How a fitness tracker changed my life

Data, technology and identity in personal blogs

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Abstract and keywords

Self-tracking is a phenomenon that is increasingly accessible and accepted in today's digitized world. Smartphones and wearable devices allow us to capture quantitative self-representation in tables, graphs and numbers. Along with written and visual digital self-representations, they have come to shape an extension of the self. This research observes from the perspective of Foucault's technologies of the self how both blogging and self-tracking practices are used to construct a digital extension of identity. The main research question answered is "how is self-quantification integrated into digital self-representations of personal bloggers?". To answer this, a sample of 50 personal blog posts, in which bloggers describe their experience with self-tracking, was subjected to a qualitative content analysis using a grounded theory approach. Two primary overarching themes were found in the blog posts. The first is the *presentation of the self*, which shows that the digital representation of the self in personal blogs is like a bricolage made up of the bloggers' self-disclosure, what is assumed of the reader and the commercial forces in the blogosphere. The second is *reflexive self-analysis*, which shows us the practice of self-tracking is grounded in a cultural idealization of self-improvement, but can lead to disembodiment. There is a tension between self-tracking devices being experienced as either a controlling structure that represents an alternate version of embodied reality, or as a tool to obtain empowering insights into lived reality. The human tendency to actively work on a construction of self long predates our digital era of blogs, social media and wearable self-tracking devices. However, the integration of these technologies into our everyday lives continue to change the dynamics of how we digitally construct identity. This research connects to the modern perspective of the self as a direct reflection of our moral decision-making, behavior and actions. If it seen as our moral responsibility to perfect the aspects of self that we have any control over, today that responsibility overarches both the physical body and the digital representation of the self. This is further amplified by the data doxa, the cultural belief that the data-driven technological tools such as self-tracking devices available to us are helpful or even necessary in our quest for self-actualization. With an increased cultural, moral, social and economic pressure to optimize the self, Foucault's conceptualization of technologies of the self has become more relevant than ever.

KEYWORDS: *The quantified self, self-tracking, blogs, digitizing identity, extension of self*

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1   Introduction

> In our current era of non-stop technological innovation, fuzzy wishful thinking has yielded to the hard doctrine of personal optimization. (…) It's no longer enough to imagine our way to a better state of body or mind. We must now chart our progress, count our steps, log our sleep rhythms, tweak our diets, record our negative thoughts—then analyze the data, recalibrate, and repeat (Schwartz, 2018).

1.1   Data, technology and identity

The way we use technology for self-tracking make it seem like we have become more fixated on self-optimization than ever. Self-tracking is a phenomenon that is increasingly accessible and accepted in today's digitized world. As Schwartz (2018) indicates, our wearable technologies, smartphones and other devices not only collect and store personal data on anything that can be quantified - they show us how we can make better decisions in everyday life by using this data. Ultimately, they show how to lead an optimized life. This phenomenon is sometimes referred to as the *quantified self*. While self-quantification used to be reserved for a specific, dedicated community of self-trackers, the practice has now become more commonplace and normalized in western society. In a world where technology and human beings are becoming more and more integrated, this thesis explores how the quantified self is becoming a part of our identity. The research will focus on personal blogs, which contain many first-hand accounts of people's experiences with self-tracking. The data reveals not only how the bloggers relate to quantitative personal data, but also how the individuals use technology to construct a digital identity. A qualitative content analysis was conducted, using a sample of 50 blog posts from a diverse range of personal blogs. In these posts, bloggers give individual and in-depth accounts of their experience with the quantified self and self-tracking. Through a grounded theory style analytical approach, I identified two primary themes that emerged from the articles in relation to the research topic, offering a unique angle to the integration of data, technology and self-identity. The human tendency to actively work on a construction of self long predates our digital era of blogs, social media and wearable self-tracking devices. However, the data reveals that the integration of these technologies into our everyday lives continue to change the dynamics of how we digitally construct our personal identities. This research highlights how, now that identity has expanded to include digital representations of self, the pressure on the individual to optimize the physical and digital self is greater than ever.

1.2   The quantified self

The quantified self has a history in pen-and-paper tracking of to-do-lists, finances, daily habits and anything else that can be captured in numbers, figures or graphs (Rettberg, 2014). It was labelled as a movement in California in 2008 by Nafus and Sherman (2014). Initially, the Quantified Self movement had the most appeal to individuals involved in sports and fitness (Ruckenstein, 2014) and highly committed "self-tracking geeks" (Barcena, Wueest & Lau, 2014, p. 16). However, technological developments have made self-tracking more common amongst casual users (Ruckenstein, 2014). By 2014, one out of every 10 adults Americans owned an activity tracker (Rettberg, 2014). These individuals engage in self-tracking out of curiosity or believe it can help them gain specific health- and lifestyle related goals (Parviainen, 2016). The quantified self movement relies on technologies like mobile phone applications, smartwatches, wristband sensors and monitors or sensors in the home environment (Swan, 2012). In this research, self-tracking is understood as a technology of the self, as conceptualized by Foucault (1988). Technologies of the self are practices that allows the user to make an impact on themselves, both physically and mentally. Self-tracking technologies are used in the quantified self movement to help users make data-driven decisions that help them lead better lives (Wolf, 2010).

