A Room of One's Own?

Using period trackers to escape menstrual stigma

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Abstract

This article's ambition is to study the needs and motives embedded in the everyday usage of period trackers.[1] Based on twelve in-depth interviews with Danish women who use period trackers, I explore the connections among menstrual stigma and the usage of period trackers and investigate how digital traces from their datafied[2] bodies transmit meaning to their everyday life. The women in the study described how the app provides them with reassurance and privacy, and thus the article finds that 1) period apps are experienced as private, shame-free rooms for exploratory engagement with the menstruating body and 2) the risk of embodied data potentially becoming shareable commodities does not affect the everyday self-tracking practice of these women.

Keywords: female self-tracking, apps, privacy, datafied bodies, menstrual stigma

Introduction

With the rise of big data studies and the assumptions of what big data as sociocultural artefacts (Lupton, 2015) can predict, improve and provide us with, it can be difficult to justify an interview study when investigating onlife (Floridi, 2015) traces. From a critical perspective, however, it is important to try and understand the motives and needs behind these digital traces and methodologically to dive deeper into the everyday lives of the people producing the data (boyd & Crawford, 2015). Thus, my research focus is on exploring why women use apps for tracking and which purposes these apps might fulfil but also who benefits the most from these self-tracking practices. Today's femtech[3] industry provides numerous products, services and solutions focusing on women's health through data and algorithms. Some of these solutions are period apps for keeping track of menstruation and fertility. The industry claims that engagement in these self-tracing practices reveals the mystery of the female body and provides the self-tracker with certainty, control and empowerment. In academia, the view of the engagement with self-tracking apps is slightly more precautious. Scholars (e.g. Lupton, 2014; Thomas & Lupton, 2015) have argued that these apps promote a specific kind of subject – a white, heterosexual woman – and raise questions about privacy, gendered labour and a tech industry capitalizing on

the female body. Throughout history, the menstruating body has been stigmatized and its leaking fluids connected with a lack of control (Chrisler, 2011; Chrisler et al., 2014; Grosz, 1994; Shildrick, 1997). Scholar Jane Ussher has empirically shown how women's experience of premenstrual syndrome leads to self-policing, self-silencing and blaming the body (Ussher, 2004; Perz & Ussher, 2006). Prior studies on women's attitudes towards menstruation have shown that menstrual shame affects young women's decision making when it comes to sex (Schooler et al., 2005) and that they have negative attitudes towards their reproductive functions, experiencing shame connected with both menstruation and breastfeeding (Johnston-Robledo et al., 2007). Another study on young Western women has indicated that their attitudes towards menstruation are formed by either their mothers or their schoolteachers (Beausang & Razor, 2010), pointing to menstrual stigma as being transmitted through some of the major socialization agents in our culture, such as family and school (Johnston-Robledo & Christler, 2007). A survey study from 2004 indicated that self-objectification and negative attitudes towards menstruation reduce as women age (Roberts, 2004), and another survey study of 72 American woman suggested that body appreciation and attitudes towards menstruation are linked (Chrisler et al., 2014). A study from 2002, in which participants interacted with a female colleague who accidentally dropped either a hair clip or a tampon, showed that, when reminded of a woman's menstrual status, the negative evaluation increases; when the woman dropped a tampon, she was evaluated as being less competent and the participants avoided sitting next to her (Roberts et al., 2002). Drawing from these studies, this article's ambition is to examine which needs period trackers fulfil, how they intersect with menstrual stigma and concurrently what kind of questions they potentially foster regarding privacy. To explore the latter, I will draw on privacy from a feminist and historical perspective as well as looking into the history of shame connected with the menstruating body. Situating these historical perspectives on the female body and privacy within a study of the usage of self-tracking technologies constitutes an original contribution both to the field of (female) self-tracking and to the sense making of small data in a big data era (Kitchin & Lauriault, 2014). Based on a study of semi-structured in-depth individual interviews with twelve Danish women aged 26 to 49 who use apps for tracking their menstrual cycle, I examine the practices of monitoring the female cycle and discuss how matters of privacy and shame intersect with the menstruating body – both the fleshly, analogue body and the datafied one. Self-tracking (Lupton, 2016; Nafus, 2016; Nafus & Neff, 2016; Selke, 2016) can be studied both as small data and as big data to try and make sense of onlife traces. The (small data) interview-based approach was chosen as it makes room for the sensitivity and depth related to the topic and my overall focus on exploring why women use apps for tracking and which purposes they might fulfil. Furthermore, the interview-based study allows me to explore how women use these apps to make sense of their everyday (on)life, as opposed to a big data approach, which would only show the data traces that they leave behind (Kitchin & Lauriault, 2014). In the following, I will introduce privacy as a feminist objective to situate privacy in the period-tracking practice. Then I will consider how shame has been connected to the menstruating, female body throughout history and how these historical traces of blood relate to the way in which menstruation is experienced today and in connection with the use of period trackers. Secondly, I will present the methodology behind the study and discuss the findings in relation to the existing research found at the intersection of menstruation, shame, privacy and self-tracking.

