The Routledge Companion to Digital Media and Children

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Caring Dataveillance

Publication details
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Published online on: 28 Oct 2020

How to cite:- Deborah Lupton. 28 Oct 2020, Caring Dataveillance from: The Routledge Companion to Digital Media and Children Routledge
Accessed on: 21 Nov 2023

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CARING DATAVEILLANCE

Women’s Use of Apps to Monitor Pregnancy and Children

Deborah Lupton

Introduction

Apps for pregnancy and motherhood are part of a wider group of digital technologies that have been grouped under the term ‘femtech’ (Rosas, 2019). Femtech incorporates a panoply of technologies directed at supporting women’s health, including smartphone apps, wearable devices for self-tracking that have been designed specifically for women (often made to look like women’s jewellery), digitised breast pumps, and insertible devices to help women master pelvic floor exercises (Lupton, 2016b; Rosas, 2019). While some femtech is targeted at women’s general health, many devices focus on their reproductive health and fertility. Parents, and particularly mothers, are increasingly using digital media and devices to monitor the progress of pregnancy and the health and development of their children.

A plethora of apps is available for these purposes, including those designed for monitoring pregnancy and the health, development, and well-being of infants and young children (Barassi, 2017; Johnson, 2014; Lupton & Thomas, 2015; Thomas & Lupton, 2016). The vast majority of these apps are explicitly designed for the use of mothers, because it is assumed they are more interested and active in caring for infants and young children than are fathers. Monitoring opportunities related to foetal development begin from pre-conception, where devices and apps help women track their ovulation and menstrual cycles and prepare for conception by optimising the health of their bodies (Lupton, 2015, 2016b; Rosas, 2019; Wilkinson, Roberts, & Mort, 2015). Once pregnancy is achieved, another range of apps encourages women who are expecting a baby to monitor the development of their foetus, often involving customisation such as providing a name for the foetus and the expected date of delivery, and the opportunity to enter into the app details of doctors’ visits and tests. Some apps allow women to monitor and record foetal movements and heartbeats (Lupton & Thomas, 2015; Thomas & Lupton, 2016). Many other apps are available for caregivers to track their infants’ sleeping, feeding, growth, and development (Johnson, 2014; Leaver, 2017; Lupton & Williamson, 2017).

Only a small number of studies thus far have addressed how women during pregnancy and the early years of motherhood are using apps. Existing studies have shown that they are beginning to be used by women in countries as diverse as Germany (Goetz et al., 2017; Wallwiener et al., 2016), Ireland (O’Higgins et al., 2015), Turkey (Şat & Sozblr, 2018), South Korea (Lee & Moon, 2016), China (Wang, Deng, Wen, Ding, & He, 2019), and the USA (Tomfohrde & Reinke, 2016) as well as Australia (Johnson, 2014; Rodger et al., 2013). The findings from these
studies show that apps for pregnancy and parenting are appreciated by women in these countries to help them learn more about their bodies and those of their foetuses or children. However, few focus in great detail on how women use these apps for monitoring their pregnancies or their infants’ health and development and how women feel about the apps.

This chapter examines and analyses the implications of these types of monitoring apps for women’s experiences of pregnancy and the care of children, drawing on the findings of the researcher’s two empirical studies involving Australian women. In doing so, two literatures – those on dataveillance and feminist new materialism – are brought together to offer new insights into digitised caring practices in relation to foetuses and children. The chapter begins with an overview of this scholarship before discussion of some of the key findings of the projects.

