strangers. You know sometimes it is easier to talk to strangers than your families or friends'. The stranger relationship, which I at the very beginning considered as a stumbling stone for my research, later on actually functioned as a lubricant, helping the conversion go more smoothly. However, the stranger identity does not help a lot when interviewing male participants. For example, one male interviewee is a little bit cautious when I ask his motivation in using the app. The two male interviews are shorter (from 30 to 41 min) than the female ones (usually lasts over 1 hour).

My interview guide includes 3 themes: the first encounter with period-tracker in general and with *Easy Period* specifically, experience and feelings when engaging with the functions in *Easy Period*, and experience and feelings when engaging with the data visualizations in *Easy Period*. Each theme is allocated with a list of questions related to the research question and some potential follow-up questions (Thomas 2013: 198).

Each interview was transcribed within 1 day after it was conducted[11]. After transcribing, each was read immediately and some quick notes were taken in the margin. Later on, the transcriptions were put aside for 2 days before reading again because a slight defamiliarization process helps to go beyond my blind spots, which I found do work in helping me gain some fresh ideas on the empirical data. During the repetitive reading process, I constantly referred back to the research questions to ensure my understanding of the transcriptions stays in focus (Rivas 2012: 373).

It is during this repetitive reading process that I started the descriptive coding. At the very beginning, it was done by simply underlining the keywords in each sentence. As sometimes the interviewee expresses one point with lengthy sentences, I also took some descriptive notes in the margin, trying to use shorter words to describe what the informant said. This first round coding is mainly an inductive coding process during which I let 'the data to speak for itself' (ibid.: 372). However, the second round is

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[11] Please see appendix 5 for an example of transcription which is translated from Chinese to English.

somehow more deductive as I have already had some conceptual tools in my mind guiding me. For instance, after the first round coding, I realized one of my conceptual tools is related to users affective experience, therefore in the second round, I use red color-block to mark all the emotional experiences and inner feelings of the users[12].

Later on, these codes were typed into an Excel worksheet and developed into categories and themes. In this process, again I was guided by a mix of the deductive and inductive methods. I first let the codes speak for themselves. However, the deductive method leans in very soon. As it is 'impossible to do research in a literature vacuum', before forming the categories and themes, I have been immersing myself in the reading materials to build up my 'theoretical sensitivity' (ibid.: 368). The conceptual tools I acquired during the reading process guides me through the category and theme formation process. Finally, 6 themes were developed out of categories. They are: multiple motivations, increasingly sophisticated self-surveillance practices, living with *Easy Period*, affective usage, constructing an urban female identity, and tracking under the name of care[13].

Research ethics

The ethical issue was taken into consideration when designing interview questions. According to the Act concerning the Ethical Review of Research Involving Human by Sveriges Riksdag (SFS, 2003: 460), though new knowledge produced through research is important for the whole society, human rights, and fundamental freedom must always be given priority over the need of science when humans and biological material from humans are involved in the research. As information regarding health, reproductive health in my case, is sensitive data and therefore should be approached carefully. When designing interview questions, questions that address the user's health condition, medical history, and sexual life are avoided. However, what is considered as a sensitive and uncomfortable question varies from person to person. Questions that I see as acceptable might be considered as unpleasant by others. Therefore, before conducting

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[12] Please see appendix 6 for an example of how I did the first and second round coding.

[13] Please see appendix 7 for the category- and theme- forming process.

each interview I also orally highlighted to interviewees that they can refuse to answer any question that they think as sensitive or uncomfortable. Equally highlighted is that I am a student researcher who tries to *understand* their daily practices with period-trackers, not to *judge* or *evaluate* them.

After designing interview questions, I also carefully designed a consent form. Ethical principles for Humanity and Social Science researchers provided by the Swedish Research Council (2002) suggests a responsible researcher to weigh between the research contribution of knowledge and potential risk for participants in the study. In order to protect the participants, Swedish Research Council offers four requirements to researchers: the information requirement, the consent requirement, the confidentiality requirement, and the use requirement. According to these principles, the researcher should inform each interviewee about the research aim and how the research will be conducted in general. Alongside, it should be clearly stated that interviewees are voluntary to participate and have the rights to stop participating at any time without getting any negative consequences, information about the participants will not be recognized and accessed by outsiders, empirical materials and academic results gained from the study will stay confidential, as well as some basic information about the researcher, the institution he or she is affiliated with, and on which platform the study will be published. Based on these requirements, a consent form is designed[14]. As many Chinese do not speak English, the form was translated into Chinese and sent to interviewees through *Wechat*. The contents in the form are read out again by me when we start the interview, to make sure that each interviewee knows his/her rights when participating in the research.

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[14] Please see appendix 8 and 9 for the consent form.

Chapter 4: Decoding the gender scripts in *Easy Period*

As Koch (2017: 4) mentions, established culture can be coded in digital and informational objects, and such inscribed culture can be made visible by analyzing the app itself. This chapter will include the examination of the way *Easy Period* represents the female body, the visualizations on the three interface pages, and some major functions afforded by the app.

Compartmentalizing the bleeding body

Just as in the medical world where the flesh is often dissected into several independent parts ready to be known, the human body is similarly treated separately in the self-tracking world, making the body parts be quantified, tracked, controlled, and optimized isolatedly. This compartmentalization of the body is a heritage of a modern way of knowing. As Amoore and Hall state (2009: 447), 'Renaissance and Enlightenment anatomical dissections fostered a form of knowledge that sought to know by reducing a body to its component parts', and such compartmentalization and fragmentation make the body 'a domain to be mined for certainties' (ibid.: 448). The growing self-tracking apps that target different body parts or activities could be seen as the digitalized 'dismemberment of flesh' (ibid.: 449), making a human body into separate observable, knowable and controllable sites through data. In the case of period-tracking, women's reproductive system, rather than the whole female body, becomes a separated site that invites ever-finer knowledge, revelation and control.

Displaying the bleeding body through data visualizations

After being separated, the human body is turned into data sets displayed on the self-tracking apps. Users' data usually takes the form of visualization such as bar charts, pie charts, line graphs, tables, etc. These data visualizations are powerful in delivering meaning to users (Ruckenstein 2014: 77), as well as sites where power lies. As Kennedy and Hill (2017: 773) say, 'data visualizations are not neutral windows onto data: they

privilege certain viewpoints, perpetuate existing power relations and create new ones, and, as such, they do ideological work'. What kinds of graphs are used to explain the key insights and how are they ordered to emphasize certain relationships? Which color is chosen to represent? How is annotation used to guide the users to make sense of the data? What visual metaphors are applied and how? These are all decisions made by the producer in the visualization process (ibid.: 771-774).

In this app, data visualization takes three forms, a mix of line and bar chart, a pie chart and a digital calendar. The bar chart and line graph are on the first interface page. The two could be easily shifted through a click on the button marked with arrow sign below:
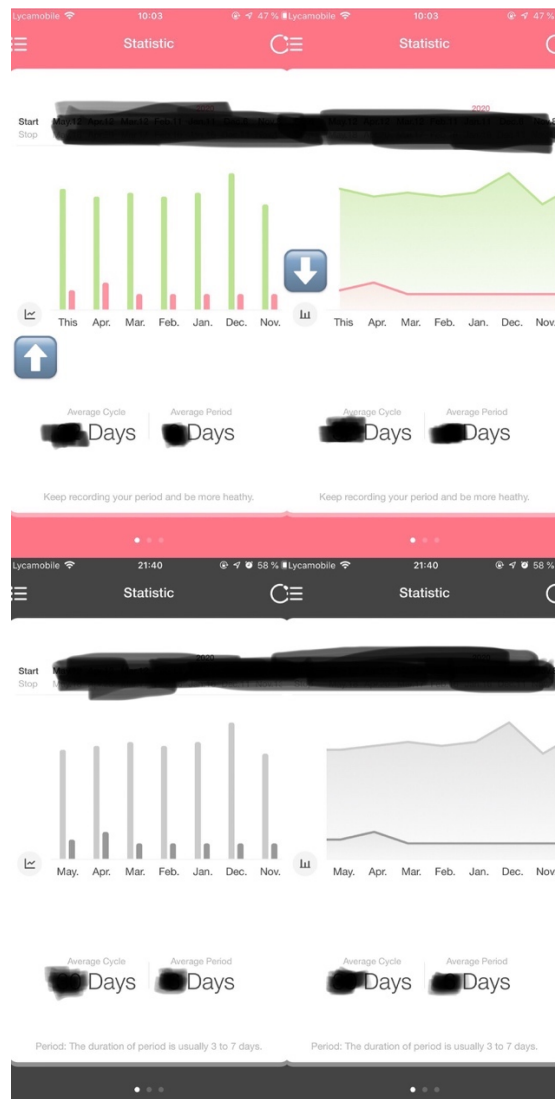

Figure 2: The first page of *Easy Period*
(The above is the female version, the below is the male version.)

Bar chart and line chart were invented by William Playfair in 1768, and later on, was widely used in scientific reports since the 19ᵗʰ century (Lewandowsky and Spence 1989: 201-202). Presenting through statistical charts signals the scientific and objective character of data (ibid.). Using charts and graphs therefore firstly mirrors the sweeping power of modern science in shaping people's way of knowing. Knowing through statistics echoes the slogan of Quantified Self Movement 'self-knowledge through numbers', demonstrating the dominant belief in numbers and calculations in contemporary society. van Dijck calls such belief as dataism, a 'widespread belief in the objective quantification' (2014: 198). Similarly, Hong (2016) argues self-tracking practice has its roots in people's belief that the objective machines will know better than humans themselves. It is the 'modernity's epistemic virtues of accuracy and objectivity' (ibid.: 2) that paves the way for ubiquitous period-tracking apps.

However, numbers and statistics are also politicalized tools to govern and discipline individuals as it defines 'what is normal and what is pathological' (Ajana 2018: 3). From the male producer's perspective, among the various criteria to judge women's reproductive health, the length of one's whole cycle and the menstrual period are selected as the two most crucial variables. Besides, these two charts are inscribed with a presumption that a stable statistic means healthy while a fluctuant pattern functions as an alert to one's health. For instance, if the graphs show an unstable pattern, the annotations below the two graphs will warn the user to adjust her lifestyle into a healthier one by providing some healthy suggestions on the bottom of the first page. In this way, only a woman who bleeds regularly is defined as a healthy body.

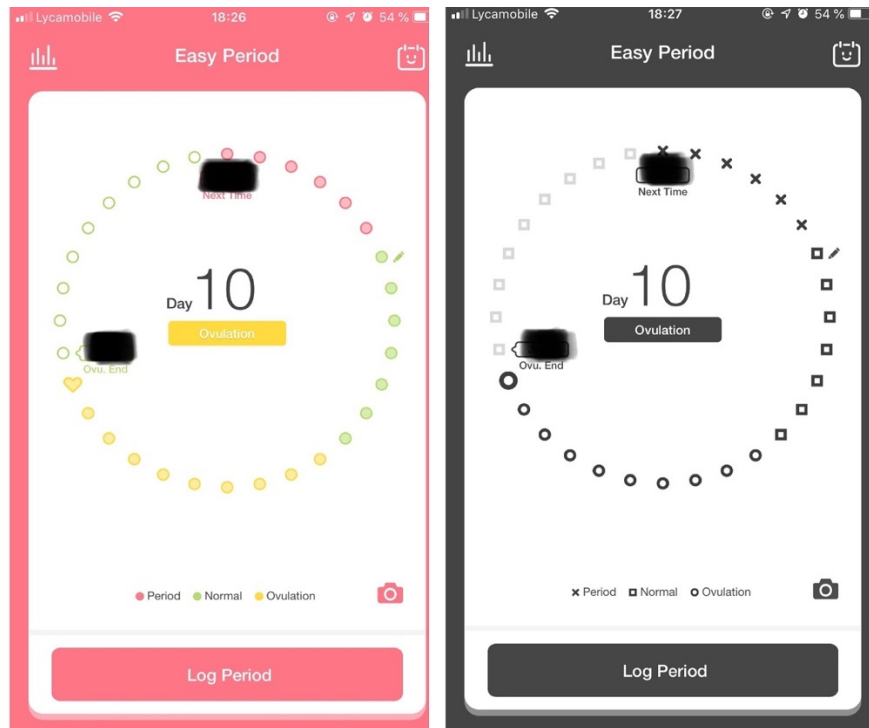The second page of visualization is a circle:

Figure 3: The second page of *Easy Period*
(The left is the female version, the right is the male version.)