1.3   Digital self-representations

The data collected by self-tracking technology can be seen as a digital representation of the self. From the perspective of Rettberg (2014), three types of self-representation exist in digital media. The first is the written form, found in blogs or written text on social media. The second is visual, most commonly in the form of selfies. The third type is the quantitative form, such as self-trackers that measure activity, productivity and any other quantifiable personal data. New technologies make it possible for individuals to engage in these forms of self-representation. Rettberg (2014, p. 12) argues that digital self-representations serve both a personal and a social purpose. Socially, they are used to communicate with others. On a personal level, self-representations are used for both "self-reflection and self-creation". These digital self-representations do not exist separately from each other. A selfie posted on social media might be accompanied with a written caption. Or a blog could contain both self-portraits and quantitative information on the author. From this perspective, the three digital self-representations are interrelated. This research combines the written and quantitative self-representation by analyzing the way the quantitative self is integrated in the written self-representation in personal blogs.

1.4   Personal blogs

Where quantitative self-representations rely on data and numbers, the written self-representation is considered a more narrative form of capturing the self (Rettberg, 2014). Historically, the written self-representation was created in the form of personal diaries, which has become more commonplace with higher literacy rates and freedom of self-expression (Rettberg, 2014). Personal bloggers are in a unique position of complete control over the content they publish about themselves. For that reason, blogging is an act of self-representation and impression management (Hookway, 2008). Personal, or self-representational blogs are a specific type of blog that can be compared to diaries, describing the personal lives, experiences and thoughts of the blogger (Chia, 2012). Blogs can also be topic driven or anonymous but remain an expression of the author's personal life experience (Rettberg, 2014). Personal bloggers write about a wide range of activities, products or services that are a part of their everyday lives. Personal blogs add an interesting angle to social research because they are private reflections of the blogger on everyday experiences. Through language, thoughts and concerns of our culture are articulated in blogs. According to Jones and Alony (2008), the accessibility and ease of use of blogs give people a unique new form of self-expression that is organic and unstructured, similar to other natural forms of human communication. The authors found that personal blogs can reveal the tip of the genuine and unbiased insight into what thoughts are on the bloggers' mind. Since self-expression and social connection are amongst the primary motivators for people to blog, authentic thoughts and feelings will usually shine through in blog content. Both personal bloggers and self-quantifiers seem to share an overlapping interest in self-disclosure of personal information (Maltseva & Lutz, 2018), which may lead to interesting observations on the interaction of these two phenomena.

1.5   Social relevance

The prevalence of self-tracking can be understood in the societal context of the "second fitness boom", which Millington (2016, p. 1185) argues that the availability of self-tracking devices has brought on. He describes the fitness boom as a popularity of fitness similar to the first occurrence in the 1970's and 1980's. A key aspect that characterizes this trend is automated prosumption, the automatic production and collection of personal data that occurs simultaneously with consumers using self-tracking technologies (Millington, 2016). Individuals engaged in this activity convert the collected data into narratives of the self (Gardner & Jenkins, 2016). This highlights what actions people are taking in attempt to be fit, healthy, and lead better lives (Millington, 2016) and how they shape their identities in relation. Similarly, creators of personal blogs relate to their digital selves as a part of their personal identities. They treat digital narratives and shared content as an extension of the self (Belk, 2013). The explosive growth and popularity of

personal blogs highlight their appeal in today's culture (Jones & Alony, 2008). Research into blogger behavior and motivation hints that bloggers are driven by a need to fulfill both intrinsic needs, such as self-expression, introspection and documentation of everyday life, and external needs like social contact, recognition, and collecting and sharing information (Jones & Alony, 2008), which may explain their popularity. Knowing that blogs appear to be a tool that can fulfill all these personal needs, their role they fulfill in digital culture and personal identity becomes significant.

The growing role of blogs and self-tracking technologies has not gone unnoticed in popular (news) media. Some have started reporting on the potentially harmful consequences of how personal data can be used as a means of surveillance and control. For example, marketers and business are not afraid to express the potential they see in this new body of personal data on individuals. Fox (2017, p. 144) introduces "health consumerism", the creation and selling of new consumer technologies to improve personal fitness. There is a consumer demand for self-tracking devices that marketers try to meet. The data that is generated and stored by using this technology can be exploited by marketers for targeted advertising, identifying market trends and be selling to external parties. When Pedraza (2013, para. 1) predicted that "self-actualization is the next big market", he could have been on to something. Millington (2016) agrees that different industries have an interest in prosumption because consumers continue to generate and willingly share valuable data. This is becoming increasingly simplified for them. In addition to the consumer seeing it as the desirable thing to do, technological developments automate and simplify the process, taking away the amount of effort required. As a result, consumer data becomes more accessible to external parties including those with a commercial interest. Mehta (2013) captures the value of this from a marketer's perspective strikingly:

> For the marketer, this data seems like the holy grail. Exclusive, accurate data at
> scale that helps marketers better understand their customers in order to build
> loyal relationships, minimize advertising waste and optimize ad spend? Sign me
> up. (para. 11)

This quote shows how invaluable the personal data is in aiding business to target and reach specific consumers according to Mehta. While those engaged in the quantified self are motivated by the prospect of self-knowledge and optimizing their personal lives (Parviainen, 2016), the world of business is an external stakeholder that has different intentions with the data than those who are generating and collecting it. Meanwhile, the popularity of self-tracking tools continues to rise. This appears to be part of an overall cultural fascination with self-improvement. In her book *The Sum of Small Things*, Currid-Halkett (2017) describes the rise of what she calls the aspirational class, a new elite that emphasizes cultural rather than material capital to set itself apart. What defines them is a

conscious and well-informed lifestyle, including optimized physical and mental health (Polak, 2018). Various media sources have picked up on the same phenomenon, generally with a skeptical tone. Schwartz (2018) summarizes a wide range of self-improvement books and articles, attempting to highlight just how deeply the aspirational desire to achieve perfection in every aspect of life that can possibly be measured, is rooted in our culture. Tanaka (2016) criticizes this pursuit, arguing that the self-perfection ideology makes us focus too much on ourselves and too little on the world around us. She worries that this selfishness weakens our sensitivity to societal problems outside of the individual experience. Tanaka (2016, p. 8) seamlessly integrates self-tracking and social media into her argumentation, proposing that it is used to for "self-grooming" by sharing the most desirable version of self. Tanaka is not the first journalist to express concerns about social media and blogging culture and the self-centered tendencies associated with it (Koifman, 2018). Rather than writing about the selfishness of using technology for optimization of the self, Schrage (2016) instead expresses his fears about the resulting dehumanization of individuals, using the example of productivity data in the workplace to frame his worries. From productivity to the popular life hacks and modern self-improvement advice, these authors have captured the cultural idealization on being the optimized version of oneself, using whatever tools and techniques available to us. These concerns frame the social relevance of studying the growing role of self-tracking technologies in the everyday lives of individuals. These phenomena continue to be the subject of media attention but have also been widely observed in academia, as the following section will outline.

1.6   Scientific relevance

Self-tracking has attracted the attention of academic researchers from diverse disciplines, making it possible to ground this study in a framework of already existing theories and concepts brought in relation to the quantified self, general self-monitoring (Drew & Gore, 2016) and the use of measuring devices to obtain a greater self-knowledge (Crawford, Lingel, & Karppi, 2015). The role of external technologies in the construction of identity is not an entirely new concept. However, new dominant technologies have facilitated a shift towards a more numbers-based approach to understanding and representing the self for contemporary individuals (Stepanchuk, 2017). Arguably, the rise of quantitative data as a digital extension of identity has the potential to change how we think of what it means to be human (Ruckenstein, 2014). It is contended by some researchers that self-tracking can be a catalyst for behavioral change and self-actualization (Ruckenstein, 2014). Opportunities indeed looking promising for the field of healthcare (Fox, 2017) and physical education (Williamson, 2015), to give some examples. A more positivist position is that self-tracking is an opportunity for personal empowerment through self-knowledge (Lupton, 2013). However, relating to the physical body through data and technology can make way for disembodiment and an idealized

perception of constant self-perfecting as a moral responsibility (Depper & Howe, 2017). Young (as cited by Danter, 2016, p. 56) adds that digitalization of culture and everyday life causes a sense of disembodiment by removing the experience of everyday life from the physical. This becomes concerning when people begin to assess themselves through technology rather than their embodied experience of life. As an example, recently the sleeping disorder orthosomnia was identified by researchers. They define this as a pre-occupation with tracking and perfecting personal sleep data, getting in the way of actual sleep quality (Baron, Abbott, Jao, Manalo, & Mullen, 2017). The participants in this study are overly focused on perfecting an aspect of their lives and use technology to assess their success, which leads to adverse outcomes. This example illustrates how a culture of healthism (Lupton, 2013) and body performativity, constantly evaluating oneself and working towards objectives, can be problematic.

Two perspectives on these problems are particularly prominent in the current body of research on the quantified self. The first emphasizes the moral and ethical implications of collecting, storing and sharing personal data. For instance, in the historical account of self-tracking by Crawford, Lingel and Karppi (2015), they focus on the transparency of and user agency in the handling of personal data. Epstein (2016) relates her study of biometric technologies to the concepts of surveillance and privacy. Ajunwa, Crawford and Schultz (2017) approach self-tracking from perspective of worker productivity surveillance through tracking technology. In the book *The Quantified Self*, sociologist Lupton (2016) explores the social and cultural questions surrounding self-tracking. In her work, she takes care to differentiate between voluntary self-tracking and covert means of control and collecting individuals' data (Lomborg, 2017). All of these studies approach self-tracking from the perspective of pre-determined academic concerns that already frame the direction of the results. They highlight the ethical tensions surrounding data collection and ownership, consumer agency, privacy, surveillance and control. Evidently, these are important questions to consider when conducting research into the way individuals relate to the quantified self. At the same time, the results in these studies may not reveal thoughts and ideas of the research subjects beyond the borders of the researchers' concerns.