**Dataveillance and Feminist New Materialism Theory**

The term ‘dataveillance’ refers to conducting watching of people by gathering information about them, often these days using digital technologies to generate, store, and process these personal data (Clarke & Greenleaf, 2018; Raley, 2013; van Dijck, 2014). Digitised and other forms of surveillance are often understood in negative terms as an authoritarian restriction of autonomy and privacy of those who are being watched (Lupton, 2016a). In the wake of numerous scandals about the leaking or breaching of people’s digital data, originating with Edward Snowden’s 2013 revelations about the dataveillance of unwitting citizens by national security authorities in the USA, UK, Canada, and Australia (Lyon, 2014), many scholarly critiques of dataveillance have focussed on the negative features of dataveillance. They tend to adopt a view that positions it as repressive, invasive, or exploitative, conducted by those with power on less-powerful citizens (Andrejevic, 2013, 2014; Clarke & Greenleaf, 2018) as part of the digitised ‘control society’ (Best, 2010). This is a macro-political position on dataveillance which pays little attention to the micro-politics of how people live with and through devices and practices related to the datafication of their selves and bodies, and how they might seek to generate digital data about people with whom they have intimate and caring relationships (Lupton, 2018).

Dataveillance need not be conducted from an authoritarian, repressive, or coercive position, however. While these uses of people’s personal data certainly exist and are worthy of critique, the more benign modes of dataveillance tend to be ignored. Many contemporary forms of dataveillance target children, from pre-birth into adolescence, including the use of apps by mothers for monitoring foetuses and young children as well as various forms of educational monitoring once children start attending school (Gard & Lupton, 2017; Lupton & Williamson, 2017). When dataveillance is employed as part of familial relationships and caring practices, the power dynamics can be very different. At the micro-political level, dataveillance conducted as part of intimate family relationships or other types of nurturing relationships can be an expression of love and attentiveness to others who need this kind of care because of illness (Essén, 2008) or physical dependency, including infants and children (Leaver, 2017; Levy, 2015) and companion animals (Richardson, Hjorth, Strengers, & Balmford, 2017).

Richardson and colleagues (2017) have drawn attention to what they entitle the ‘careful surveillance’ undertaken of companion animals by the humans who live with them, some of whom use at-home monitoring cameras to check on the activities of both their children and their pets. This chapter adopts instead the term ‘caring dataveillance’ as a means of working across the concepts of dataveillance and caring practices as they are experienced in and with the use of apps for pregnancy and parenting. Caring is used as a term instead of careful, as the author wanted to clarify that the practices are about engaging in care, whereas the word careful has multiple meanings (including being cautious). The term ‘dataveillance’ was used instead of ‘surveillance’ to signal that the watching involved uses digital data.
Adopting a feminist materialist perspective draws attention to these material dimensions of these forms of dataveillance by acknowledging the more-than-human worlds in which intimate relationships such as those between mothers and their children are conducted. Human bodies/selves are viewed as entangled with other humans and with nonhumans such as digital technologies, and as unbounded and emergent (Barad, 2007; Bennett, 2004, 2010; Braidotti, 2016; Haraway, 2016). These human-nonhuman assemblages configure a ‘thing-power’ (Bennett, 2004) that is dynamic and contingent on the time and space through and in which humans move and the other humans, other living creatures, and objects with which they come into contact. Working together, humans and nonhumans generate thing-power. Relational connections, affective forces, digital and bodily affiances, and agential capacities are part of this thing-power, inspiring and enacting action, knowledge, and responses. This perspective invites considerations of caring practices that acknowledge that they are more-than-human and more-than-digital. Viewed through the lens of feminist new materialism approaches, dataveillance involves continually changing assemblages of humans–technologies–data as humans learn to become and live with data (Lupton, 2018).

Details of Projects

Findings from two research projects involving Australian women are discussed in this chapter.

**Project 1**, ‘Australian Women’s Use of Digital Media for Pregnancy and Parenting’, involved a survey and focus groups with women who were either pregnant at the time they participated or caring for a young child aged three or younger. The online survey was completed in late 2014 by 410 women around Australia. The participants were diverse in terms of their ethnicity and geographical location (from all states and territories of Australia, including rural regions), but had higher levels of education compared with the Australian population as a whole. The survey found that almost three-quarters of respondents said that they were using pregnancy apps, while half reported using a parenting app (Lupton & Pedersen, 2016). Following the survey, a focus group study was conducted in mid-2015 in Sydney, involving four groups with a total of 36 Sydney women. The focus groups were designed to follow up in more detail why women used pregnancy and parenting apps and other digital media and devices. These women were also mostly university educated (findings are outlined in Lupton, 2016c, 2017).