According to the developer, the circle is an analogy with women's monthly cycles. The edge of the circle consists of approximately 30 dots, depending on the average cycle length one inputs before using the app. For example, if a user inputs a 35-day cycle length before using this app, there will be 35 dots displayed on this page. On this circle, one's period is marked as red dots and named as 'period', the ovulation period in yellow and named as 'ovulation', and the non-bleeding period is labelled as 'normal' and marked in green. Also, the heart-shaped sign signals the bodily status at the moment when the user clicks the app. For example, Figure 3 shows that today is the end of the ovulation period for the user. Here, naming non-bleeding days as 'normal' days indicates it is the non-bleeding male body that is set as the unmarked norm. Any bodily state deviating from this norm is abnormal and marked with special categories (e.g. 'period' and 'ovulation'). The traffic-light color of the dots also leads to some interesting interpretation. Linking red to the bleeding state indicates women to slow down and stop proceeding when they are bleeding, pathologizing and medicalizing the bleeding body as weak and ill. Using yellow to stand for ovulation days warns women

to be cautious during these highly risky days, bearing the pregnancy risk on women's shoulders. Marking non-bleeding days as green suggests women keep proceeding when they are not menstruating.

It is this page that differs greatly from the one in the male version where the bleeding period is marked as 'x', a forbidden sign. According to the developer, the no-sign aims to tell male users that 'something should be prohibited during this stage', square is used to refer to 'normal days' as 'square has a sense of stability, therefore means a stable bodily state', and the tiny hollow circle indicates ovulation days because 'it looks like an egg'. These visual metaphors similarly reproduce certain male norms. For instance, when non-bleeding days are likened to square, a signal of a stable state, women's other bodily stages such as bleeding and ovulation periods are implied as unstable.

Another page of visualization is a calendar on which one can distinguish different bodily stages and mark their daily mood:
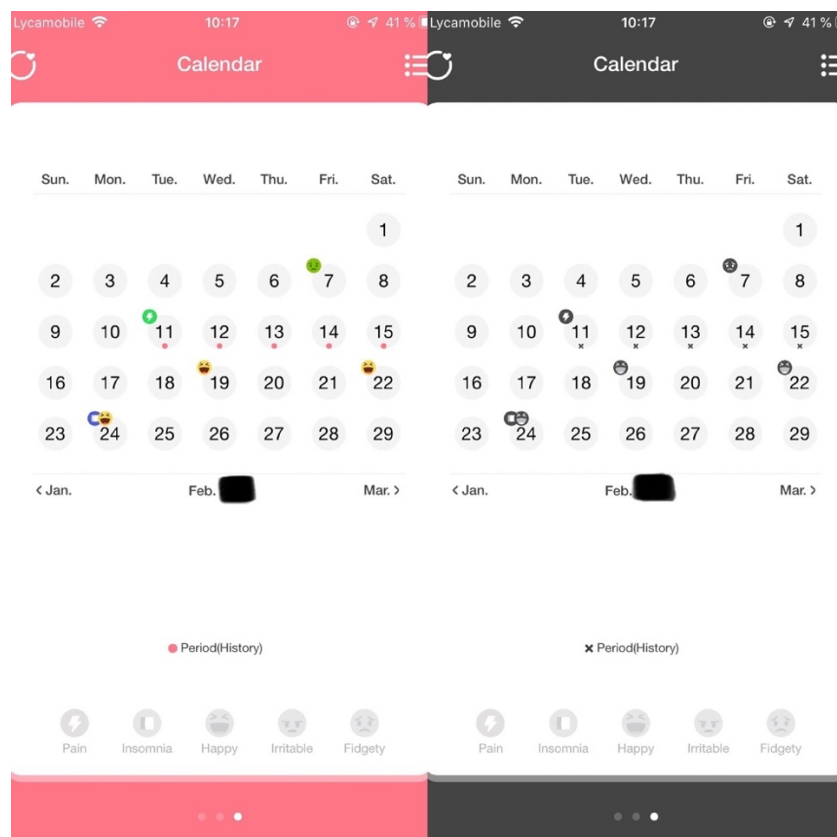

Figure 4: The third page of *Easy Period*
(The left is the female version, the right is the male version.)

This visualization could be seen as an extension of the menstrual calendar invented after the 1920s (Schlunder 2005: 158, in Schemechel 2016: 277). At that time, women themselves did not come up with the idea to observe and track their period. It is male gynecological doctors that encourage women to track their cycles. In this process, menstruation and the female body were treated as othered objects that contribute to the accumulation of scientific knowledge. 'Although the subject doing the tracking in everyday life was the female, the actual subject behind the scenes of the self-tracking were medical and similar institutions, and, therefore, male… the idea of controlling/monitoring the processes of fertilization was… a biopolitical task' (Schemechel 2016: 277). Embedding the century-old menstrual calendar into the app thus perpetuates such a biopolitical task. The mood-tracking function on this calendar also suggests a strong link between one's monthly cycle and emotional status. In popular discourse in the Chinese context, bleeding women are often seen as bad-tempered and easily irritated. In this sense, this function mirrors such popular views and reinforces such stereotypical links.

Hiding and caring the bleeding body

Except for the mood-tracking affordance, another function that deserves question is that *Easy Period* suggests users set a password for the app, implying that information around menstruation is not proper to be discovered by others. Some might argue that this is for privacy concern, but other self-tracking apps, for instance, the running-tracking or sleep-tracking apps, do not suggest users keep their bodily data in secret but instead encourage users to use it loudly by sharing the data on other social media platforms. Encouraging users to keep it secret could be seen as closely related to the longstanding androcentric discrimination on menstruation, a bodily process that is 'shameful and in need of concealment' (Dolezal, 2015: 106).

Equally important is its male version offered by the app. By sharing the same account, a man can easily know when his half's period starts and show his care during her monthly hormonal change period. This function could be viewed as stereotyping

the menstruating body as in need of specific attention and care. According to Lupton (2012: 141), such a view dates back to as early as the 19th century when menstruation is seen as the root of sickness. Women's bodily symptoms such as headache, sore throat, and indigestion during the menstrual period were believed to be rooted in their uterus and ovaries. Menstruation has since then been seen as abnormal that should be subjected to 'the surveillance and ministrations' of male doctors (ibid.). Different from the previous time when male surveillance of the bleeding body is conducted under the name of knowledge, contemporary surveillance is practiced under the name of care.

To summarize, in *Easy Period* the female body is not treated as an entity but is broken down into othered fragments. The app also defines a healthy female body under limited standards. The gendered design and affordances also feed into the long-existing social stigma on menstruation and the female body, seeing them as dirty, unstable and abnormal bodies while at the same time reproducing the normal body based on the male standards. These are the gender scripts inscribed in the app. However, as the gender scripts are not stable and fixed, but always negotiated by users (van Oost 2003: 196). In the next chapter, attention will be shifted to the users.

Chapter 5: Domesticating *Easy Period*

Having said that this app is inscribed with various social and cultural values on menstruation and women, in this chapter, we discuss the usage of the app in users' everyday life settings. In the following sections, the subtitles out of the brackets are borrowed from different stages of domestication theory, those in the brackets are the original themes that developed from the coding process.

Appropriation of the period-tracker in general (multiple motivations)

Reports have shown that 60% of health-related apps are abandoned after 6 months of use (Economist Intelligence Unit and Price Waterhouse Cooper 2012, cited in Nafus 2016, introduction). However, a large number of the interviewees I interviewed have been using menstrual trackers for at least 5 years. Compared to other self-tracking apps which play a fleeting role in users' phones, what's so special about period-tracking apps that makes it be continuously used? My research shows that different cultural meanings attached to menstruation have a great role to play in motivating users to adopt menstrual tracking apps.

Before approaching the appropriation of *Easy Period*, it is necessary to demonstrate users' first encounter with menstrual tracking apps in general. When first encountering such apps, users are more curious than suspicious. None of them have queried why it is necessary to track their period with such apps because all of them have been told by elder women in the family or female peers to keep an eye on their bleeding date since puberty. Users were quite curious about the newly emerging app when they knew such app from recommendations on social media, App Store or their friends. They recalled that the first trial was not very difficult. As Zoey said:

> I have been tracking my period with my brain and memory for so many years, so it was quite easy to embrace these apps when I first knew it… it is just digitizing your memory process. In the past, you remembered the start and end date with your brain,

and now you input these dates. The two methods are of the same logic. Quite easy. (Zoey, 26-year-old, marketing specialist)

As period-tracking apps inherit the 'same logic' of their predecessors, users can easily acquire control over it, usually by drawing on their earlier memorizing experience and trying their hands on the new apps for several minutes. Using period-tracking apps could be seen as an extension of their old tracking habits formed since menarche. Since tracking one's period has become a second nature for interviewees, these apps quickly start to enter women's life without triggering too many questions.

Appropriation involves various kinds of decision-making (Silverstone, Hirsch and Morley 1992). After the first encounter, there are also other motivations for continuous usage. For Zoey, a 26-year-old marketing specialist, a monthly cycle means monthly pain. Keeping recording the period dates makes her more aware of the next bleeding date so that she can be well-prepared before it starts:

I used to have really strong reactions, like vomit, every time when I got my period. That was a nightmare. It felt like I died once a month, so my period definitely has a huge impact on my life… it's like an enemy (laugh). I'm kidding (laugh)… the app really helps me to avoid such a sudden nightmare. For example, when the app reminds me I will bleed next week, I will from now on stay away from cold food, soak my foot with Chinese herbal immersed in hot water every night before sleep, and stick heating pads on my stomach. After finishing all these preparations, my pain gets relieved. (Zoey, 26-year-old, marketing specialist)

For Zoey, the monthly cycle causes many annoying bodily reactions. Continuous tracking activity thus becomes a way to avoid the painful monthly experience. However, tracking does not directly lead to the disappearance of menstrual pain but often works through performing cultural practice such as avoiding cold substances and keeping warm. Similar cultural practices are also found in other interviews. All the interviewees state that if the app notifies their period will start soon, they will start to avoid cold

substances. Therefore, users do not gain meaning simply through the tracking practice itself, but always influenced by the culture she comes from. The usage of period-tracking is thus context-based.