Another focus found in previous research is related more directly to the individual experiences and behaviors of users of self-tracking technology. Gardner and Jenkins (2016) studied users' understanding and interpretation the data as personal narratives of their experiences, using interviewing and subject observation techniques. Lynch and Cohn (2016) interviewed participants on their experiences with self-tracking techniques in a trial setup. Both reveal useful information on how individuals experience self-tracking as an empowering practice which facilitates self-knowledge and altered behavior. However, in these studies the research circumstances and lines of questioning were constructed by the researcher. For example, Parviainen (2016) conducted a netnographic study on

users of biomonitoring devices with a focus on the feedback loops they create. An interesting contribution from Kristensen and Ruckenstein (2018, p. 2) poses that self-tracking technologies create what they call a "laboratory of the self", a place where the self-tracking individual, the technological device and biometric data come together and co-evolve. Here, the researchers highlighted specific aspects of the quantified self that can be useful in understanding the overall way individuals relate to self-tracking.

Although the potential concerns of self-quantification seem evident, they are often overshadowed by a more positivist framing, focused on the potential opportunities attributed to the quantified self. This may contribute to the "data doxa", a term introduced by Smith (2018, p. 2) to describe how tracking data in Western society is considered not only normal, but even necessary and empowering. Fascination with data and established habits in the way technology is used, contribute to the normalization of continuously producing, collecting and sharing personal data. This is not only considered inevitable, but even constructive or helpful in everyday live. For example, when conducting an online search, we expect the results to be personalized, because we believe the search system should already have information on our personal preferences and circumstances, making the search more efficient. Likewise, the general myth surrounding self-trackers makes us think of them as devices that help us improve our lifestyles because it gets to know us through the data it collects, which allow it to give insights and suggestions for improvement. When people relate to data primarily this way, the more agentive and doubtful aspects of self-tracking are not touched upon. Processes of governance, self-exposure and data-imposed discipline are disputed aspects of our modern technology-driven lives. Meanwhile, the modern individual's attraction to data, the pursuit of "maintaining a virtual presence" (Smith, 2018, p. 12) combined with the arguable incapability of the data sharing economy keep us oblivious to the potential harm inflicted. Research suggests that habitual self-tracking has a familiarizing effect on individual's perception of sharing personal information, making them more prone to self-disclosure in other areas of life (Maltseva & Lutz, 2018). This finding shows how the quantified self relates to the overall context of big data, the mass collection, storage and application of data made possible by technology in modern societies (Kappler, Schrape, Ulbricht, & Weyer, 2018). Social scientific researchers express their concern for the social implications of datafication of many aspects of modern life. This development is said to lead to a culture of constant real-time feedback, control and regulation, as the data can be directly used to monitor and impact an individual's behavior (Kappler et al., 2018). In the context of this research, the data doxa perspective on data tracking may play a significant role on the way self-quantification is represented by those actively involved in the practice.

Gilmore (2016, p. 2525) combines several of these perspectives in his 2016 article, exploring the societal implications of the increasing prevalence of wearable fitness technology and the

quantified self. He describes wearable technologies from the overarching perspective of "everywear", portable technology that is worn or carried on the body. He concludes that it is too simplistic to approach the quantified self from either the perspective of empowerment and self-knowledge, or governance and control, exclusively. Instead, he claims that a multi-faceted understanding is needed to grasp the meaning of these technologies, which involve the complex internal and external processes for individuals involved in self-tracking. Gilmore (2016) concludes that self-tracking enables the integration of a qualitative and quantitative experience of everyday life. Nafus (2016) takes a similar position, approaching self-tracking from an anthropological perspective in the wider context of biosensing technology. Nafus (2016) calls for a less individualistic understanding of self-tracking, explaining how self-tracking is constituted by a broader context of "technology design, regulatory frameworks, cultural habits, academic thought, individual experience, and so on", as Lomborg (2017, para. 10) summarizes in his review of the work. Evidently, the quantified self is a complex topic that has captured the interest of researchers from different disciplines. What they collectively show is that the perceived opportunities, risks and societal implications vary, depending on the lens through which it is observed. My research contributes to a possible literature gap because it studies the experience of self-tracking through primary data generated by self-trackers which is more natural than data drawn out through interaction with researchers. By studying how self-tracking is combined with conscious digital self-construction, the research draws out the aspects of self-tracking most prominently experienced and represented by the individuals who make use of these technologies in everyday life and choose to integrate it into their digital representations of self.

1.7   Research question

Based on the increasing social relevance and on-going academic discussions surrounding the quantified self, the following primary research question was formulated: "How is self-quantification integrated into digital self-representations of personal bloggers?". The main concepts in the research question are digital self-representations in the quantitative and written form, the quantified self and personal blogs. To answer the research question, it is broken down into the following sub-questions:

- How do personal bloggers describe their experiences with the quantified self in relation to their identity?
- What themes or aspects of the quantified self do personal bloggers highlight in their narratives?