**Project 2**, ‘Australian Women and Digital Health’ took place between late 2016 and mid-2017. It included women living across Australia and at a range of life-stages in interviews and focus groups, and had a broader focus, asking them about their use of digital technologies for health-related purposes. A total of 66 women participants across Project 2 were involved in either interviews or focus groups about their use of digital health technologies. Among the participants were women who were pregnant or caring for young children, including two focus groups of mothers with infants. It is these participants’ experiences with digital health related to pregnancy and parenting that are discussed in this chapter (overviews of findings from all participants can be found in Lupton, 2019; Lupton & Maslen, 2019), together with the focus group discussions from Project 1. Combining qualitative investigations from both projects allows for an analysis that incorporates women’s experiences elicited between mid-2015 and mid-2017 in different geographical locations.

Findings

Across the focus groups and interviews conducted for the two different projects, it emerged that using digital media for pregnancy and parenting, as well as for general health-related purposes, was very common. The findings of Project 1 revealed that digital media were very important to the participants. They used mobile apps, social media, content-sharing platforms and online
discussion forums to connect with each other and with family members, post images and other information about their pregnancy and children, track their pregnancy or their children’s behaviours and development, and learn about pregnancy, infants, and childcare. They commented that they were constantly googling to find information about their children. Project 2, which included women across the life-stages, revealed that all of them, regardless of their age, went online to look for health-related information not just for themselves but for their partners and family members, including young and adult children, grandchildren, and elderly parents. The women were highly digitally engaged in their health- and caring-related practices, willing and able to conform to the ideal of the self-responsible citizen who not only managed her own health but also that of her family members.

Both projects found that many participants who were pregnant or caring for infants and young children had used pregnancy or parenting apps. Participants also talked about using period and ovulation tracking apps when they were trying to conceive. This practice had encouraged them to carefully monitor their own bodies in the effort to achieve conception, almost to the point of obsession, as some of the women in a focus group (Project 2) noted.

Participant: I was very diligent with recording my health when I was trying to get pregnant. So, you can use an app to record like literally daily symptoms of like, put in your period and then all kinds of – if there’s any signs of discharge, if you’ve got a temperature, you put in all of your details and it tells you when you are at your most fertile.

Participant: I got a bit obsessive about it. I was told that I wouldn’t be able to fall pregnant, so I was like obsessively putting information in and checking it. And I don’t think I would want to use it again, because it was a bit – I was a bit addicted to it.

Participant: I was using it daily and ticking if I took my vitamins and ticking off this and that, and it kind of made trying to fall pregnant very scientific and mechanical and it wasn’t fun. For me it was all about having a baby.

Women in both projects who were pregnant or had young children had used apps for tracking the progress of their pregnancy and finding information (apps such as Ovia and What to Expect When You’re Expecting), child vaccination records, infant development monitoring (in particular, the Wonder Weeks app), and parenting advice (for example, Baby Center). These apps served a combination of information provision and generating new data about their infants’ health and development. Some participants mentioned pregnancy apps, including those that showed the size of the foetus as it grew, comparing it with fruit as a way of helping users conceptualise the foetus in visual terms. Women who used these kinds of apps described how the apps helped them to develop a relationship and bond with their foetuses and generate a sense of excitement about their pregnancy.

Participant: I think it was Pregnancy [app], the one that tracks your – you know, how far along you are, what’s happening, what’s happening with baby. Yeah, because it kind of made me feel excited as well, month by month seeing baby grow and all that kind of stuff.