Zoey's motivation for using period-tracker is largely to prepare in advance in order to prevent abdominal pain. However, others' motivation comes from a negative cultural view of menstruation. Many of them see menstruation as interruptive of normal life. It will influence their studying or working performance, discourage them from outdoor activities, and invite embarrassment if the menstrual status is discovered by others. The acquisition of period-tracking apps is therefore to avoid such interruptions. One example comes from Shelly who has many embarrassing experiences. In high school, she was made fun of by her classmates because her menstrual towel accidentally fell to the ground. Last year when her menses overflow and left stains on her pants, she was stared at by a couple on the bus for several minutes:

I could notice the couple was watching me on the bus. Even after I got off they were still staring at me, through the bus window. I was so nervous and didn't even know how to walk my way properly, so I had to stand against a wall and wait until there was nobody around me, and then I ran away. (Shelly, 24-year-old software engineer)

For Shelly, leaking invites unpleasant gaze, therefore constant tracking her period means assurance that her menstrual state will never be found out and she will never receive any uncomfortable gaze from others. Different from Shelly's shameful view on menstruation, some interviewees said period is a natural bodily process, there is no need to feel ashamed or embarrassed about it. As Emma, a 27-year-old government employee put it, 'it's just like you catch a cold, or the growth of your hair, it's natural'. The interesting thing is these women assert menstruation is not a shame, but their daily practices tell the opposite story. Menstruation is described in euphemistic language such as 'Lijia' (literally, regular break), 'Dayima' (literally, old aunt) both in the interviews and in their daily life. Giving out menstrual status to others is considered as uncomfortable and ashamed. Taking Emma as an example, getting bloodstains on her

pants is 'inelegant'. Asking for leave with an excuse for menstrual pain to her male boss makes her feel 'embarrassed'. Tracking her period allows her to prepare menstrual napkins in advance, making sure that period will not invite embarrassment and disrupt her normal life.

Menstruation is also seen as closely related to one's reproductive and general health. The majority of interviewees see menstruation as a health barometer that mirrors other hidden illnesses in women's bodies. The delay, the blood volume, the color of the menses, and the texture of the blood might indicate latent diseases. Hence, tracking their period on a monthly basis is also a way to make sure there is nothing wrong with their reproductive and general health. For example, Molly, a 20-year-old university student, sees menstruation as an indicator of her stress level. Shelly, 24-year-old software engineer, considers delayed menstruation as evidence of unhealthy life habits (e.g. stay up late) and life-work imbalance.

Ann, a 28-year-old government employee who has been tracking her period since middle school with an exquisite notebook, sees tracking menstruation as a practice that links her past and future. As she said:

One day you will become old, and you will stop bleeding monthly. Imagining the old you were looking back on the data that have been tracked since young, it would remind you of your years of youth (chuckle)… I feel like it would be an achievement of mine if I had been tracking it for my whole life (laugh). (Ann, 28-year-old, government employee)

As Sharon and Zandbergen (2017: 1710) state, 'the practice of tracking … opens up a reflective space in which memories can be explored and cherished'. Tracking period seems to have a romantic and delighted meaning for Ann: a way to document her life continuously. Her passion for documenting her whole bleeding life indicates a desire for a stable female identity. According to Giddens (1991, cited in Gauntlett, 2008: 107-108), people in late modern society pursue continuous identity by putting efforts on constructing coherent narratives about the self. In Ann's case, tracking her period

can be seen as part of such effort. A continual period-tracking life contributes to a coherent and stable female identity.

As the evidence shows above, women's understandings of menstruation stand in a spectrum. Menstruation is not just a bodily event, various meanings are constructed around it: it causes menstrual cramp and public shame, it indicates one's reproductive and general health, and it signals a coherent autobiography. The motivations of the adoption of period-tracking apps, therefore, are inevitably linked to such cultural values on menstruation.

Appropriation of *Easy Period*

Having revealed how interviewees appropriate and think of period-tracking apps in general, the following will focus on the appropriation of *Easy Period* specifically. Except for the cultural values attached on menstruation mentioned above, some other motivations also matter when it comes to the appropriation of *Easy Period*.

The appropriation of *Easy Period* cannot be understood without taking their previous tracking experience into considerations since all the female interviewees have been using other period-trackers as precursors. *Dayima* and *Meiyou* are the two most popular apps mentioned by interviewees. These two are more complex than *Easy Period*, not only functioning as period-tracking tools, but also as news distribution platforms, online female communities, and e-commerce platforms. Overloaded information and functions trigger strong aversion from the interviewees, which leads users to disengage with *Dayima* and *Meiyou* and appropriate *Easy Period*.

As news distribution platform and online communities, *Dayima* and *Meiyou* provide floods of information, ranging from information related to the female body for example pregnancy, beauty, breast enlargement techniques, etc., to intimate relationships, gossip news, and so on so forth[15]. Different to *Easy Period* which only has three still interfaces without too much information, *Dayima* and *Meiyou* have 5 interfaces, each of which provides 'endless trash information' if one scrolls down,

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[15] See appendix 1 for some examples from *Dayima* and *Meiyou*.

which is described by most interviewees as 'super annoying' and 'a waste of time and energy':

OMG there are ... SO MANY WEIRD information. As I remember, one day the app [*Meiyou*] said the menstrual blood has foul fishy smells. My blood smells fishy? What the hell is this? This kind of description is so disgusting. ...And there is too much gossip news in the app, really annoying... The most annoying thing is these platforms keep updating. It's like infinite. Without ending (a bit angry). (Jenny, 26 year-old, university student)

I don't like *Meiyou* and *Dayima* because the information they provide is not authoritative. I prefer selective, you know high-quality information when it comes to my health condition. I don't want to consume too much trash information. That is a waste of time and energy. (Mary, 26-year-old, white-collar)

These descriptions show how women dislike being bombarded with endless trash information. In addition, many also express how they hate to be treated as exploitable objects. As e-commerce platforms, *Dayima* and *Meiyou* sell products such as sex toys, pregnancy test kits, menstrual towels, diet pills, ginger tea, uterus heating device, etc. Besides the e-store embedded in the apps, the two apps also have many popped up advertisements, suggesting they are selling users to third-party advertisers. Seeing users as harvestable and vendible objects triggers strong critiques among most interviewees:

I think *Meiyou* is selling users. I am not 100% sure about this, but you know it has too many free tools, for example, Trevi Fountain [For users to make a wish, usually to pray for a regular period], sleep tracking, and calorie tracking tools. I feel like it is using these free online services to attract as many users as possible and then turn all these female users into money. I really don't like this. I would rather buy an app than use a free app that keeps selling my information to others and making a profit from me. (Chloe, 26-year-old, UI designer)

Compared to the appropriation of period-tracking apps in general, the appropriation of *Easy Period* is not simply an engagement with period tracking activities without too many questions. Quite the contrary, the deliberate choice is a resistance, by abandoning apps with diverse affordances and engaging with the minimalist style app, users are resisting the endless low-quality information and refusing to be treated as exploitable objects. However, users tend to reproduce the normative menstrual stigma without showing a strong interest in resisting it.

Objectification (increasingly sophisticated self-surveillance practices)

Originally, the objectification phase refers to how certain technology is spatially located in the household (Silverstone, Hirsch and Morley 1992). Inspired by this definition, one's smartphone can be considered as a space. Replacing the word 'household' with 'smartphone', objectification in my research means how *Easy Period* is located on the phone screen.

The way interviewees locate the app shows creative patterns. Many users reject to see period-tracking apps as something special which needs to be hidden, but a 'very natural thing'. One interesting example is from Emma:

> I used to hide such apps. You know you can form a folder on your screen and then move other apps into it. The folder only displays 9 small icons at first sight. If you move the period tracking app as the 10th or 11th or whichever number bigger than 9, it will be hidden. You can't see it until you click on the folder and slide towards the left. That was how I used to hide these apps, but later on, I feel it's not necessary. … Tracking period is not a shame, it's just a normal and natural thing for women. So after I realize this I just put it randomly on my phone screen. (Emma, 27-year-old, government employee)

Similar to Emma's random arrangement, many interviewees expressed that they do not hide *Easy Period* in a separate folder or in an obscure corner on their phone screen, it can stand comfortably together with the most frequently-used apps. As Emma

tells, 'it's totally ok if my colleagues or friends or some strangers see me using this app'. Some interviewees like Zoey, Chloe, Daniel and Patrick locate the app randomly on their screen together with other apps that will be constantly used in everyday life such as *Wechat*, *Weibo*, *Taobao* (the Chinese version of *Amazon)*, *AliPay* (the Chinese version of *Swish)*, *NetEase Cloud Music* (the Chinese version of *Spotify)*, *bilibili* (the Chinese version of *Youtube)*, and so on.

The location where the app is positioned shows a destigmatized view on women's menstruation, but at the same time, it also demonstrates a female body that is increasingly and more sophisticatedly surveilled. For many of them, *Easy Period* is arranged on the phone screen together with many other apps that target women such as apps related to cosmetic products, beauty cameras, body hair, and fitness. For example, Tracey organizes all the apps according to the color of the icon. *Easy Period*, an app with pink icon, is put together with other reddish apps like *Red*, a social media and e-commerce platform targeting specifically on female users, *Meitu*, one the most famous beauty camera app in China. Ann puts *Easy Period* with *Beauty Keeper*, an app that reminds users of the expiring date of their cosmetic products, and *Philips Lumea IPL*, an app connected to a Philips hair removal device to track her body hair. Mary put it with *Keep*, a fitness tracking app, *Apple Health*, *Awesome Image* on which one can learn ingredients in cosmetics and personal care products, and a sun protection advisor that provides reminders and forecasts on UV rays.

Silverstone, Hirsch and Morley (1992: 20) suggest, the media technologies one uses cannot be understood in isolation. 'They signify together as an expression of' oneself and the social context. Clearly, these self-tracking repertories (Gerhard and Hepp 2018: 689) show that interviewees not only surveil their monthly cycle but also their skin condition, skin care products, body hair, fitness, etc. In contemporary China, young women are actively engaging with fine-grained bodily surveillance, suggesting a new subjectivity that is strongly influenced by neoliberalism which bears the burden of being healthy and beautiful citizens on an individual's shoulders (Li 2020: 57).

How interviewees locate *Easy Period* in their phone also tells a story about the temporality of late modernity. For Molly, a busy university student who is obsessed

with time management, the way she organizes her phone screen depends on how frequently the app will be used. Those used on a monthly basis will be positioned on the first page of her phone, weekly on the second, and daily on the third. *Easy Period*, an app used once a month, is positioned on the first page of her phone. The self-tracking repertories in the interviewees' phones also include productivity apps and devices such as *Mi Fit*, which is connected to *Mi Band* to monitor one's sleep pattern, heart rate, and calorie one has burnt, and *Huawei* smartwatch to monitor one's pressure level. These self-tracking repertories tellingly suggest that contemporary young women in China are seeing their bodies as a means to achieve higher productivity. In this sense, the bleeding body is also a working body that aims to be productive.

To sum up, the objectification of *Easy Period* tells a broad picture of contemporary Chinese women. Different to the appropriation stage when users do not question the menstrual stigma, in this stage, most users, including women and men, reject a dirty or pollution view on women's period, suggesting a destigmatization of the bleeding body in today's China. At the same time, the intensification of other forms of self-surveillance practice suggests an entrepreneurial subjectivity that treats herself as in need of ceaseless improvement (Elias and Gill 2018). A female body today is struggling to surveil her period, skin condition, fitness, body hair, sleep pattern, stress level, productivity, etc. The growing and all-around self-surveillance practices mirror the increasing power of neoliberalism in China.

Incorporation (living with *Easy Period*)

After claiming a position in one's phone, *Easy Period* is incorporated into and starts to play a constructive role in one's daily routine. According to Silverstone, Hirsch and Morley (1992), the incorporation phase highlights how ICTs are used and incorporated in people's daily life. My research finds that, linking back to the first research question, women are not simply following the scripts encoded by the designer. Rather, the app is reinterpreted and negotiated in their daily life. It is not simply a tracking tool, but also a tool to increase reproductive health literacy, to free themselves from constant manual work, to help communicate with professional doctors, and to arrange their daily life.