1.8   Thesis structure

In the following chapter, a theoretical framework is established using previous academic works on the quantified self and personal blogs. The literature gives an in-depth explanation of the interrelation of technologies and the construction of identity. The methodology chapter describes how the research was conducted using a constructivist grounded theory approach to qualitative content analysis. In the results section, the main themes found in the dataset of blogs are discussed in relation to the research question and sub-questions. Finally, the main conclusions and several limitations and future recommendations are discussed. A full list of references is found at the end of this thesis. The dataset and codes used in each step of the analysis are attached in the appendices.

2   Theoretical framework

The following chapter explores current academic literature on the quantified self and the digital construction of identity. Foucault's technologies of the self, and the concept of the extended self, serve as a lens to frame the research. The literature reveals some of the motivations, underlying beliefs and implications for personal identity of individuals involved in self-quantification. Personal blogs are argued to be a paradoxical stage of both genuine self-expression and deliberate impression management.

2.1   Technology and identity

2.1.1   Technologies of the self

In this research the theory of *technologies of the self*, as conceptualized by Foucault (1988) is used to understand how individuals use technology for self-optimization. Technologies of the self can be understood as techniques that allows the user to make an impact on themselves, both physically and mentally. In his discussion of Foucault's work, Elliott (2013) explains how this concept can facilitate discussions on practices of self-construction. This perspective holds individuals to be self-focused in their pursuit of stylizing and improving themselves. Elliott (2013, p. 101) remarks that from Foucault's perspective, self-realization can be achieved as an individual pursuit of what he calls "self-control and self-mastering". He rejects the idea of knowledge and rationality as liberating, the same perspective often used to argue in favor of self-tracking. Instead, he argues this same rationality to facilitate an on-going struggle for power and control (Elliott, 2013). In relation to technologies of the self, Foucault links the concept of governmentality, taking control and ownership over the construction of the self, including the physical body. Elliott (2013) includes the perspective of sociologist Turner (as cited by Elliot, 2013, p. 104), who describes how individuals make use of technologies of the self, specifically monitoring and controlling the diet, to optimize the physical body. It becomes clear how the quantified self matches what is defined as a technology of the self. Elliott (2013) continues to link technologies of the self to technological innovation, describing how new technologies give individuals new ways to collect data and monitor the physical body as a means of self-construction. This theoretical framing sheds light onto the relationship between self-tracking technologies and the formation of personal identity.

A second theoretical perspective that can be useful to understand the interrelation between technology and identity, is Rettberg's (2014) work on three modes of digital self-representation. This perspective is particularly useful because it categorizes different self-construction techniques, which helps us see the connection between the personal blogs and quantified self. The written, visual and

quantitative self-representations according to Rettberg (2014) can be considered technologies of the self that are used by individuals to control their constructions of self-identity. The written self-representation can take the form of diaries or blogs, as used in this research. The visual self-representation consists primarily of photographs of oneself, which are also frequently shared on blogs. The quantitative self-representation Rettberg (2014) adds a third way for individuals to use technology for self-monitoring and self-control driven by a compulsion for optimization, leading to a digital representation of self. We can see how both the quantified self and personal blogs could be observed as technologies of the self, as both are practices individuals engage in that contribute to an active construction of self-identity. In her theory, Rettberg (2014) reveals how personal blogs and the quantified self relate to each other and share certain similarities, which are useful to understand the different concepts in this research.

2.1.2   The digitally extended self

Belk (2013, p. 277) introduces a concept that helps us understand technologies of the self in relation to social sharing. He describes this as the "extended self" which is applied to our interactions with technology and digital environment. The author notes how humans consider their digitally shared content and narratives a part of their self-identity (Belk, 2013). Therefore, when bloggers in this research write about their experience with self-tracking, this can be seen as a part of the extended self. The act of writing and publishing their stories adds a dimension of sharing with an "other", a real or imagined audience. Not only socially shared information, but also personal data or technological devices themselves can be perceived as an extension of the self (Belk, 2013). Parkinson, Millard, O'Hara and Giordana (2017, p. 5) argue that there is a broad range of terms used in research inconsistently to describe the digitization of personal data. They propose the term "the digitally extended self" to most completely represent the different digital elements of an individual's identity. This makes it particularly interesting to study the accounts of the quantified self written in personal blogs, because it could give insight into the way individuals take their privately collected quantitative self-representation and make it a part of their public digitally extended self. The work of Parkinson et al. (2017), Rettberg (2014) and Belk (2013) combined show how the construction of identity is an interaction between an individual and his or her environment, rather than being constructed individually. Blogging and self-tracking are both practices that cannot be understood as stand-alone activities. There appears to be some inter-relation between personal identity, the blogs used in this research and the act of self-tracking.