Privacy: A feminist approach

Privacy has always been a feminist issue, perhaps most strongly emphasized in the often-cited slogan "the personal is political" (Hanisch, 1970), which challenges the dichotomy between private and public life as well as the notion of the subject being self-governing. Instead, feminist scholars have claimed the opposite by outlining theories of the non-sovereign, relational subject (Hanisch, 1970; MacKinnon, 1989; Pateman, 1989). This dichotomy seems crucial when studying how self-tracking practices are embedded in the everyday lives of women and emphasizes the importance of the concept of privacy in this regard. In addition, how does privacy undergo changes in terms of the subject moving from offline to online spaces but still intersect with concepts of control and empowerment (Richardson, 2011)? In Western culture, the concept of privacy has been associated with the private sphere connected to home. The home is where a man has his private belongings under complete and utter control (e.g. his materialistic goods, his children and his wife). From an early feminist perspective, privacy has been seen as a possible cover up for repression, abuse and violence happening in the household, where women were bound and controlled by their husbands without interference from the public – the outside (MacKinnon, 1989). On one hand, it has been difficult for women to find a room of their own – as described in Virginia Woolf's (1929) famous essay *A room of one's own* – even in their own house. On the other hand, total interference from the state in the private and intimate sphere of women's lives was not a wanted alternative (e.g. governmental control of reproduction and birth control). Using apps for tracking menstruation involves giving away personal data about one's body. A woman commits to the idea of generating data for an algorithm to process and translate that data into quantifiable outputs. It is like being part of a feedback loop – between the woman and the app – and it is personalized self-tracking technologies in a nutshell; the more information is put into the app, the more precise the feedback that will be received (Xu et al., 2011). It takes a certain amount of personal data to predict a user's cycle: when she ovulates, when she is most likely to experience PMS and when her next period will arrive. In other words, using self-tracking technologies to gain knowledge about one's own body entails giving away access to data generated from that same body. This blurs the boundaries between who controls, processes and produces the data. In a perfect world, the self-tracker is able to build a software system that allows her to keep the raw data, process and interpret the produced data herself and thereby substantially minimize the interference in her onlife. However, the average self-tracker does not possess these skills. She will have to trust both the data controller (app provider) and the one processing the data – and more importantly to know and understand the machinery behind her smart service to be able to make informed decisions regarding the disclosure of her private data (Lindqvist, 2018). Research on women's everyday off-life sharing and disclosure of issues related to their reproductive function and health has shown that societal norms play a huge role in these choices. Even though mothers are advised to breastfeed for as long as possible, it conflicts with the norms and conformity in their workplaces, which involve negative attitudes about maternal bodies (Gatrell, 2007). Breastfeeding mothers either give up breastfeeding or force their maternal bodies to subjugate to the norms of workplace by only producing milk after work, privately (Gatrell, 2007). Scholar Elisabeth Grosz hypothesized that "[…] women's corporeality is inscribed as a mode of seepage" (Grosz, 1994: 203), and by this she emphasized how women's bodies have

been viewed as contagious and uncontrollable – as opposed to men's. In the following, I will examine the taboo that historically has been connected to the female, leaking body.