Some interviewees use *Easy Period* as a tool to achieve knowledge of menstruation and their body. The quantification of one's bodily event and visualizations updated monthly in the app spawn more self-knowledge (Couldry and Hepp 2017: 123), making users more aware of some previous latent menstrual processes:

Before using *Easy Period*, I don't know what is ovulation phase. My knowledge of the period is very basic: the whole month is divided into two parts: bleeding days and non-bleeding days, that's all. … I feel like my period becomes less abstract after being divided into more stages and visualized. Menstruation is not just a term for me anymore. It is a complete cycle with a starting and ending point. It is something with more dimensions. (Jenny, 26 year-old, university student)

For Jenny, *Easy Period* helps her to understand her cycle more thoroughly and comprehensively than before. Such a view is also shared by many other interviewees. For them, seeing period-tracker as a way to learn more self-knowledge has its root in the lack of proper sex education from schools and families during their puberty. The app, therefore, becomes an opportunity to compensate for such insufficient sex education. In order to know more about their menstrual and reproductive health, users do not use *Easy Period* alone, but often cross-use other medical platforms, leading to a more complex media engagement. For example, professional terms in the app (e.g. the luteal phase, PMS) give them a chance to jump into other medical platforms like *Dingxiang Doctor*, a well-known digital health platform in China, to acquire more knowledge on their menstruation and reproductive health.

Easy Period, together with other online medical platforms, is not only involved in the making of a healthy reproductive body (Hamper 2020: 5), but also free users from the arduous calculative and manual-recording practice. Almost every interviewee champions such freedom and convenience afforded by the app, saying it is a relief to get rid of the monthly note-taking work. Some further demonstrates a technophilic account toward the role of technology and data:

I think the visuals on the app will tell you directly. It's very clear. Red dots mean you are going to bleed, green means there is no need to worry at this moment. So you don't have to remember the exact date by yourself if you have a digital tool at your hand to help you. You just click the icon of the app and you will know… and I am pretty sure that data are more accurate and objective compared to your own memory… People are easier to make mistakes than technology. (Emma, 27-year-old, government employee)

Emma describes her subjective knowledge, for example her own memory which she used to rely on, as error-prone and insufficient, while self-tracking technologies can compellingly transcend and overcome such limitations of humans (Lupton 2014; Schulz 2016: 45). A few interviewees even wish to keep their bodily knowledge at a further distance. They put great hope on the advanced wearable devices, hoping future generations of wearable devices could tell them everything about their period by simply wearing it on their body so that they 'can know the bleeding date without even a click on the phone' (Tracey, 24-year-old, insurance company employee). Wishing advanced technology can bypass and transcend humans' subjective experience and knowledge shows a desire to conquer human instincts with quantified rationality (Hong 2016). In this way, the period-tracking app or wearable devices not only track the period *for* her but also *instead of* her.

Due to the trust in technology and data, some interviewees also use *Easy Period* as an assistant when visiting doctors. For example, Chloe showed the data in *Easy Period* to a doctor when she was asked about her menstruation condition, which she describes as quite empowering in helping her, a layperson, to communicate with the professional doctor. It is described by her as fast, efficient, and reliable.

Interviewees' practices with *Easy Period* are not only strongly shaped by their trust in rational technology and data but also largely influenced by traditional Chinese medical culture. Interviewees constantly use the app to plan for their future lives. Most participants say they often check the historical data in the app to make sure the next bleeding date and accordingly to make some plans. For example, Mary said she

sometimes checks the data to decide whether to join their friends to have ice cream. Zoey arranged her beach trip according to the historical bleeding data as she thinks contact with water during her period will invite menstrual pain. It seems these kinds of future plans are informed by the data in the app, but what actually is functioning is the Taoist TCM culture. As most Chinese women believe it is unwise to stay close to cold substances when menstruating, their future lives (e.g. gathering plan, travel plan, dietary plan) are usually planned based on such belief.

To summarize, their usage of *Easy Period* constantly fits into the user's daily routine, contributing to their reproductive health literacy, leading to a more convenient life and helping them to communicate with doctors and to organize their lives. The usage of *Easy Period* is therefore not one-dimensional as the app developer may imagine. Additionally, the usage cannot be understood without taking the social context into consideration (Krajina, Moores and Morley 2014). It is the juxtaposition of the faith on up-to-date science and technology and belief in traditional Chinese medical culture that informs interviewees' practices with the app. However, what concerns me is that interviewees show a willingness to outsource their subjective way of knowing their bodies to objective self-tracking devices. One's bodily sense is considered as better to be 'outsourced to and performed by auxiliary codifying mechanisms that are adjudged to encompass greater degrees of validity and reliability' (Smith and Vonthethoff 2017: 9). A privileging of 'machinic sensibility' of the digital tool (Hong 2016: 14) over one's own sensibility runs a risk of losing one's autonomy.

Affective usage

Before approaching the conversion stage, I would like to add one section in between. In Silverstone, Hirsch, and Morley's (1992) original work, incorporation focuses on the usage of certain technological products, but they do not show a symmetric treatment of users' emotions and feelings when using the technology. According to the empirical data collected in this research, the affective experience (Lupton 2017; 2020) with *Easy Period* contributes greatly to users' meaning-making process.

The usage of the *Easy Period* involves different affective states. Tracking one's period does not only happen at the moment when the period starts and ends. Instead, it usually happens several days before the menstruation starts. Informed by the data, a feeling of uncertainty starts to emerge usually one week before the period starts. Such uncertainty and anxiety can be handled by doing some preparation in advance. For instance, preparing menstrual towels in one's bag to ensure the menstrual status is concealed timely, staying away from cold food and sweets to avoid menstrual pain, and sleeping earlier than usual to avoid pimples, etc.

The moments when clicking the starts and ends button in the app are also highly emotional. The majority of the interviewees state that when the period starts they have a sense of relief. As Chloe puts it:

I feel relieved when I click the my-period-starts button because it signals I have a healthy body. (thinking) It's like when someone important promises to meet you on a specific day, and you have been waiting for several days to meet her, and finally, she shows up. You know, 'oh finally, here she is'. That kind of relief. When the period ends, a feeling of 'oh finally' shows up again, but it's slightly different. When clicking the my-period-ends button, it feels like a kind of freedom. Ok finally I can eat ice-cream, I can go to the beach, I can be energetic and active again. (Chloe, 26-year-old, UI designer)

For Chloe, as well as many other interviewees, menstruation is a state one urgently expects, yet also urgently wishes to get rid of. The relief brought by the emergence of the period is derived from a sign of health, while the relief after the period comes from a free body without confinement.

Besides the affective using experience, studying one's data is also an emotional process. As Lupton suggests, the data and their visualization displayed on self-tracking devices and apps have strong affective power (2020: 90). In the case of period-tracking, particular attention is paid to the fluctuating data pattern. Compared to, for example, the fitness apps which usually trigger exciting feelings of competition and achievement

(Sumartojo et al. 2016), the fluctuating data in the period-tracking app tend to trigger more negative feelings. Molly feels panic and anxious when studying her historical data:

I look at my data REALLY closely… Sometimes when comparing my bleeding date with history data, I feel panic if something unusual happened. For example, my bleeding length used to be 6 days, but one day, all of a sudden the app said the length became 5 days, this made me so panic. I was like 'what happened to my life? did I do anything wrong?'. I was really afraid anything went wrong with my body, so the next day I booked an appointment with a doctor and did a blood test, urine test, and uterus X-ray. It frightened me even if it was just one-day delay…There are too many risks in daily life. I wish I could be as healthy as possible. (Molly, 20-year-old, university student)

Molly's description reveals a strong fear of uncertainty in a risk society (Sanders 2017: 43). Emphasizing the future risk factors in life and being obsessed with one's bodily data sometimes generates unnecessary fear and makes the self-tracking practice a burden (Lupton 2019: 74). Chloe finds another kind of anxiety when studying her data:

The most frequent page I check is the bar charts on the first interface because I can see my average cycle length. Someone told me before that in a woman's whole life, the eggs she can produce are constant. You are predefined that you will have like 400 eggs in your whole life. So a longer average cycle length means you will be bleeding for more years. That means your aging process will be slower than others. I pay particular attention to that page because I wish the average cycle length could be longer (laugh). I wish I could stay young. (Chloe, 26-year-old, UI designer)

Fear of getting old is well shown in Chloe's expression. For Mary, her anxiety is amorphous depending on if she is single or in a relationship:

When I am single, if the data tells me my period has been delayed for like 5 days, I will start to worry. This kind of worry is mainly about my health, but after I have a boyfriend, it shifted into a kind of anxiety about pregnancy. (Mary, 26-year-old, white-collar)

In a word, the affective usage of *Easy Period* plays a profound role in women's period-tracking practices. The emotions and feelings provoked during the usage reveals the insecure state of the reproductive bodies. differ from woman to woman, depending on their own situations. However, their affective engagements are largely negative, related to one's anxiety about health conditions and fear of getting old or pregnant. Notwithstanding such negative engagement, users do not disengage with *Easy Period* since bad data often reminds them to be aware of potential risks in their life. The affective usages therefore reveals the insecure state of the reproductive bodies.

Conversion (constructing an urban female identity)

In the original text of Silverstone, Hirsch, and Morley's research (1992), during the conversion stage users are building their identities through interacting with others. However, my research suggests a slightly different finding, that is, *Easy Period* users do construct their own identities through usage, however, it is a more or less invisible process as they rarely share their period-tracking stories with others.

What kind of menstrual technology one uses tells how one identifies herself/himself. In her book *The Modern Period: Menstruation in Twentieth-Century America*, Freidenfelds (2009) observes that using modern menstrual products (e.g. tampons) is a way for women in the 20th century's America to become modern (ibid.: 4) and join the middle class (ibid.: 72). Similarly, the period-tracking app, an innovative menstrual technology in contemporary society, is also used to maintain a modern identity for users. Specifically, users are trying to maintain their identity as urban, well-educated middle-class women by choosing *Easy Period* as the tool to track their period.

Though *Easy Period* welcomes all women who bleed, some users think it is mainly for well-educated women living or working in urban settings. When asking why they refuse to use *Dayima* and *Meiyou* but choose *Easy Period*, some interviewees linked it to their identities:

If the app has too many functions and contents, it's kind of distractive. I am a goal-oriented person, so I really don't like *Dayima* and *Meiyou*, but prefer a simple app with just a few functions. Maybe users of *Dayima* and *Meiyou* have plenty of free time, they are not busy with study or work therefore have more time to consume the garish content in the app. (Molly, a 20-year-old university student)

I think *Easy Period* users are modern urban women with a higher education background and income like me. Women in rural areas pay more attention to trifling details in their daily life, I don't think they are willing to spend time and money just tracking their period. (Chloe, 26-year-old, UI designer)

We *Easy period* users are more goal-oriented because we know what kind of information we want. Probably they [users of *Dayima* and *Meiyou*] have some difficulty in selecting information. They are more prone to trust those trash unscientific information. (Emma, 27-year-old, government employee)

As Hall (1996: 4-5) tells us, 'identities are constructed through … difference…. It is only through the relation to Other, [and] the relation to what it is not' that identity can be constructed. The above examples suggest users define themselves against others, constructing their identity through distinguishing themselves with rural women, less well-educated women who are not experts in selecting information, and women who are not busy with their study and work. By differentiating themselves from those who they are not, users maintain their identities as well-educated, busy, goal-oriented, urban women, and demonstrate a wish to stand out and be different from the others who are less valued. Therefore, even though there is no virtual community in *Easy Period*, it

still serves as a platform for users to imagine a middle-class group identity, a group identity as what Emma calls 'we *Easy Period* users'.