2.2   From the Quantified Self to everyday self-tracking

2.2.1   The Quantified Self movement

To answer the questions raised in this study, we need to be familiar with the origins of the quantified self as a concept. Human beings have historically turned to quantitative data to gather information on their personal lives, habits, finances, and life events with whatever means of recording available to them at the time (Rettberg, 2014). Consumer devices that automatically or with permission track this type of data have simply made it easier (Rettberg, 2014). Lee (2014) provides a comprehensive overview of the quantitative self-tracking and its background. In the author's terms, the quantified self "involves extended tracking and analysis of personally relevant data" (Lee, 2014, p. 1032), framing the quantified self as collecting data on a broad range of dimensions. He explains how the technologies that make the quantified self possible, the public and the scientific interest are all on the rise. An actively involved quantified self community exists, with the formation of support organizations and websites, online discussion forums, and in-person meetings organized globally. American authors Gary Wolf and Kevin Kelly, enthusiastic about the potential of self-tracking technology, were first to define it as what they called the "Quantified Self Movement" (Nafus & Sherman, 2014, p. 1785). Wolf (2010) describes the quantified self as a way for humans to live a data-driven life. His position is that tracking data on his life allows him to make rational and informed decisions. Over time, technological developments have made it increasingly accessible for people to track data on their lives. In the article, Wolf predicts that self-tracking will become the standard for human beings in the near future. With his words, "(…) soon everybody is going to be doing this, and you won't even notice", Wolf (2010, para. 15) highlights how people may be unaware of the data that they are collecting on themselves. Wolf (2010) bases his claim on four fundamental developments that make a widespread integration of self-tracking possible: The availability of increasingly small electronic sensors, the fact people carry mobile phones and other computer devices, the social media culture that got people used to sharing information and the upsurge of cloud computing. Since these predictions made in 2010, self-tracking has indeed become more accessible and commonplace. Considering both the potential impact and widespread integration of these technologies bring up new questions about how people beyond this dedicated Quantified Self community relate to technology and self-tracking data.

2.2.2   Characteristics, motivations and underlying beliefs

Despite these developments and self-tracking becoming more commonplace, it can still be considered a trend that has a particular appeal to individuals with a specific set of characteristics and motivations. A 2018 study into the psychological profile of self-trackers analyzes them using the popular Big Five model, which describes personality based on five scales: "Extraversion,

agreeableness, conscientiousness, emotional stability and openness to new experiences" (Maltseva & Lutz, 2018, p. 104). The results show that self-tracking can be linked with conscientiousness (which includes traits like self-discipline, organization and responsibility) and emotional stability (Maltseva & Lutz, 2018). The same study shows that individuals engaged in self-quantification are more likely to self-disclose through other means, measured in this study by the willingness of participants to answer to unrelated questions of a personal nature. Moreover, habitual self-tracking may have a normalizing effect on disclosing personal data, making these individuals more likely to share other information not related to the quantified self (Maltseva & Lutz, 2018). Self-quantifiers are also relatively trusting in institutions, which may be required for one to entrust their personal data within a device or application. Those who are more aware of privacy concerns may be more selective in the technologies they use (Maltseva & Lutz, 2018). When asked for their motivations for self-tracking, responses frequently relate to self-improvement and taking control of one's own life (Maltseva & Lutz, 2018). A similar study by Lupton and Smith (2017) confirmed that the ideals of self-improvement and self-control are driving motivators, although they add the third motivator of recognizing patterns to help reaching goals. Here, these motivators are considered agential capacities which facilitate self-tracking. The underlying belief that was identified, poses self-tracking as a means to exert responsibility over one's own life, avoiding risk and chaos. On the other hand, less progress-driven uses of self-tracking technologies have been marked in the form of emotional engagement. Users have articulated a sense of enjoyment or playfulness from self-tracking, both through the social competitive aspects of some applications and through achieving individual goals (Weiner, Henwood, Will, & Williams, 2017). Additionally, self-tracking is described as a way to establish and maintain an "athletic identity" (Weiner, Henwood, Will & Williams, 2017, p. 17), involved in a community of like-minded individuals. Accoding to Lupton (2013), this desire is embedded in the sociocultural trends of healthism, a fixation on personal health and taking one's reasonability to control the state of the physical body. She adds that, in this line of discourse, those who fail to take responsibility for obtaining good health are perceived as less-ideal citizens or morally deficient. Performative behavioral ideals, working towards what is considered the perfect body and functional health are framed as a moral self-responsibility to apply control and surveillance to the physical body (Depper & Howe, 2017). The underlying beliefs and motivations held by self-trackers could play a role in the way they represent their practices publicly. If using quantified self technologies alone is already a way to connect to a certain desired identity, blogging about this practice has the potential to serve a similar purpose of displaying alignment with these cultural trends.