Menstruation: A history of shame and blood

Females make up half of the world's population and will inevitably experience menstruation in their lives from menarche to menopause. However, even though menstruation is natural and vital to the reproductive process, it bears with it a resilient cultural taboo[4] (Chrisler, 2011; Chrisler et al., 2014; Delaney et al., 1976; Phipps, 1980). The strong historical and cultural link between women's bodies and shame is far from insignificant. While the male body is described and positioned as the gender "neutral" and "normal" body, women's bodies are positioned as deviant and sometimes even pathological. This bias has leaked into everyday understandings of female bodies and made menstruation an anomaly of normal experience (Dolezal, 2015). The female body is relational; it is the other (Beauvoir, 1989). The quantification of the female body and in particular monthly periods was founded in antiquity. In ancient Greece, Aristotle and the Hippocratics determined the health of a woman by quantifying her period: "The number of days continued to be the most flexible of ancient criteria in determining whether a woman's period was healthy or not" (Dean-Jones, 1989: 181). The healthy period was quantified by the length, two to three days of heavy bleeding, and by the amount of blood: a pint, which is eight times as much blood as we know today is reasonable. If a woman bled – and evidently many women did – differently from the number of days decided as normal, she was considered either pathological or infertile (Dean-Jones, 1989). Menstruation was seen as a phenomenon corresponding to changes in the moon, and the moon played a significant role in Aristotle's and the Hippocratics' attempt to understand the rhythm of menstruating women (Norgaard, 1999). The assumption was that women menstruated synchronically and that the womb would release the blood at the coldest part of the month during the waning moon (Dean-Jones, 1989). It is most unlikely that the women of the fourth or fifth century B.C. bled more heavily than the women of modern Western society. These "scientific" thoughts were produced in the contours of the cultural constructs of the female. However, I find it fascinating that the quantification of the female body (e.g. the amount of blood and the number of period days) has survived until today, when women may not menstruate following the waning moon but instead following algorithmic impulses provided by an app for tracking their cycle. Throughout history, the female menstruating body has been connected with both hysteria mystery and taboo. Aristotle claimed that menstruation blood was impure and that women were to be excluded from participating in activities influencing the community. The uterus was believed to cause hysteria by literally wandering around inside the body and blocking the heart, which was thought to be the key to reason and thought at the time (Dean-Jones, 1989). The only way to avoid or at least to ease the hysteria was for a woman to be with a man: to have sex and give birth. The monthly blood was – and in some cultures still is – a symbol of failure of life. Menstruation has in fact been described as "the uterus crying" – shaming the woman for not conceiving. Today, modern Western women may not think of menstruation as shameful; however, Western culture and society think otherwise. Western feminist philosophers have argued that bodily fluids related to women's reproductive functions have been connected to disgust

and a lack of control of bodily fluids (e.g. breast milk leaking and menstruation blood spilling), which subsequently means a lack of self-control (Gatrell, 2007; Grosz, 1994; Schildrick, 1997). Grosz argued that, "[…] by the process of reproduction, all women's bodies are marked as different from men's (and inferior to them) particularly at those bodily regions where women's differences are most visibly manifest" (Grosz, 1994: 207). The question is how women of today cope with this sense of being different. Various forms of shame connected to menstruation appear among women of today: the shame of bleeding, when all they may want is to become pregnant, the shame of having an irregular cycle, the shame of experiencing certain emotions in relation to menstruation and the shame of bleeding days visualized on a calendar for colleagues to see. Shame is an emotion involving the self, a negative self-evaluation by the individual or by others (Kasabova, 2017); it is different from guilt in terms of being connected and equalized to the subject. Shame can only survive in the dark; if we talk about shame it disappears (Brown, 2015). In the following, I will present and discuss the sampling and methods used in the interview study on which this article is based.

Methods

When studying women's use of period trackers, individual in-depth interviews are able to embrace the sensitivity and sensemaking surrounding the topic as well as identifying the experiences that are often hidden (Hesse-Biber & Leavy, 2007). The interviews were carried out in Denmark during 2017. My initial aim was to explore how digital menstrual cycle tracking is embedded in the everyday lives of Danish women. I want to understand how women experience tracking their cycle with an app, what kind of necessities the app might fulfil and how this fulfilment potentially differs from keeping track of menstruation in an analogue way or via an online calendar. Inspired by prior studies on period apps from a user and design perspective (Bretschneider, 2015; Epstein et al., 2017), I also aim to find out how period tracking with an app corresponds to the experience of the menstruating body in a socio-cultural context: what does it mean to digitize the body, and is it only a matter of controlling reproduction that encourages women to use period apps? Twelve Danish women who use apps for tracking their menstrual cycle were recruited via Facebook and Twitter using a purposeful sampling technique; interviewees were recruited until data saturation was achieved and no new themes emerged. They ranged in age from 26 to 49 (M=32.5) to avoid very young women just experiencing menarche and to come as close as possible to menopause. This sampling strategy was also carried out to secure a relatively broad representation of what I would refer to as "experienced menstruators"[5]: women for whom menstruation has been part of their everyday lives for several years. Furthermore, since prior studies (see the introduction) have focused on young women and suggested that negative attitudes towards menstruation decrease with age, this choice of segmentation made sense. Furthermore, I wanted my interviewees to be a mix of parous and nulliparous. All the women were Caucasian, and, even though sexual orientation was not considered to be important in the recruitment, some of the interviewees referred to their partner during the interviews. (One of the interviewees referred to herself as homosexual, seven referred to a male partner and four did not mention their sexuality or a partner.) Narrative semi-structured in-depth interviews (Kvale, 1994) were conducted with open-ended