Tracking under the name of care

In this section, we discuss how male users' use *Easy Period*. Ytre-Arne (2019: 489) argues that biographical change is central to understand people's engagement with the media. For the two male users Daniel and Patrick, the appropriation of period-tracking apps is related to the transition of their life course, which means the usage of period-tracker is only possible when they are in a romantic relationship. After breaking up with his girlfriend, Daniel disengaged with period-trackers. Patrick, a 27-year-old married man, is still using this app to record his wife's period.

In the past, menstruation was something dirty for ordinary men (Dikötter 1995: 43). Some keep away from this hidden monthly event and see it as disgusting. Some rarely put effort to learn and understand it. Patrick recalled that before using *Easy Period* the only thing he knew pertaining to women's menstruation is that it appears once a month and nothing else, but when he started to use the period-tracking app, he realized it is quite complex: it causes pain and stress; women's bleeding time varies, ranging from 4 to 7 days; a whole cycle includes several stages, and so on so forth. As period-related practices (e.g. tracking the bleeding date, managing menses) used to be exclusively conducted by women, men's willingness to learn about menstruation through using period-tracker at the first sight shows a de-stigmatized understanding of menstruation. However, looking closer, things become slightly different.

First of all, the two male interviewees see bleeding women stereotypically as weak and in need of care and protection. Bearing such a view in mind, even though their girlfriends do not require help, men take the initiatives to record for girls and frame the tracking activity as a help. For Patrick (27-year-old, government employee), tracking the bleeding date means freedom for his wife as she does not need to bother herself to memorize the date: 'My wife thought tracking period is seeking trouble for herself. She has tried before but felt impatient about the monthly recording, so I helped to track for her'.

Male's help also takes other forms. Daniel, a 26-year-old algorithm engineer, not only helped his partner to *track*, but also helped to *analyze* the data. For him, using the *Easy Period* on one hand shows his care and love, and on the other hand, it also helped his girlfriend to become healthier. As he recalled:

> Once the data showed something irregular, we analyzed together to see if there is any potential health problem or something like that. Sometimes we reflected on her daily life together to find the cause that led to the irregular period. So tracking and analyzing are ways to show how much I care about her health and an expression of my love. … I think helping her analyze the data is also a way to encourage her to become a better and healthier self. It's just like encouraging her to exercise regularly. I'm doing both for the sake of her. (Daniel, 26-year-old, algorithm engineer)

Daniel himself is an enthusiastic fitness-tracker who uses *Strong*, an app to track his weight-lifting history and *Apple Health* to track his footsteps, and wears *Apple Watch* to track his heart rate, daily movements, etc. As a man who requires himself to make constant progress, his description shows how he wishes his partner to make improvements together with him.

Furthermore, the tracking activity is not only framed as a help, for Patrick and Daniel, it is also a good way to perform as a good boyfriend/husband. The two male interviewees agree that a man who takes good care of his partner during her period is a good boyfriend/husband:

> The way I got to know this kind of app is through a *Weibo* post. It said a good boyfriend should take good care of his girl during her period. So after reading that post, I suggest to my girlfriend that I can help her to record her period every month to see if it is regular or if there is any potential health risk. … I think tracking her period is a way to show my care. So even if it is an app targeting women, I think men should use it as well, to show their care and love. (Patrick, 27-year-old, government employee)

I think men, I mean those in a romantic relationship, can try this app. After all, when girls are bleeding, they are a bit weak, both physically and emotionally, I think a good boyfriend should show more care during this period. (Daniel, a 26-year-old algorithm engineer)

From these quotes, we can tell the morality of becoming a good boyfriend/husband plays an important role in male's engagement with *Easy Period*. The app is mainly appropriated by Daniel and Patrick to perform themselves as an ideal partner. Therefore, their usage of *Easy Period* is not only for the sake of their partner's health, but more importantly to construct a subject position for himself: a helper and a considerate good boyfriend/husband. Using a feminine app does not cause the emasculation of men, but becomes a way to perform and reassure their masculinity.

Chapter 6: Conclusion

My point of departure in this research project is to explore the gender scripts in a Chinese period-tracking app named *Easy Period* as well as its domestication process. It has been argued though the app is produced with conventional imaginations on menstruation and the bleeding body, women's period-tracking practices show colorful patterns depending on the social and everyday context. The conclusion part will be divided into two parts. I will wrap up my findings and answer the research questions. Furthermore, I will delineate the contribution and limitation of this research, and point to some possibilities for future research.

Findings

Gender scripts in Easy Period

In the first part of the research, I examined the gender scripts embedded in the *Easy Period* app. It is found that just as in anatomy, in this app, a specific body part is separated from the complete female body, making one's reproductive system be easily quantified, known, and reflected upon through numbers and data. Nevertheless, data and numbers are not apolitical. Three forms of data visualization displayed in the app carry particular social and cultural values. A healthy woman is defined as someone with a regular cycle. The gendered design and metaphors suggest the menstruating body as abnormal, sick and unstable, reproducing the norm of the male body. The digital calendar is an extension of the century-old menstrual calendar, a tool initially used by male professionals to examine the female body. Additionally, different affordances also reproduce stereotypical and even discriminatory views about menstruation and women. For example, the mood-marking function inherits a view that women are emotionally unstable during their periods. The password suggests information about women's period is supposed to be hidden, and the male version indicates bleeding women are special, either in physical or emotional sense, hence in need of particular care. To be brief, *Easy Period* reproduces the period as a shame that needs to be concealed, and the

bleeding body as leaky, abnormal, unstable, weak and in need of external help (Karlsson 2019).

Domesticating period-tracker and Easy Period

I adopt domestication theory to understand users' usage of *Easy Period*. It is found that different from the producer's stereotypical imagination of period and women, women's usage of the app has little to do with producer's intention, showing colorful motivations and usage patterns. Therefore, the meaning of the *Easy Period* in individuals daily life is not fixed but fluid, and in line with Gaybor's (2019) and Karlsson's (2019) findings, users' actively reinterpret and negotiate the meaning of the app according to their own life situation.

To begin with, the motivations to use period-tracker in general are diverse, depending on women's own needs. These apps are designed to record and track one's period, but from women's perspective, it is used to avoid menstrual pain, to escape stigma, to know one's health condition, and to keep life memory. For them, choosing *Easy Period* is also a deliberate resistance towards popular period-tracking apps which objectify periods and women's bodies. The popularity of *Easy Period*, therefore, suggests women's agency in contemporary China. Rather than simply accept what the developer suggests and what the market provides, they make their own decision on what to use or not. Nevertheless, during this appropriation stage, women do not show the potential to resist the period stigma. It is in the objectification stage that a mild resistance to menstruation stigma starts to emerge. Users do not hide the app on their phone screen and consider the password affordance which suggests users to lock the app as unnecessary.

The incorporation of *Easy Period* in everyday life suggests women's agency again. The app, especially the data and knowledge it delivers, transmits meanings to users' everyday life. It is a tool to gain more self-knowledge, to free themselves from years of memorizing, to communicate with professional doctors, and arrange future life. Users are doing things with the app as well as feeling it. Their engagement is highly affective and tellingly reveals the diverse risks and fears that the reproductive body constantly

has to confront, for example, fears of being unhealthy, getting pregnant, aging. Moreover, the usage constructs and maintains users' identity. Women users see it as a marker of their female identity, and most importantly as a way to maintain their identity as young, urban, and well-educated women

Period-tracking in China

The usage of *Easy Period* tells women's ambivalent attitudes toward menstruation. On one hand, the interviewees insist menstruation is a natural bodily cycle rather than an ashamed one, but on the other hand it has the potential to invite embarrassment and the bleeding instinct, an important part of femininity, causes many negative feelings such as anxiety and fear. Such ambivalence suggests it is still too early to say that women in their daily life are resisting the menstrual stigma. Although the app is actively used in various scenarios and users demonstrate their resistance towards other dominant period-tracking apps, the stigma on menstruation is still partly maintained.

The usage of *Easy Period* also tells rich information about contemporary Chinese women and men. The interviewees are engaging with more sophisticated self-tracking practices, including tracking on one's body hair, fitness condition, skin condition, sleep, stress level, productivity, etc. The embracement of increasingly fine-grained self-surveillance practices tellingly reveals how urban Chinese women, as bleeding bodies and working bodies, are living in a self-disciplinary neoliberal era. In this sense, I suggest when studying the relationship between women and menstrual technology, we need a more comprehensive and vivid understanding of the menstruators. A period-tracker user is more than a menstruator as shown in existing research (e.g. Karlsson 2019). She is also a female body disciplined by various beauty standards (e.g. a hairless, fit, young woman with glowing skin), a working body in an urban setting who hopes to achieve high productivity, a reproductive body who faces pregnancy risk, a goal-oriented neoliberal body who has limited time to consume low-quality information in this information overload era, etc.

Besides, men are also important users of period-tracking apps. Male interviewees engagement with the *Easy Period* app depends very much on their life stage, that is,

whether he is in an intimate relationship or not. Different from the long time engagement and colorful usage pattern from female users, men's motivations and usage patterns are more limited. In general, men are largely following the gender scripts coded by the developer, reducing women into physically weak and emotionally unstable cycles. Examining how men do with the app also tells a story about the construction of masculinity. Engaging with *Easy Period* functions as a way to perform a good boyfriend/husband identity.

Also, to understand the phenomenon of period-tracking, it is important to contextualize it in the social and cultural discourses. Silverstone, Hirsch and Morley (1992) highlights the household as the key context of media use, while in the case of period-tracking, the broader social and cultural contexts put more weight on users' media practice than domestic context. To be specific, when managing their period, interviewees are straddling both the discourse of progressive science and technology and the traditional Chinese medical culture. Users on one hand trust contemporary data-driven technology and scientific knowledge on their reproductive system, on the other hand constantly refer to the practices informed by Chinese medical culture and traditional Taoist philosophy.

Contribution and limitation

This research makes some contribution to existing research field. First and foremost, it expands the domestication theory into the field of critical self-tracking and menstrual technology research. Silverstone, Hirsch and Morley's (1992) theory provides a helpful theoretical framework to investigate the domestication of self-tracking and menstrual technology which is often ignored by existing research. From Karlsson's (2019) work, we already know that the period-tracker is actively used in women's daily life, however, the process of how it is gradually accepted and integrated by users remains unclear. My research therefore contributes to making the study of period-tracking more comprehensive. Nevertheless, when studying the domestication of menstrual/self-tracking technology, the affective dimension need to be highlighted (Ytre-Arne 2019; Lupton 2017, 2020). Meanings are gained through the four stages of appropriation,

objectification, incorporation, and conversion. At the same time, the emotions and feelings during these stages are also meaningful in articulating users' media practice. As Anderson (2014, cited in Sumartojo et al. 2016: 34) notes, 'affects are always-already imbricated with other dimensions of life without being reducible to other elements'. To better understand users' engagement with menstrual technology and self-tracking technology, this research suggests to pay particular attention to the affective element of the domestication process.

There are some limitations of this study. Firstly, as an audience/user research, the first priority of this project is to address the 'use', rather than 'non-use', of digital media. However, according to Hill (2017: 8), users' reactions towards media stand in a spectrum, including positive engagement, negative engagement and disengagement, and the disengagement is often ignored in research. In a similar vein, Ytre-Arne and Das (2019: 187) suggest:

> A substantial effort is needed to research different expressions of resistance to media and technology, including lower or slower uptake of connected technologies, evasion, abstention or non-use, ambivalences, resignation, strategic or selective self-management of technologies, skepticism, critical voices, and protests.