2.2.3   Data-driven progress

Rooksby et al. (2014, p. 1163) introduce the "lived informatics perspective" as a way to understand the quantified self. From this perspective, those engaged in the quantified self are not relating to the data in a strictly rational way. Instead, self-tracking is seen as a socially constructed activity. The way users relate to the data and subsequently alter their behavior are based on context. Despite the notion that not all those engaged in the self-tracking will actually make more rational decisions, change their behavior or improve themselves presented in the lived informatics perspective, research does suggest self-quantification have potential to lead to positive changes in its users. Lee (2013) makes suggestions on how the potential of quantified self technology can be used to improve education by optimizing the potential of students both in and out of school. More common in academic literature is the link between the quantified self and healthcare. Bottles (2012) lists a number of cases that highlight the impact self-tracking can make in healthcare. The author shows how these developments are significant for the healthcare industry and gets his readers thinking about what other possibilities might be. These are merely examples from an extensive body of research on progress made by self-tracking. The "progress narrative" (Rettberg, 2014, p. 31) that both users and researchers appear to relate to, is actively reinforced by the large majority of self-tracking applications. The applications almost universally include gamification elements, borrowed from video games to give the users a sense of continuous progress towards an improved self. Whitson (2013) explores self-quantification in the context of gamification used to drive behavior change in people. Areas of change again include health, fitness and education, but also bring new ideas like personal productivity and consumer loyalty (Whitson, 2013). In this research, it will be interesting to observe whether and in what way the progress narrative might frame how the bloggers understand their use of self-tracking technologies.

Aside from the progress or optimization perspective, the usefulness of the self-tracking can also be observed from the stance of the scientific researcher. Quantified self technologies are significant to scientists in many different fields because they can grant unique access to accurate and large-scale biometric data. A recent publication of sleep data by Fitbit's team of data scientists, based on 6 billion data points, reveals just a fraction of what might be learned from the data (Pogue, 2018). The author remarks that classical sleep studies either measure sleep in a set-up experimental environment or are based on self-reporting, both methods scrutinized for their inaccuracy. Arguably, the automatically tracked data from fitness bands is a rich resource of new data for researchers. While the accuracy of this data, as compared to clasically constructed sleep studies, has certain limitations, it does give access to an entirely new and extensive dataset. Swan (2013) agrees that individuals engaged in self-tracking contribute to a revolutionary body of big data on biological, physical, behavioral and environmental facts on human beings. However, it should be noted that the

overrepresentation of Western societies in such studies can be problematic. Too frequently, the role of those in developing nations in digital activity and the generation of big data is minimized in scholarship (Arora, 2016).

2.2.4 Everyday self-trackers

While a dedicated Quantified Self community exists, self-tracking has become more widespread and accepted by the casual user in the form of wearable electronics. In this category are products including smartwatches, wristband sensors, mobile phone applications and monitors and sensors in the home environment (Swan, 2012). This supports Wolf's (2010) prediction that self-tracking will be normalized in civilization. The dedicated niche of the Quantified Self Movement remains a specific group of individuals who are highly aware and knowledgeable about the data they are collecting. This group of people is involved in what Rooksby, Rost, Morrison and Chalmers (2014, p. 1167) categorize as "documentary" or "diagnostic" tracking, with the intention of creating a long-term and accurate quantitative self-representation. The individuals analyzed in this study are not decisively part of the dedicated members of the Quantified Self movement but can be more casual or lay users of the technology. This group often only tracks data temporarily and in relation to a personal goal (Rooksby et al., 2014). But they are conscious of, and might make decisions based on, the personal data presented to them on their mobile phones, fitness trackers and smartwatches. In a critical publication, Didžiokaitė and Saukko (2017) argue that the term "the quantified self" is limiting and cannot be used to accurately describe what they call everyday self-trackers. They confirm the clear distinction between active members of the Quantified Self community and the ordinary individual who may track personal data. What sets these self-trackers apart from the Quantified Self community is that they often track for more modest goals as opposed to the "biohacking" narrative found in the Quantified Self community (Didžiokaitė and Saukko, 2017, p. 1474). Furthermore, the research subjects in this study treated their self-tracking technology (in this case a calorie tracking application) as an authoritative tool, determining for them how many calories they should consume. Finally, self-tracking did not lead to greater self-knowledge, but just more awareness of the calories in food and short-lived lifestyle adjustments (Didžiokaitė et al., 2017). As technologies develop and self-tracking becomes more widespread, individuals begin collecting quantitative data on a wide variety of measurements. The majority of self-tracking described in the literature appears to be related to health and the physical body. This could be related to the origins of the quantified self in sports and fitness (Ruckenstein, 2014). Units of measurement include weight, food and water intake, physical activity and sleep. However, self-tracking can also involve less tangible data such as emotions, time tracking, productivity or habits (Rettberg, 2014).