questions, and the interviews were framed like a dialogue to increase the reciprocity and rapport (Hesse-Biber & Leavy, 2007). Interviews were carried out in the private homes of the interviewees (two interviews), at the university of Aarhus (three interviews), at a private space within the workplaces of the interviewees (two interviews) and in a research apartment in Copenhagen (five interviews). The interviewees were given the choice of deciding on the interview setting to accommodate the sensitive nature of the topic as well as practical issues. I aimed at creating an intimate atmosphere of trust and comfort, escaping the sense of formality to ease the interviewees and make them feel as safe and comfortable as possible. Every interview opened and ended with small talk on more general topics to maintain that atmosphere. However, only during the actual interview was the recorder switched on. Due to ethical concerns and respect for the interviewees, this was a deliberate strategy. No names were mentioned, only age and profession, and, during the coding process, I used numbers as a reference scheme to separate the interviewees from each other. However, to ease the reading process of this article – and to emphasize the fact that the interviewees are human, not just data, each interviewee has been given a "fictive" name (see the table below). The duration of the individual interviews ranged from 30 to 85 minutes.

***Table 1**. Overview of the sample*

Name	Age	Profession	App	Tracking period
Nana	40	Office assistant	Clue	2 years
Maja	37	PhD fellow	Clue	2 years +
Susan	28	BA in drama	Woman's Log	2 years +
Sonja	32	BA in nutrition and health	My Days	5 years
Sandra	26	MA in media studies	Clue	1 month
Donna	26	Consultant	Clue	1 year 3 months
Eve	31	MA in natural science	Woman's Log	6 years
Dea	49	State attorney	Clue	1.5 years
Judith	36	CEO in PR company	Clue	4 years
Ruby	29	PhD fellow	Clue	4 months
Freya	28	MA in Scandinavian languages	Natural Cycles	¾ years
Silvia	28	MA in aesthetics and culture	Clue	2 years

All the interviewees were recruited using the snowball sampling technique, being aware that one downside to snowball samples is that they can quickly skew to one type of group or demographic (Tracy, 2013). Looking at the sample for this study, it clearly shows that the majority of the interviewees are highly educated, white and heterosexual. Future research could benefit from expanding the sample size and including a broader variation of demographics to approach more conclusive findings. Throughout the transcription, each interview was coded with different themes for further analysis. The coding process was inductive as the themes were derived from the data: from the words of the interviewees and from my observations. I asked the interviewees to show me their period tracker to see if it was placed on the front screen or in a hidden folder and to observe how they navigated the app. It made sense to have the materiality of the

app present. The themes appearing in the first-cycle coding and refined and strengthened in the second-cycle coding (Tracy, 2013) were privacy, shame and reassurance.

Table 2. *Main reasons for use*

	First-cycle coding	Second-cycle coding
To seek insight, as a private calendar, to keep notes on bleeding private, to decide who to share menstruation with.	Privacy	→ private data, privacy policy, sharing preferences
To navigate days of pain, to avoid menstruation being used against you, to hide reproductive labour.	Shame	→ menstrual stigma, reproductive shame, shaming others, shamed by culture
To compare length of cycle, to explain unstable emotions (PMS) and physical symptoms (pain, cravings), to gain reassurance.	Reassurance	→ the app as reassurance, coping with negative emotions, PMS

This ongoing process made it possible to locate similar narratives among the interviews and develop them further. Major interrelated themes occurred: shame related to privacy, shame and privacy related to menstruation and shame and reassurance related to one another. Regardless of age, profession and sexual orientation, these themes were common among the interviewed women and formed the process of analysis. In the following, I will consider how the interviewees experience privacy in connection to period tracking.

Results

Privacy is a twofold matter

Each of my interviewees was asked if they had read the privacy policies in the app and whether they had considered giving permission to the app company to back up their data. None of them had either read the regulations or were able to remember whether they had given permission to the company. Typical responses among the women were:

> […] yes, I probably have, so they might own my blood. But, really, it is just my period. It is fine by me. (Maja, 37)

> It is pretty innocent data for me […] I wouldn't categorize it as sensitive data. (Nana, 40)

> [it] is not something that I care so much about. [I would have done so] had it been my bank account. (Susan, 28)

This corresponds well with prior studies on willingness to give up privacy when using online services (Culnan & Milne, 2001; Fox, 2000; Hann et al., 2002; Jensen et al., 2005; Phelps et al., 2000). The risk of losing control or ownership over tracked data based on monthly experiences with the menstruating body is not considered to be a risk in the same way as losing control over one's bank account is. The interviewees showed much greater concern about the stigma of menstruation experienced in their analogue world than the potential loss of data in cyberspace. In the interviews, they expressed how they

felt the necessity to hide and cover up signs of their own – or others' – menstruation before starting to use the app:

> If I was using my outlook calendar, I would use some sort of code that didn't say period […] but said something else that I knew meant period. (Eve,31)

> I made marks in my calendar but that was also too obvious […], it just seems a bit embarrassing, I guess […]. I mean […] it is private to me. I have this friend and I have recommended her to use the app because I saw on her refrigerator that she had a calendar where there were little crosses […] and I was like isn't it better that you have it on your smartphone so it isn't that obvious? (Sonja, 32)

The effort put into not only hiding or covering up one's own bleeding patterns but also a friend's menstruation – shaming another woman – not to be harmful but out of the best intentions to help her hide it so it is not so obvious that she is menstruating is noticeable. That women perform self-policing to adjust and subjugate themselves to the norms and expectations of society is related to the Foucauldian concept of self-policing (Foucault, 1979), and one could ask whether using an app for tracking menstruation is dealing with a cultural, structural problem or simply just relocating it. The women I interviewed experienced the app as a way to push back on cultural norms by using it to reclaim the body, as Judith described: "[The app] has an element of feminism like a reclaiming the body attitude that I really like, you feel like being part of a really cool community". The interviewees articulated issues with online calendars in today's workplaces, which often means that colleagues have access to each other's calendars, and the fact that they sync with our smartphones means that private appointments, or notes displayed there, are accessible at work:

> […] but it is also because the calendar is often shared with someone else, there can potentially be several people seeing it, so in that way it is possibly also a bit taboo for me […]. If I am to look at it objectively […] well, then I guess it is because I don't want other people to see that I have my period? (Ruby, 29)

The app can offer a private calendar only meant for notifications of bleeding and ovulation days and only accessible to the user. Sandra (26) has tried to get pregnant for almost a year and is using the app to keep track privately of ovulation days. For her, the need to hide menstruation away also becomes the need to hide a potential failure in reproduction, as she explained: "It is also a little taboo in a sense I don't need people to know that we are trying until we have succeeded". Today, the femtech industry is providing the market with numerous digital solutions to support and develop women's reproductive health, all based on the woman filling in data and the algorithm predicting future days of menstruation, pain, PMS and ovulation. In that sense, the responsibility for reproduction is still solely placed on women – still being responsible for getting pregnant, responsible for not getting pregnant and responsible for being in a bad mood. Simultaneously, women are the ones leaking data to the industry and in that sense become prosumers – both producing and consuming data (Lupton, 2016). When the privacy policies remain a procedural mechanism that is detached from everyday life and lacks transparency, it becomes less important and difficult to grasp and thus does not provide the user with better privacy (Nissenbaum, 2011). Judith described how she does not mind sharing data with the app but permitting data access to the donor she and her partner were using to become pregnant felt too close:

> I assume that when [the app company] share my data and use it for their big data analysis, then it is anonymized and that I kind of disappear in the crowd. This was suddenly very one-to-one. (Judith, 36)

When sharing data is separated from the body, it feels anonymized, and Judith felt like she disappears in the abundance of data. Allowing someone in our everyday life to see when we ovulate or menstruate is far more private and intimate and can lead to negative evaluation and objectification, as prior studies have shown; it suddenly becomes very "one-to-one", as Judith explained. Privacy in that sense becomes a twofold matter for the interviewees; they instinctively distinguished between onlife and analogue privacy, between the datafied and the analogue body. In their analogue life, they can (and are prone to) control and hide what they consider to be private, related to their female cycle. In their onlife, however, the situation is far more complex. What they are offered by the app as a private room can potentially be accessed by others. Nissenbaum argued that the right to privacy should be the same online as offline, as onlife is social life (Nissenbaum, 2011); however, it is difficult for the interviewees to claim that right in their onlife. They cling to the notion of being anonymized, disappearing into the crowd and referring to their data as just being data traces of their blood – divorced from their bodies. The urge for privacy is strikingly different when it relates to their datafied bodies than to their analogue bodies. This makes room for an industry that capitalizes not on the female body but rather on the societal and cultural stigma *associated* with the female body, offering women an opportunity to escape the stigma created by society.