Participant: I like the app where it says, ‘the baby’s the size of an avocado’. Like that sort of inspires me, it just makes it a little bit – because you can’t see [the foetus] and when it’s early you can’t necessarily feel it – so it just kind of – I’m a visual person, so it just helps. (Project 1)

Some of the new mothers in one of the focus groups in Project 2 had a conversation in which they talked about apps for tracking feeding, nappy changes, and sleep. They said that they found these apps helpful because “we’re still new mums”, as one woman put it, and “you’re just
so tired all the time” as another added. A participant in this group went on to note that apps for tracking their babies can be helpful when they are dealing with trying to note the routines and behaviour of their babies:

You’re thinking about so many different things, it’s so easy to forget to look at the clock when they get up from their sleep. Or yeah, to pay attention to the clock. So it can really help if you’re like, ‘Why are you [the baby] cranky? Maybe you’re tired?’… So it gives you that information that you might not have kind of been able to keep track of yourself.

These participants went on to describe how they were ‘offloading information’ from their brains to the app, “so you don’t have to rely on your brain so much”. One woman said that if she went to a child health centre for her baby’s check-up and was asked how many nappies she went through a day, she could pull out her phone and check it on the app. These participants described inputting these data in the middle of the night, when changing or feeding their babies, or first thing in the morning.

In a different focus group in Project 2, another participant described the distress and tiredness she had experienced in dealing with her new baby’s needs. For this woman, using infant monitoring apps was a significant means of coping with these feelings and managing the chaos of her life. Using digitised monitoring of what appeared to be highly unpredictable and mysterious behaviour of the infant helped her to gain an understanding of her baby’s needs and patterns, as well as working towards finding some respite from lack of sleep.

Like when your baby’s screaming when you try to put him to sleep and you don’t realise you’d only fed him two hours ago, so it’s gone from screaming because he doesn’t want to sleep to screaming, ‘I’m hungry!’ By inputting all that into the apps, like I know when it was changed last week, when it fed last, how long it slept during the day, if it’s teething, then it sleeps less or if it’s having a good day, it sleeps more. It’s really good for understanding what’s going on with the baby. Yeah, so I – at the moment I just do it for sleep because I’m obsessed with sleep as most mothers are and you can just like – so for me, it makes it easy to see like if he’s a bit cranky, I’ll look at the phone and ‘Oh yeah, he’s due for a nap’. So, he has a pattern that’s emerged so he can only really stay awake for two hours before he gets tired. But otherwise I would lose track of that.

Several women in both projects made specific mention of using the Wonder Weeks app, which provides information on the cognitive development of infants in terms of ‘leaps’ and how this affects their behaviour. The women found this app reassuring, as it helped to explain why their infants may be particularly unsettled:

Participant: So I don’t have the notifications on it or anything, but if [my baby’s] been real crazy, shitty for no apparent reason, sometimes I’ll check that and be like, ‘Oh she’s going through a developmental leap this week and I don’t have to worry about it – she’s okay, so she’s not sick or anything, she’s just having a mental growth spurt’. Which is great.

Participant: Yeah, it’s reassurance isn’t it?
Participant: Yeah, it’s reassuring to be like, ‘Oh!’ And it makes sense because they change so much!
Participant: It’s happened to me a couple of times, where I just genuinely do not know what’s wrong with this child. And then you’re thinking, ‘Is she teething, is she sick, is there is she constipated?’ Then you’ll [think], OK, well she’s going through a leap so that is probably the reason. (Project 2)
It was evident from the focus group discussions that new mothers spend far less time thinking about their own health or searching for information about it online, as they are currently pre-occupied with their infants’ health and well-being. As one woman in Project 2 explained:

I know if I’m not feeling well, whereas with [my baby] I don’t know. Is he just being a baby or is he unwell? Is there something wrong? Whereas with myself, I know if I’ve got a cold or whatever. So it’s much more about him than about me.

Those women who had been using self-tracking apps to monitor their health and fitness before the birth of their babies said that since the birth they have not been interested in using these devices because their attention has been diverted to their infants’ health and well-being. Their lives had changed so significantly that there was no longer any time or interest in continuing these practices. Their self-monitoring had become devolved to monitoring of their infants’ bodies.