Therefore, users' agency can be explored more deeply in further research by studying why users disengage with and even resist period-tracking apps. Also, my study mainly treats urban young women's everyday life. Before conducting this research, I intended to cover more diverse samples, however, the reality disappointed me. Only limited users (13 among 53) agreed to participate in my study, and they are all urban young women. According to Wajcman (2007: 294), the same artifact may have different meanings for women with different backgrounds. How women with other backgrounds, for instance, rural women, old women, and minority women make meaning when tracking their period deserves more attention in future research.

Besides, what I want to highlight is that future research should consider more about male's practices of period-tracking technologies. In China, the period-tracking

responsibility seems to shift from women to men with period-trackers being increasingly used by men. However, we know little about their practices. Moreoever, when I say male user, I mean anyone who identifies as a man, including transgendered man. Menstruation has long been normalized as a women-only experience, constructing transgendered menstruator as the Other (Rydstrom 2020: 946). Trans menstruators period-regulation practices are almost invisible in the realm of popular culture, medical institution, and everyday conversation (Chrisler et al., 2016). Their practices should also be taken into consideration in future research.

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Appendix 1
Introduction of the other two popular period tracking apps
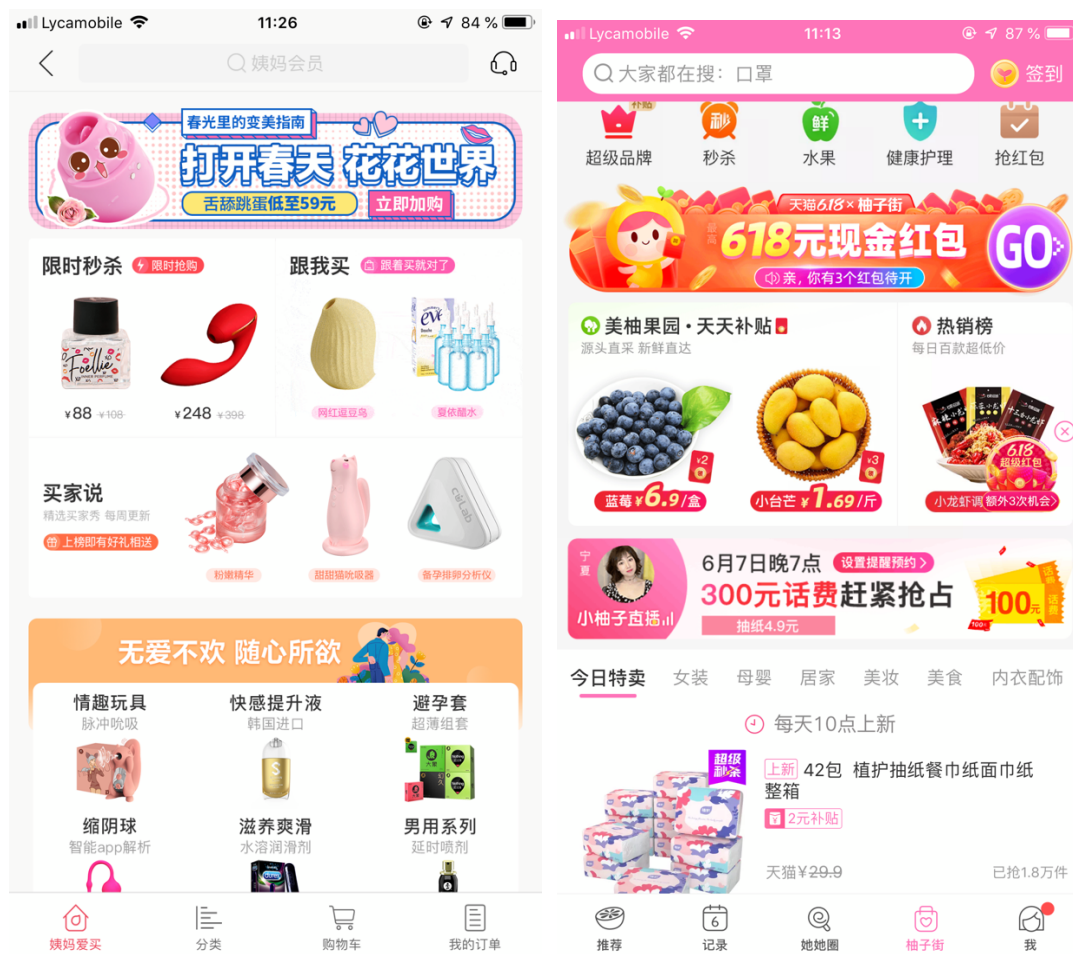### (*Dayima* and *Meiyou*)

1. **Endless information and embedded advertisements (*Dayima*, the left, *Meiyou*, the right)**

[Accessed 3 June, 2020]

These two pictures are screenshots from the two apps. If the user scrolls down the screen, there is no end for such information.
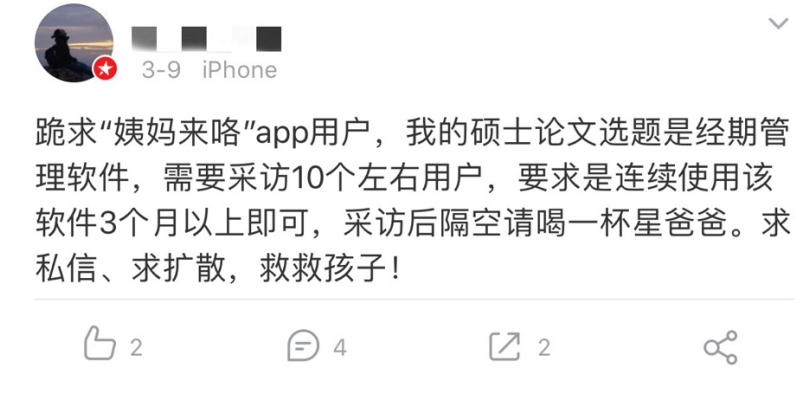
2. E-store in the app (*Dayima,* the left, *Meiyou*, the right)

[Accessed 3 June, 2020]

Appendix 2
Interviewee recruitment process

1. Recruiting through my social media account (*Weibo*)

跪求"姨妈来咯"app用户，我的硕士论文选题是经期管理软件，需要采访10个左右用户，要求是连续使用该软件3个月以上即可，采访后隔空请喝一杯星爸爸。求私信、求扩散，救救孩子！
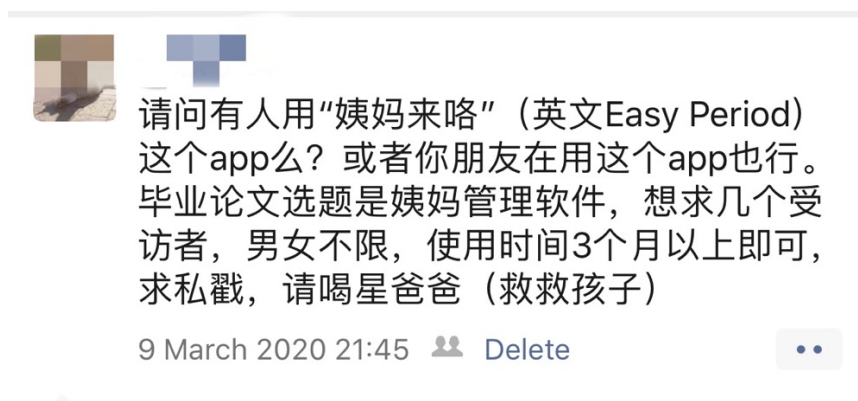
Recruitment advertisement through my *Weibo* account

Translation:

I am looking for users of *Easy Period* for my master thesis which deals with the topic of period tracking. I need around 10 users who have been using this app for at least 3 month. I will provide a cup of Starbuck coffee for free after the interview is done. Please private message me if you are interested in joining. Also please help to forward this post to your friends if possible to help my recruitment.

2. Recruiting through my social media account (*Wechat*)

请问有人用"姨妈来咯"（英文Easy Period）这个app么？或者你朋友在用这个app也行。毕业论文选题是姨妈管理软件，想求几个受访者，男女不限，使用时间3个月以上即可，求私戳，请喝星爸爸（救救孩子）

9 March 2020 21:45   Delete

Recruitment advertisement through my *Wechat* account

【帮转】请问有人用"姨妈来咯"（英文Easy Period）这个app么？或者你朋友在用这个app也行。毕业论文选题是姨妈管理软件，想求几个受访者，男女不限，使用时间3个月以上即可，求私戳，请喝星爸爸（救救孩子）

10 March 2020 00:45

One of my friend copied my *Wechat* advertisement to help me with the recruitment

Translation:

Does anyone use the app called *Easy Period*? or you by any chance know someone who uses it? I am looking for users of this app for my master thesis which deals with the topic of period tracking. I need around 10 users who have been using this app for at least 3 month. Please private message me if you are interested in joining. I will provide a cup of Starbuck coffee for free after the interview is done. (please help me)

3. Recruiting through my social media account (group chat in *Wechat*)
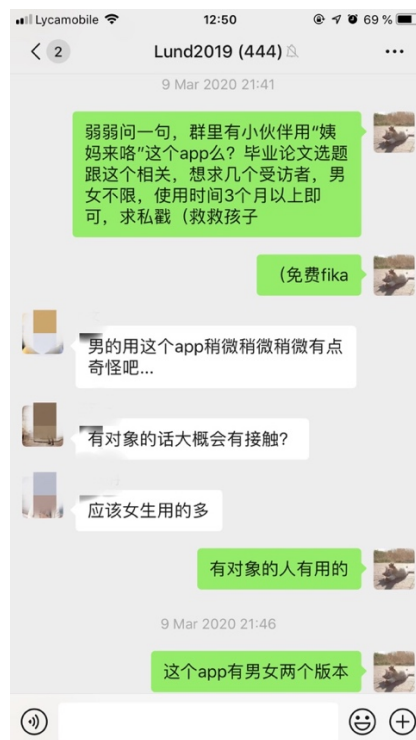
Recruitment advertisement through a group chat for Lund University students based on *Wechat*

Translation:

Me: Sorry for taking up your time and attention. Does anyone use the app called *Easy Period*? I am looking for users of this app for my master thesis which deals with the topic of period tracking. I need around 10 users, including male and female users, who have been using this app for at least 3 month. Please private message me if you are interested in joining. I will provide free fika after the interview is done.
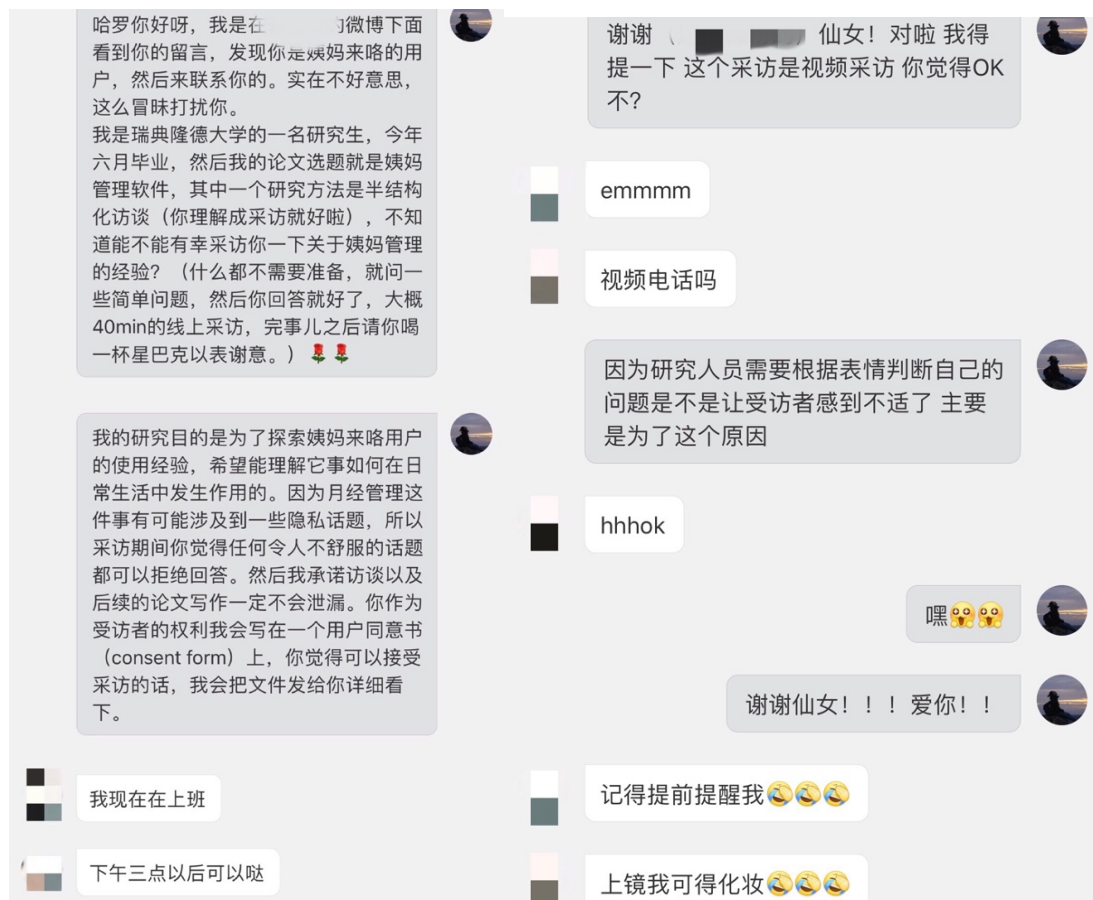
Group member A: It is a bit strange for a man to use this app…

Group member B: I guess probably those who have girlfriend will use it?

Group member C: I think most users are girls.

Me: Yeah those with partner might use it. This app has two versions, one for women and one for men.

4. Recruit through private massage on *Weibo*

哈罗你好呀，我是在　　　微博下面看到你的留言，发现你是姨妈来咯的用户，然后来联系你的。实在不好意思，这么冒昧打扰你。
我是瑞典隆德大学的一名研究生，今年六月毕业，然后我的论文选题就是姨妈管理软件，其中一个研究方法是半结构化访谈（你理解成采访就好啦），不知道能不能有幸采访你一下关于姨妈管理的经验？（什么都不需要准备，就问一些简单问题，然后你回答就好了，大概40min的线上采访，完事儿之后请你喝一杯星巴克以表谢意。）🌹🌹

我的研究目的是为了探索姨妈来咯用户的使用经验，希望能理解它事如何在日常生活中发生作用的。因为月经管理这件事有可能涉及到一些隐私话题，所以采访期间你觉得任何令人不舒服的话题都可以拒绝回答。然后我承诺访谈以及后续的论文写作一定不会泄漏。你作为受访者的权利我会写在一个用户同意书（consent form）上，你觉得可以接受采访的话，我会把文件发给你详细看下。

我现在在在上班

下午三点以后可以哒

谢谢 ＼　■　　■　　仙女！对啦 我得提一下 这个采访是视频采访 你觉得OK不？

emmmm

视频电话吗

因为研究人员需要根据表情判断自己的问题是不是让受访者感到不适了 主要是为了这个原因

hhhok

嘿😱😱

谢谢仙女！！！爱你！！

记得提前提醒我😂😂😂

上镜我可得化妆😂😂😂

Translation:

Me: Hi there, it might be unexpected for you to get a private massage from a stranger, sorry for that. I saw you in the comments section from xxx's (the app developer) *Weibo* account from where I found you are a user of *Easy Period*. I am a master student in Lund University, Sweden who will graduate this summer. My master thesis is about period-tracking app with a method of semi-structured interview (just in case you don't know about this method, it's basically a kind of interview). Since you are a user of this app, I am wondering if I can have the honor to interview you about your using experience with this app? (you don't need to prepare a lot, I will prepare the questions, and you just answer it according to your experience. It will take about 40 minutes. I will offer Starbuck coffee for free after the interview) .

My research aim is to understand how users use this app in their everyday life. The topic on menstruating-tracking might be a bit sensitive, so if you have any uncomfortable feeling towards the questions I ask, please stop me any time. I also promise all the information I get from your interview will stay confidential. If you agree with my interview, I will send you a consent form which specifies your rights when participating the study.

The user: I am working now, I can do it after 3 p.m.

Me: Thank you so much. The interview will be conducted through video, is that ok?

The user: hmm, video call?

Me: Yeah it's because as a researcher I need to see if my interview questions raise any uncomfortable feeling to you according to your expressions and bodily gestures.

The user: Haha ok.

Me: Yay! [emoji] [emoji]. Thank you so much!

The user: please remind me in advance when you are ready. [emoji] [emoji] [emoji]. I need to put some make up if it is a video call. [emoji] [emoji] [emoji]

Appendix 3
Information about the participants

anonymized name	gender	age	recruitment	education background	profession	marital status	tracking period (in general)	tracking period (Easy Period)	interview time
Emma	female	27	private message on Weibo	post graduate	government employee	single	around 8 years	around 5 months	1 h 09 min
Shelly	female	24	private message on Weibo	graduate	software engineer	in a romantic relationship	around 5 years	around 2 years	1h 43 min
Molly	female	20	private message on Weibo	bachelor student majoring in Medicine	university student	single	4 years	around 2 years	55 min
Mary	female	26	post on wechat	post graduate (from Australia)	white-collar	in a romantic relationship	around 8 years	around 2 years	1h 03min
Chloe	female	26	private message on Weibo	post graduate	graohic designer	married without children	around 9 years	1 year	1 h 23 min
Ann	female	28	private message on Weibo	post graduate	government employee	single	around 6 years	1.5 year	54 min
Tracey	female	24	private message on Weibo	graduate	insurance company employee	in a romantic relationship	around 2 years	around 1.5 year	1 h 14 min
Zoey	female	26	private message on Weibo	post graduate	marketing specialist	engaged	5 years	around 1 year	1 h 05 min
Jenny	female	26	post on wechat group	master student majoring in Human Ecology (from Sweden)	university student	single	2-3 years	around 1 year	1 h 23 min
Daniel	male	27	post on wechat	post graduate (from UK)	algorithm engineer	single	1-2 years	1-2 years	31 min
Patrick	male	25	private message on Weibo	graduate	government employee	married with a child	around 4 years	around 2 year	41 min
Joecy (Pilot)	female	27	post on wechat	post graduate	white-collar	single	4 years	around 1 year	52 min
Judy (Pilot)	female	21	private message on Weibo	bachelor student majoring in Finance	university student	single	around 4 years	4 months	48 min

Note: the interview time includes small talk before the formal interview which usually last for 5-10 min.

Appendix 4
Interview guide

First encounter

1. Is *Easy Period* the first period-tracker you have ever used?

2. If yes, then:

   - When did you start use?

   - How did you know it?

   - How did you feel during first encounter?

   - What attracts you to start?

   - What did you get/lose from the usage?

   - What motivates you to keep using it?

   - Can you describe these kind of app to me? Imagine if I know nothing about period-tracking app.

3. If no, then

   - Can you describe some period-tracking apps you used before?

   - When did you start use period tracker?

   - How did you know it?

   - How do you feel during first encounter?

   - What attracts you to start?

   - What did you get/lose from the usage?

   - What motivates you to keep using this kind of app?

   - What else have you tried before *Easy Period?* when and why you shift to *Easy Period*?

   - Can you describe *Easy Period* to me? Imagine I am a user of other period-trackers.

experience and feelings of the functions

Ok let's talk about your experience of *Easy Period*.

1. How often do you use this app? Under what circumstance will you use it? Can you name some scenarios when you use the app?

2. Can you tell me where do you position this app in your phone?

3. Discuss function one by one, including the tracking function, the prediction function, password function, the mood tracking function, the male version.

   - How do you use each function?

   - What did you gain (or lose) from this function? Why do you think this gaining (or losing) is important?

4. Discuss about the different design of male and female version.

experience and feelings of the visualizations

1. How often do you check the data graphs? For what?

2. Among the three visualizations, which page you check most frequently? And why?

3. How do you feel when you check/study it?

4. How do you use the data in your daily life?/ How does it help (or not help) your life? Do the data change your daily practice/behavior and knowledge regarding period? and how?

5. By any chance you (used to) share your period data with your partner? And why/ why not? How did you feel if you have shared?

Appendix 5
Translated transcription example

Q: Is *Easy Period* the first period-tracker you have ever used?

A: No, I have been using this kind of app for quite a long time. (thinking) I think I started to use such an app in 2012 when I am still a bachelor student. but I forgot its name, very similar to *Easy Period*. I also tried *Meiyou* years ago.

Q: Ok, let's talk about your first encounter with period-tracker in general. How did you know these apps at the very beginning?

A: It's actually a very random thing. When I was browsing the app store, I noticed there was a kind of app that you can use to track your period. Cos I was not sure about my bleeding date at that time, sometimes this invites embarrassment. For example, sometimes I forget to prepare a menstrual towel. That was even more embarrassing, especially when there was no shop for you to get a menstrual towel.

Q: What do you think about this new way of period-tracking when you first knew it?

A: Very convenient.　Because I don't need to memorize them by myself any more. Well of course I know the vague dates of my period, it's about the end of each month or something, but I can't remember the exact date. With this kind of app by hand, you can know it with a simple click.

Q: Except the convenience it brought to you, are there any other things that attract you to use these apps?

A: Yes sure. keep tracking it allows me to know more about my body. You know there are some auxiliary functions in these apps and they will tell you some knowledge about period, ovulation, something like that. I think that's good to know more about these physiological knowledge. And with all the data and analysis provided by this kind of app, I start to analyze my body as well. I rarely did this before, but now I am doing a good job in analyzing my body. Also irregular periods are not good for women's health, especially reproductive health.　If you don't track it, you might be unaware of how irregular your period is, that's a bit risky for your health. And as I said before, you can prepare menstrual products in advance so that you won't end up in embarrassing situations.

Q: Anything else?

A: (Thinking) Oh yes. You know sometimes doctors will ask you about your period. Not only gynaecologists. As I remember when I visited a doctor to check some stomach problems, he asked about my period. I thought the stomach problem had nothing to do with my period, but doctors don't think so. At that time, I couldn't remember clearly about my bleeding date. So keeping tracking actually helped me in the next time to communicate with the doctor more smoothly.

Q: You seem to get lots of help from the app. Did you have any concerns when you used these apps?

A: Concerns? Not really. (thinking). Oh wait, I did have some concerns when I used *Meiyou*. it was a really annoying app. It has lots of messy and trash articles talking about women's bodies. I don't need this kind of bull shit. I need the information to be selected. Also there are lots of ads. So yeah I was concerned about the company selling my data to some third party. So I uninstalled it soon after trying for a few months.

Q: Ok. That's very rich information. Now let's talk about the *Easy Period*.   Can you describe this app to me? Imagine if I knew nothing about it.

A: Ok, I would say this period-tracking app is very friendly to use. I mean the interface is clear and very easy to operate, you just click when your period starts and ends. And you will get the most important information you need, unlike *Meiyou* which is full of trash information. And the most awesome thing is there are no ads in the app.