Period trackers as normative standards

Maybe I trust it too much […] but I do trust that it knows what the different things are at least", said Judith (36) and thus situated the app as a standard for what is normal when it comes to the female cycle. The app serves both as a "friend" providing comfort but also as a normative standard to measure everyday emotional and embodied experience, like am I normal? Is my cycle normal? Is it normal to feel the way I feel? Donna and her partner have tried to get pregnant for one year and she is struggling with the fact that something might be wrong with her. She recently experienced a miscarriage and, while still recovering emotionally, she emphasized the reassurance that she gains from comparing cycles with peers who also use the app:

> I have two friends, one has just given birth and the other one recently lost (...) and we just sit there together with our phones and Clue[6] realizing well your cycle is strange too (laughs). That is really calming. (Donna, 26)

A strategy to cope with stigma is to build self-esteem and acceptance together with others who define and experience themselves in the same way. By spending time with others and sharing the stigma, it vanishes (Stangor & Crandall, 2000). According to shame researcher Brené Brown (2012), shame vanishes if we talk about it, not if we hide it away in the dark. The ability to be notified about premenstrual symptoms (PMS) makes it easier to cope with feeling irrational, sad and introverted and seeking conflicts on purpose. The women described how looking at the little clouds covering the days when the algorithm predicts PMS is soothing and calming. Some chose to receive a notification a day before PMS begins, and some even chose to take screen dumps of those

notifications and send them to their partner to prepare them for emotionally unstable days, using algorithmic predictions as a way to make sense of their everyday analogue lives. Dea described her job as stressful, and she uses her app to reassure and reaffirm herself in hectic times. Her tracking increases when she experiences pressure in her job, and she described how she does not want colleagues to look at her as a person lacking control and not being able to do her job due to menstruation:

> The fact that I menstruate […], I don't want that to be part of my work life […]. I don't want it to influence their (colleagues and superiors) review of me and what I do […]; maybe they will think that I am premenstrual or something, and I prefer to be in control of when I think that is relevant. [Self-tracking] can be a sort of confirmation to myself that it is okay that I feel the way I do […] so in that sense it can reassure myself. I guess there is something in it […] something like it is true that I am tired […] it reassures me […] apparently, I need to have something that can reassure me in this. (Dea, 49)

Organizational and institutional attitudes towards the menstruating body might vary; however, it is striking that women seek comfort and reassurance in an app because it is too stigmatizing to disclose feeling stressed or exhausted due to period-related pain. Regardless of their workplace, the interviewees from this study collectively expressed the perception of a culture that does not support or embrace the female (reproductive) body (Gatrell, 2007) and taking precautions to avoid being subjected to negative evaluations by colleagues or friends based on their menstrual status. This corresponds to prior studies on how negative evaluations of women are related to their menstrual status (Johnston-Robledo & Chrisler, 2003; Roberts et al., 2002). These precautions materialized among the interviewees in hiding their period in creative ways to keep the fact that they bleed every month hidden from their surroundings. I found that they experienced relief in being provided with a solution to engage with their menstruating bodies in private and that this solution is far more valuable than the risk of leaving substantial onlife traces to be accessed by others.

Conclusion

In this article, I have examined the motives and needs embedded in the usage of period trackers to explore how digital traces from datafied bodies transmit meaning to the everyday life of women who use these trackers. Based on twelve individual in-depth interviews with Danish female self-trackers, I have suggested that period trackers serve not only as digitized management tools to keep track of bleeding days but also as private scopes to engage with the menstruating body: a place to find reassurance and to escape menstrual stigma in everyday life. This indicates that menstruation (still) bears a string of taboos as something one needs to keep hidden and reaffirms prior studies on menstruation and feminist thoughts on the female reproductive body as being leaky and volatile (Chrisler, 2011, Chrisler et al., 2014; Grosz, 1994; Schildrick, 1997). Thus, is using a period tracker just a new digitized way of subjugating and self-policing the female body? The interviewees experienced the period tracker as a way of reclaiming the body – using algorithmic predictions to make sense of their everyday life, be it by individual engagement with the app, by sending screen dumps of PMS notifications

to a partner or by comparing unstable cycles with peers. These findings constitute an original contribution to the underresearched field of female self-tracking by situating the usage of self-tracking technologies within a framing of privacy as a feminist objective and historical perspectives on the female body. When the female body is datafied, the interviewees expect to disappear in the abundance of data, which emphasizes why privacy continues to be such an important issue for feminist theory, beginning with the attack on the public/private divide and progressing to an ongoing investigation of privacy related to the female body in off- and online spaces. Questions to pursue in future research could concern data regulations (i.e. GDPR) and how they fit with the IoT and self-tracking practices (Lindqvist, 2018). Self-trackers become prosumers – both consuming and producing data (Lupton, 2015) – which means that we must be aware of the power balance between us (the users) and the industry: what are we giving and what do we receive in return? What kind of knowledge is produced through the self-tracking practice and who benefits from that knowledge? Thus, at the same time, the needs that are potentially formed by societal norms and structures, motivating the datafication of our bodies, are acknowledged. There is much more to these intersections of privacy, datafied bodies and menstrual stigma than can be subsumed in a small interview study. With this article, however, I hope to point towards a more destigmatized dialogue about the female body – in the interplay between digital technology, personal data and issues of ownership and privacy.