Affective responses were key to women’s explanations of their relinquishment of self-tracking. One woman in a Project 2 focus group noted that she had de-activated a fitness tracking app on her phone because she kept receiving notifications from it that she had not reached her goals, and she simply wasn’t able to engage any more. Other participants in the same focus group agreed that such apps ‘make you feel bad about yourself’ or ‘guilty’. One woman suggested that there should be a ‘baby option’ programmed in the app (‘like holiday mode’) that changed expectations about step counts or calories expended for new mothers:

Like [my baby’s] having a clingy day today. I could barely put him down this morning. As if I’m going to get 10,000 steps!

The participants in this group also commented that they didn’t want to track their sleep, because it would simply be too confronting to document exactly how badly they slept when they were disturbed by the needs of their infants. As they found it difficult to eat meals at regular times and to ensure they were eating nutritious food, these women also didn’t see a reason to track their own food intake. They felt as if they had not yet ‘had their body back’ and it was difficult to return to the same kinds of fitness routines or eating habits they kept up before becoming pregnant, because they now had to respond to the demands and needs of their babies.

I’d like to be able to go out for runs in the morning like I used to, but I can’t, because most of the time we’re still asleep because that’s his best sleep, around 7 a.m. Then I can’t leave him at home and I can’t go running with him. So I don’t go running.

One focus group in Project 2 included women who were struggling with mental health conditions, such as post-natal anxiety. They suggested that an app that sent them friendly, supportive reminders to care or take time for themselves and their own health and well-being would be an ideal replacement for the self-tracking apps they had given up using.

Participant: It’d be nice if you had someone to just – if you could put an app on your phone that sends you really lovely friendly messages that were just sporadic reminders to drink water.

Participant: Just like . . .

Participant: Eat something healthy today.

Participant: That didn’t make you feel bad about yourself.
**Discussion**

Any discussion of the ethics of caring needs to acknowledge that the agential capacities generated in and through these practices can both open and restrict freedoms for the watched subjects and those who engage in watching (Puig de la Bellacasa, 2017). As Richardson et al. (2017) point out, this form of monitoring may be asymmetrical and non-reciprocal, involving the watching of one subject by another, but it is also ‘careful’, incorporating both caring affects and practices and notions of maintaining responsibility for the close monitoring of the health, safety, and well-being of those humans or nonhumans under one’s care. Richardson and colleagues call for attention to be paid to the ethics of how this digitised form of care is achieved, and the tension between care and the restriction of freedom of those who are subjected to dataveillance.

The findings of the two projects provide insights into women’s experiences of engaging in dataveillance related to pregnancy and motherhood using apps. Using pregnancy and child monitoring apps, as well as other forms of digital media such as social media and online discussion forums, women can actively generate information about their foetuses and children. They are not simply passively accessing information, therefore, but creating very personal datasets about their children, some of which may be shared with others online. Expectations that women should aspire to the ideal of the ‘good’ mother who seeks out knowledge and intensely monitors the health and well-being of her foetus or children existed for decades prior to the emergence of digital technologies. However, the close and continual tracking that digital media such as apps can offer provides new opportunities for women to practise this kind of caring labour, as well as manage the often chaotic and physically demanding experiences of living with infants.

The broader sociocultural context in which these apps are developed and marketed is that in which foetuses and young children are represented as vulnerable and precious, requiring high levels of care and attention to protect them from harm, and where the ‘good mother’ takes steps to do so (Doshi, 2018; Johnson, 2014; Lupton, 2012, 2014, 2016b). Women in their reproductive and child-caring life stages are under intense pressure to conform to the ideal of the ‘digitised reproductive citizen’ who takes responsibility for finding, generating, and using digitised information about pregnancy and childcare in the interests of protecting and promoting their health, development, and well-being (Lupton, 2016b). Critical analysis of the content of pregnancy and parenting apps has demonstrated that they tend to reproduce and reinforce these norms and expectations about ‘good’ mothers (Barassi, 2017; Doshi, 2018; Lupton, 2016b; Lupton & Thomas, 2015; Thomas & Lupton, 2016). In her analysis of apps designed specifically for women, for example, Doshi (2018) noted that the subject position of the ‘earth goddess’ was frequently portrayed in apps for pregnancy and motherhood. This archetype promoted the normative feminine body as naturally fertile, maternal, and devoted to caring for others. Lupton and Thomas’ analysis of pregnancy apps (Lupton & Thomas, 2015; Thomas & Lupton, 2016) found that the app visuals tended to aestheticise pregnancy and the foetal subject, and represented foetuses as already infants that required the greatest of care and attention from women to protect them from harm. Pregnancy was simultaneously presented as a joyous and exciting experience and replete with risks that must be assiduously avoided.