Q: You mentioned *Meiyou* two times. I wonder why you shift to the *Easy Period* app?

A: The main reason is *Meiyou* gives too much information which I don't need at all. The trash information in the app actually made me skeptical about the app itself. How can you guarantee this is a good period-tracking app when you see lots of trash in it? Probably they have some difficulty in selecting information. They are more prone to trust those trash unscientific information. *Easy period* users are more goal-oriented because we know what kind of information we want.

Q: How often do you use this app?

A: I think I clicked on the app like five times one month. Mostly during my bleeding period, like the moment when it starts and ends, and sometimes I check during the bleeding days to see how many days I have been bleeding. I also check once or twice when my period is around the corner, just to make sure I can prepare some menstrual towels, and painkillers.

Q: You mentioned many times that you need to prepare menstrual towels in advance according to the data.

A: Yeah if you don't prepare, something embarrassing will happen. Like what if you get stains? It's inelegant.

Q: Was there any moment that you felt embarrassed by your period before?

A: Compared to my friends, I don't have many embarrassing moments. Only once when I ask for a leave from my boss. He is a man, and I feel a bit shy to say that I got my period to him, so I told him I feel a bit uncomfortable with my stomach and I need to leave. He seemed to know what was happening and agreed without asking too much.

Q: Can you tell me where you position this app in your phone?

A: It's randomly organized on the screen. Why?

Q: You don't feel bothered if the app is revealed to others.

A: No I don't mind. The interesting thing is, you are right, I used to hide such apps. You know you can form a folder on your screen and then move other apps into it. The folder only displays 9 small icons at first sight. If you move the period tracking app as the 10th or 11th or whichever number bigger than 9, it will be hidden. You can't see it until you click on the folder and slide towards the left. That was how I used to hide these apps, but later on, I feel it's not necessary, tracking period is not a shame, it's just a normal and natural thing for women. So after I realize that I just put it randomly on my phone screen. It's totally ok if my colleagues or friends or some strangers see me using this app. It's just like you catch a cold, or the growth of your hair, it's natural.

Q: Ok I'm curious about how you use the different functions in the app. How about we discuss one by one?

A: Sure. Ask whatever you want.

Q: Thanks. Let's start with three interfaces. Which one you pay the most attention to?

A: For me it's the second page. The round one. Because it has all the key information on it. I can clearly know my body situation, like it will remind me that 5 days later I will get my period, something like that. I feel like it has the most important information I want. (thinking). Sometimes I also checked the first page to make sure the history data show a stable pattern. The bar chart is actually delivering information in a very direct way, no need to think, it's easy to find a pattern. If I don't see any extreme data, I feel good. Means I am healthy. (laugh). I think the data alleviates my uncertainty about my health condition. The stable bar charts tell me there is a pattern on my bleeding date. Nothing is going wrong. So I know what to expect. About the third page, I don't check at all.

Q: Why not?

A: It's hard to say. (thinking) It's just not necessary. Like I said I already got the key information from the second page.

Q: What do you do with the information you got from the second page?

A: Like I told you before, I prepared menstrual towels and painkillers in advance, I used it when I met doctors. Sometimes I do spa. You know if you have your period you are not allowed to do certain projects. Like if you are bleeding you cannot do moxibustion. So knowing the bleeding date helped me to plan this stuff.

Q: It seems you trust the data very much.

A: Yeah I trust it more than my memory. I think the visuals on the app will tell you directly. It's very clear. Red dots mean you are going to bleed, green means there is no need to worry at this moment. So you don't have to remember the exact date by yourself if you have a tool at your hand to help you. You just click the app and you will know… and I am pretty sure data is more accurate and objective compared to your own memory… People are easier to make mistakes than technology. Like I also used a Mi

band before to track my sleep. It will tell me how long exactly I have been sleeping. Also it provided me with a monthly analysis based on the data the band collected, which makes you know better about your body. These are something that we humans cannot do by ourselves.

Q: How about the prediction function of the app? Do you trust it as well?

A: Yes I do. because my period is very regular, the app is telling me accurate information almost every time. The worst scenario is like one or two days mistake, but I think it doesn't matter, the algorithm will improve in the future.

Q: You think algorithms will know your body better than yourself?

A: Yeah I think so, but not now, it still takes time to develop. From my point of view, algorithms, I mean in general not the period-tracking algorithm, are very rational and objective. It does not have any emotion as we humans do. It shows things in a very accurate way, and there is little chance for them to make a mistake. I think people are biased and it's easy for us to make mistakes. So sometimes I would rather trust machines than people. (thinking). But at the same time everyone is just a human, so it's impossible to completely get rid of our emotional aspect (laugh).

Q: Does the data change your daily practice or behavior regarding period?

A: Sure, if the data suggest I am about to bleed 3 days later I will stop eating cold stuff like ice cream (thinking) .And if the history data told me I have an irregular period, I would visit a traditional chinese medicine doctor (zhongyi) to regulate my body.

Q: Ok. What about the password functions?

A: It is not necessary as well. Nobody is clicking your phone, right?

Q: Did you notice there is a male version?

A: Yeah I know there is a male version but I haven't looked at it closely. The only thing i know is that it's a dark interface compared to the pink one for women.

Q: What do you think about the male version?

A: I actually don't understand why there is male version. Is it necessary? I don't think so.

Q: Have you ever shared your bleeding experience with your (ex)boyfriend?

A: Yeah I do. ok now I see your point. In my case, when I felt uncomfortable I would like to let my ex know. For example, according to my self-observation, I am a bit irritable several days before my period starts. So sharing this information to him was mainly to let him know 'ok I lose my temper because I'm in my period. It's because of the hormone, not me, so please show some support and be tolerant to me when I'm bleeding', that kind of thing. I think telling him is good for our relationship (laugh).

Q: How did you feel when you share your bleeding dates with your ex?

A: (thinking for a long time). hmmm, it felt...I have never thought about this before. I think I didn't feel anything, but I know I was expecting something from him, like expecting him to care for me.

Q: Care? Like how?

A: Like say something warm and sweet. Or order me some healthy food, like not very spicy, not cold. Prepare me some warm water when we meet. Just those tiny things.

Q: How about female friends? Do you talk about period-tracking apps?

A: Yeah but it's very rare. Maybe we have talked about how much we hated *Meiyou* (laugh). I said 'what the hell is this', but I couldn't remember very clearly. Just some complain.

Q: Ok. I have finished all the questions I have prepared, do you have anything to add or ask?

A: No not really.

Q: Ok thank you for doing this interview, best wishes to you.

A: You are welcome. And thanks, same to you.

Appendix 6
First and second round coding

The first screenshot shows the first round coding process which is mainly conducted through underlying key words, and taking English notes on the margin. These codes are later on typed in a excel sheet. As conceptual tools are most derived from literature written in English, when I transplanted the underlined key words and notes into the excel sheet, I translated the Chinese key words directly into English so that in later stage it will be easier to form English categories and themes.

The red block in the picture was marked in the second round when I have some conceptual tools in my mind. After the first round coding, I somehow knew my research will address users' affective engagement with the app, so I highlighted all statements in red. In this picture, red mark means emotions and feelings when using the app.

theme	category	coding
mutiple motivations	first encouterment	easy to use, Nokia, 'I like it', convenient, Daiyima, Meiyou, used to use an app that has already disappeared nowadays, during university, when I owned a smart phone, happy to use, save time, not so hard to start, just try and you will easily know how to use,
	motivation to *use period tracker for the first time*	Little Calendar, recomend by friend, recomended by social media accounts, recommended by algorithms in apple store, curious, 'give it a try', iPhone carries one,
	motivation to *keep using*	to know the date and prepare in advance in order to avoid menstural pain, an indicator of my stress level, link my whole life together, avoid stigma from working place, avoid gaze from others, to arrange gathering plans with friend, to arrange wedding date, in prepare menstural products in advance, very helpful, human benefits from technology
	motivation to *use Easy Period*	dislike Dayima and Meiyou, prefer a simple tool, hate endless information, bad taste, very annoying, hate to be sold, be heavily annoyed by the low quality information on Dayima and Meiyo, I like simple things, information not authoritive
	a simutanous embracement and resistance	

category					theme
first encounterment	motivation to use period tracker for the first time	motivation to keep using	motivation to use easy period		multiple motivations to use period-tracking app
a simultaneity of resistance and embracement of period-tracking app	emotions and feeling before period	emotions and feelings when studing the data	destigmatized usage (no need to hide)		affective usage
increasling bodily surveillance	increasingly productivity surveillance	neoliberalism	outsource one's subjective knowledge		an increasingly sophisticated self-surveillance practices
self-knowledge (reproductive literacy)	helps in different life scenarios	Chinese context matters	distinction		living with period-tracking app
upper class female identity	bleeding women as weak and vulnaerable	a morality of being good boyfriend/husband	maintain intimate relationship		building an urban female identity
indivisual business					track under the name of care

Appendix 8
Consent form (English)

Master Thesis MKVM13
Media and Communication Studies Department, Lund University, Sweden

This interview, a part of master thesis research, seeks to investigate how do Chinese users understand and live with a period-tracking app called *Easy Period*. Each interview will last around 40-60 minutes, and questions regarding your using experiences and understandings of period-tracking app will be asked. As women's menstruation is a sensitive topic, questions on your menstrual health condition, relevant medical history and sexual-related information will not be asked. You can decide not to answer any question, or to stop the interview any time if you are uncomfortable. This interview will only be used in the master thesis written in English which will be published on LUP Student Papers, Lund University's database of student projects. Also, it is possible for this thesis to be published in a book called *Excellent MSc Dissertations* if the final grade is excellent.

I would like to record the interview (voice only) and use the dialogue between us to support my findings but only with your written consent. Please feel free to say as much or as little as you want. I ensure that your identity will remain anonymous during the whole research process, no one except me will get access to your information. All your information will be deleted after my research is done. Should you have any question, please feel free to contact me through the email which is stated below.

This study is based on your voluntary participation. If you agree to join, please fill the gap below in English or Chinese.

Student researcher: Yuhong Xu (yuhongxu824@gmail.com)
Supervisor: Helena Sandberg (Helena.sandberg@kom.lu.se). Associate Professor in Media and Communication

Full name & signature

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Date

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用户采访同意表

硕士论文编号 MKVM13
媒体与传播研究，隆德大学

　　本采访作为毕业论文的一部分，旨在探讨中国用户使用"姨妈来咯"这款经期追踪软件的体验与理解。每个采访时常约为 40-60 分钟，问题将涉及软件使用体验及您对月经管理现象的个人经验和看法。由于月经与女性的生殖健康息息相关，本人在此承诺，采访过程中不会询问敏感话题，如健康状况、医疗史、性生活状况等。采访期间请畅所欲言，如遇不愿回答的问题可随时拒绝。您有权在采访过程中的任何时刻中止采访。采访所涉及的数据会且仅会被用于一篇约为 2 万字的硕士论文中，论文会发表在隆德大学学生数据库中。另外，该文章也有可能发表在一本叫做《优秀论文集》的书中。

　　该采访将会被录音，以便后续分析，但需经得您的书面同意。在此我保证对您的个人信息做匿名化处理，除了本人，其他人一律不会接触到你的信息。研究完成后，你的所有数据和信息都会被删除。如有任何问题，请通过下方的邮件与我联系。

　　如果您同意参与此项研究，请于下方签字，中英文皆可。

学生研究者：徐羽宏 (yuhongxu824@gmail.com)
指导教授：Helena Sandberg (Helena.sandberg@kom.lu.se)，媒体与传播研究副教授

姓名 & 签字

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日期

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