Notes

1. A period tracker is an app for smartphones to monitor the female cycle.
2. By datafied body, I mean the representation of the fleshly, physical body created by tracked data.
3. Femtech or female technology is a term coined by Ida Tin, CEO for the company behind the period tracking app, Clue.
4. Throughout Judeo-Christian history, menstruation has been connected to something impure, and the taboo of menstruation has been the main reason to exclude women from positions of authority (Phipps, 1980).
5. As part of the fourth wave of feminism, it is common to refer to individuals experiencing menstruation as "menstruators" rather than "women" to include transgender individuals and cisgender individuals. However, in this article, the interviewees are referred to as women, as it is the term that they used themselves.
6. Clue is the name of the app that Donna and her friends use.

References

Beausang, C. C. & Razor, A. G. (2010). Young western women's experiences of menarche and menstruation. *Health Care For Women International*, 6: 517-528.

Beauvoir, S. de (1989). *Det andet køn* [The second sex]. København: Tiderne skifter.

Boyd, D. & Crawford, K. (2012). Critical questions for big data: Provocations for a cultural, technological and scholarly phenomenon. *Information, Communication & Society*, 15(5): 662-679.

Bretschneider, R. A. (2015). A goal- and context-driven approach in mobile period tracking applications. In M. Antona & C. Stephanidis (eds.), *Universal access in human–computer interaction. Access to learning, health and well-being. UAHCI 2015*. Lecture Notes in Computer Science, vol. 9177. Cham: Springer.

Brown, B. (2012). *Daring greatly: How the courage to be vulnerable transforms the way we live, love, parent and lead.* New York: Gotham Books.

Chrisler, J. C. (2011). Leaks, lumps and lines: Stigma and women's bodies. *Psychology of Women Quarterly*, 35(2): 202-214.

Chrisler, J. C., Marván, M. L., Gormana, J. A. & Rossinia, M. (2014). Body appreciation and attitudes towards menstruation. *Body Image*, 12: 78-81.

Culnan, M. J. & Milne, G. R. (2001). The Culnan-Milne survey on consumers and online privacy notices: Summary of responses. *Interagency public workshop: Getting noticed: Writing effective financial privacy notices*, December 4. Retrieved from http://www.ftc.gov/bcp/workshops/glb/supporting/culnan-milne.pdf.

Dean-Jones, L. (1989). Menstrual bleeding according to the Hippocratics and Aristotle. *Transactions of the American Philosophical Association (1974-)*, 119: 177-191. John Hopkins University Press.

Delaney, J., Lupton, M. J. & Toth, E. (1976). *The curse: A cultural history of menstruation*. 1st edition. New York: Dutton, cop.

Dolezal, L. (2015). *The body and shame: Phenomenology, feminism, and the socially shaped body*. Lanham, MD.

Epstein, D., Lee, N. B., Kang, J. H., Agapie, E., Schroeder, J., Pina, L. R., Fogarty, J., Kientz, J. A. & Munson, S. A. (2017). Examining menstrual tracking to inform the design of personal informatics tools. Retrieved from http://www.smunson.com/portfolio/projects/lifelogs/menstrualtracking_chi2017.pdf.

Floridi, L. (2015). *The onlife manifesto – Being human in a hyperconnected era*. Springer International Publishing.

Fox, S. (2000). Trust and privacy online: Why Americans want to rewrite the rules. The Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/2000/08/20/trust-and-privacy-online/.

Foucault, M. (1979). *Discipline and punish: The birth of the prison*. Penguin: London.

Gatrell, C. J. (2007). Secrets and lies: Breastfeeding and professional paid work. *Social Science & Medicine* 65: 393-404.

Grosz, E. (1994). *Volatile bodies: Towards a corporeal feminism.* Bloomington, IN: Indiana University Press.

Hanisch, C. (1970). The personal is political. In S. Firestone & A. Koedt (eds.), *Notes from the second year: Women's liberation: Major writings of the radical feminists* (pp. 76-78). New York: Radical Feminism.

Hann, I. H., Hui, K. L., Lee, T. S. Y. & Png, I. P. L. (2002). Online information privacy: Measuring the cost–benefit tradeoff. *Proceedings of the 23rd international conference on information systems*, Barcelona, Spain, 2002, December 15-18 (pp. 1-10).

Hesse-Biber, S. N. & Leavy, P. L. (2007). *Feminist research practice.* Power in Knowledge. New York, Dordrecht: Sage Publications, Inc.

Jensen, C., Potts, C. & Jensen, C. (2005). Privacy practices of Internet users: Self-report versus observed behavior. *International Journal of Human Computer Studies*, 63(1-2): 203-227.