Digital devices, in these contexts, become part of the materialities of care, or the spaces and things that are imbricated in and with caring labour and caring affects (Brownlie & Spandler, 2018; Buse, Martin, & Nettleton, 2018). The projects’ findings demonstrate the centrality of relational connections such as those between a woman and her unborn or her children to the thing-power of these digitised assemblages. Affective forces such as the desire for better knowledge and understanding of their foetuses and babies as well as for intimacy and to successfully perform caring impelled and were generated in and through women’s app use. Women often took up pregnancy or parenting monitoring apps to counter their feelings of anxiety, inadequacy,
uncertainty, fatigue, and loss of control, and they reported that apps helped them manage and cope with these affects.

The women’s use of these types of apps enabled them to perform acts of maternal caring by actively preparing their bodies for pregnancy and monitoring the progress of pregnancy and the behaviours and well-being of their infants. The apps helped women develop a sense of connection with their foetuses and build on their relationships with their infants, supporting them to better know and understand their foetuses and children. When women were dealing with the unpredictable and changeable behaviour of their infants, apps that could discern patterns in the babies’ behaviours and emotional responses enabled them to feel reassured and more confident in a context in which their own bodies were struggling with tiredness and coping with the unfamiliar physical demands of providing care to a new infant. Some of this intense work, including monitoring infants and remembering when they should be next fed, or put down for a nap, could be devolved to the app.

These findings, therefore, also demonstrate the shared capacities of dataveillance that involve entanglements of sensory and technological capacities between women, foetus or infant, device and the data that were generated in and with these assemblages. Maternal caring involves a set of interembodied practices and affects that is distributed between the foetal/infant body and that of the mother (Lupton, 2013a, 2013b). By using monitoring apps to track their reproductive cycles, pregnancies, and infants’ bodies, women were simultaneously monitoring themselves and their children. Caring dataveillance, in this context, was much more than vigilant watching on the part of women to protect the health of their children. It was a practice directed at attempting to regain a sense of control over their lives and lessen some of the burden of caring labour. In this way, caring dataveillance could engender some forms of self-care, while closing off others. For some women, previous habits of self-tracking their bodies were re-directed to their babies’ bodies. They had become aware that their lives and bodies had changed so much that these apps were no longer useful and were generating distressing affects of guilt and shame, emphasising the negative ways in which their lives had changed following the birth of their infants.

As the findings demonstrate, when the participants became mothers, the focus on conducting dataveillance on their own bodies shifted to the bodies of their infants. Indeed, their capacity to engage in self-surveillance of their own bodies became limited, as their interests and energies became absorbed into attempting to understand their babies’ behaviours and meeting their needs. The dataveillance apps generated good but also bad feelings. In this context, the thing-power of the apps worked positively towards enhancing the caring surveillance of pregnancies and infants but against dataveillance of the post-birth body. One solution to this, as suggested by the focus group of women coping with mental health conditions, was an imagined app that would encourage new mothers to turn their attention for a while away from their infants and focus again on themselves, encouraging a benevolent and supportive mode of self-caring dataveillance.

Acknowledgement

The funding for both projects was provided to the author by the University of Canberra as part of her Centenary Professor appointment.

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Caring Dataveillance and the Good Mother