Johnston-Robledo, I. & Chrisler, J. C. (2013). The menstrual mark: Menstruation as social stigma. *Sex Roles*, 1: 9-18.

Johnston-Robledo, I., Voigt, J., Sheffield, K. & Wilcox-Constantine, J. (2007). Reproductive shame: Self-objectification and women's attitudes toward their reproductive functioning. *Women & Health*, 46(1): 25-39.

Kasabova, A. (2017). From shame to shaming: Towards an analysis of shame narratives. *Open Cultural Studies*, 1: 99-112.

Kitchin, R. & Lauriault, T. P. (2014). Small data in the era of big data. *GeoJournal*, 80: 463-475.

Kvale, S. (1994). *Introduktion til det kvalitative forskningsinterview* [Introduction to the qualitative research interview]. Hans Reitzels Forlag.

Lindqvist, J. (2018). New challenges to personal data processing agreements: Is the GDPR fit to deal with contract, accountability and liability in a world of the Internet of Things?
International Journal of Law and Information Technology.

Lupton, D. (2014). Quantified sex: A critical analysis of sexual and reproductive self-tracking using apps. *Culture, Health & Sexuality: An International Journal for Research, Intervention and Care.*

Lupton, D. (2015). *Digital sociology*. NY: Routledge.

Lupton, D. (2016). *The quantified self – A sociology of self-tracking.* Cambridge: Polity Press.

MacKinnon, C. (1989). *Toward a feminist theory of the state*. Harvard University Press.

Nafus, D. (2016). *Quantified – Bio-sensing technologies in everyday life*. Cambridge, MA: The MIT Press.

Nafus, D. & Neff, G. (2016). *Self-tracking*. Cambridge, MA: The MIT Press.

Nissenbaum, H. (2011). A contextual approach to privacy online. *Daedalus*, 140(4), Protecting the Internet as a Public Commons (Fall): 32-48.

Norgaard, K. M. (1999). Moon phases, menstrual cycles, and Mother Earth: The construction of a special relationship between women and nature. *Ethics and the Environment*, 4(2).

Pateman, C. (1989). *The disorder of women: Democracy, feminism and political theory*. Stanford, CA: Stanford University Press.

Perz J. & Ussher, J.M. (2006). Women's experience of premenstrual syndrome: A case of silencing the self. *Journal of Reproductive & Infant Psychology,* 24(4): 289-303.

Phelps, J., Nowak, G. & Ferrell, E. (2000). Privacy concerns and consumer willingness to provide personal information. *Journal of Public Policy & Marketing*, 19(1): 27-41.

Phipps, W. E. (1980). The menstrual taboo in the Judeo-Christian tradition. *Journal of Religion and Health*, 19(4).

Richardson, J. (2011). The changing meaning of privacy, identity and contemporary feminist philosophy. *Journal for Artificial Intelligence, Philosophy and Cognitive Science: Minds & Machines*, 21: 517.

Roberts, T.-A. (2004). Female trouble: The menstrual self-evaluation scale and women's self-objectification. 28(1): 22-26.

Roberts, T., Goldenberg, J. L., Power, C. & Pyszczynski, T. (2002). Feminine protection: The effects of menstruation on attitudes towards women. *Psychology of Women Quarterly*, 26: 131-139.

Schooler, D. et al. (2005). Cycles of shame: Menstrual shame, body shame, and sexual decision-making. *Journal of Sex Research*, 42(4): 324-334.

Selke, S. (2016). *Lifelogging. Digital self-tracking and lifelogging – Between disruptive technology and cultural transformation*. Springer.

Shildrick, M. (1997). *Leaky bodies and boundaries: Feminism, postmodernism and (bio)ethics*. London: Routledge.

Stangor, C. & Crandall, C. S. (2000). Threat and the social construction of stigma. In T. F. Heatherton, R. E. Kleck, M. R. Hebl & J. G. Hull (eds.), *The social psychology of stigma* (pp. 62-87). New York, NY: Guilford Press.

Thomas, G. M. & Lupton, D. (2015). Threats and thrills: Pregnancy apps, risk and consumption. *Health, Risk & Society*, 17(7-8): 495-509.

Tracy, S. (2013). *Qualitative research methods: Collecting evidence, crafting analysis and communicating impact.* UK: Wiley-Blackwell.

Ussher, J. M. (2004). Premenstrual syndrome and self-policing: Ruptures in self-silencing leading to increased self-surveillance and blaming of the body. *Social Theory & Health*: 254-272.

Xu, H., Luo, X., Carroll, J. M. & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems*, 51: 42-52.

Woolf, V. (1929). *A room of one's own*. New York: Harcourt Brace & Co.