2.2.5   Limitations of self-tracking

New technologies never come without their drawbacks and points of criticism. In the case of self-tracking, the digital divide is a limiting factor that determines which individuals have access to the technology needed to engage in this behavior. Lupton (2013, p. 398) remarks this, stating that "socio-economic status, geographical location, disability, lack of skills or (…) unwillingness to learn about digital technologies" are factors that limit access to self-tracking technology to a privileged group of individuals. This is well-illustrated in the aforementioned Fitbit sleep study. The dataset used in this research still only includes subjects who were capable of buying and using the wearable device (Pogue, 2018). Pedraza (2013) tells us that not only the access to, but also the need for self-tracking devices is limited by the digital divide, by insightfully referring to Maslow' pyramid model of human needs. Maslow (as cited by Pedraza, 2013) theorized that human beings must first fulfill their basic needs for survival and safety. Second come the social needs for human connection and belonging. Only when those two are fulfilled comes self-actualization, the need for optimization of the self, finding fulfillment and living up to one's potential. Those on the unfortunate end of the digital divide, perhaps in lower-performing economies, have the more pressing needs for basic survival and social position to be concerned about. Pedraza (2013) argues that in Western economies the most basic and social needs are sufficiently fulfilled, making room for self-actualization and technologies of the self as a new pastime and fruitful economic market.

A second set of critical issues comes from the fact that self-tracker collect and store data of a personal and private nature. This raises questions about privacy, intimacy and ethical concerns that are come into play when discussing the quantified self (Lupton, 2013). According to Lupton (2013), the privacy and security protection of personal digital data is currently inadequate. In a later work, Lupton (2014) explains this as a result of commercial applications and devices used for self-tracking that may not store and use the data in the users' best interests. When personal data of self-trackers is shared to external parties, to the knowledge of the user or not, the user becomes a prosumer according to Millington (2016). The author draws this conclusion in light of what he calls the "second fitness boom" (Millington, 2016, p. 1184), a commercialization of health and fitness which manifests in the sale of products like fitness videogames, applications, fitness trackers and other wearables. According to the author, this phenomenon is characterized by an interaction between humans and technology that generates large amounts of data. Furthermore, the consumers are encouraged to customize the data and take part in larger data-sharing social networks. This shows how health and personal fitness have become commodified by, amongst other things, self-tracking apps and devices. Some authors link their concerns to a commercial interest driving a need for self-optimization in the first place. In 2013, Mehta described a future world in which customers willingly collect and share first-party personal data with marketers to use at their own disclosure (Mehta, 2013) . Schwartz

(2018, para. 7) agrees in her critical piece on self-improvement culture, stating: "We are being sold on the need to upgrade all parts of ourselves, all at once, including parts that we did not previously know needed upgrading".

Another point worth noting is what Sharon and Zandbergen (2016, p. 1696) critically refer to as "data fetishism". Their research suggests that the perception of objectivity and power found in self-tracking is limiting. It has the potential to create a discrepancy between quantifiable data and the real, embodied experience of everyday life, often placing more value in the former and reducing the perceived value of the latter. While this was remarked primarily with the highly involved Quantified Self Movement in mind, the authors draw from Morozov's (2013) more general observation of a societal inclination towards an increased trust in data as an optimizing tool for all aspects of everyday life. Moore and Robinson (2016) illustrate this in their study of self-quantifying techniques used in the workplace, where workers feel an increased pressure to perform and a sense of being objectified as a means of producing labor. Altogether, we can see how self-tracking has transitioned from a niche Quantified Self community to a more widespread practice by consumers, with both potential for personal progress and limiting factors. Because this research focusses on the everyday self-tracker, it may be interesting to observe what role these factors play in the way the research frame and relate to their personal self-tracking practices.

2.3   Personal blogs

2.3.1   Characteristics and motivations

Where the previous section focused exclusively on the quantified self, it is equally important to understand the history and development of blogs and how they relate to the construction of personal identity. Personal blogs are a category of weblogs that involve the author describing their personal life experiences (Chia, 2012). The online network of blogs is sometimes referred to as the "blogosphere" (Chia, 2012, p. 427). To study any form of communication, it is useful to understand who created the text and with what intention. In their 2008 study on blogs, Jones and Alony (2008) found that blogging is done to fulfill seven personal needs: Self-expression, recognition, social contact with both existing and new relationships, introspection, sharing knowledge and interests, documentation and artistic activity. Because of their personal nature, personal blogs are argued to play an important role in the identity and experience of life of the bloggers writing them, according Chia (2012). This tells us how personal blogs can come to be experienced by the blogger as a digital extension of self, as conceptualized by Belk (2013). He confirms how on blogs and other personal webpages, the creators are involved in a constant process of self-reflection and - representation. In the words of Belk (2013, p. 484) "It [appears] that we now do a large amount of our identity work online".

According to Nardi, Schiano and Gumbrecht (2014), blogs are often classified as online personal diaries or journals, written in the same informal narrative style. However, it can be argued that, because of their public nature, personal blogs have a different function from traditional diaries or personal journals. The authors claim that blogging is a social act, a way for the blogger to broadcast his or her story uninterrupted and to "think by writing" (Nardi, Schiano & Gumbrecht, 2004, p. 225). Stein (2013) provides a particularly pessimistic point of view on the digital representations of the self that millennials, born between 1980 and 2000. In his work, Stein (2013, p. 2) claims that millennials in Western culture make use of what he calls "selfish technology". Interestingly, the author names both self-sharing on social media and the quantified self as examples to illustrate this. What he is hinting at, is the way these individuals use blogging technology as a tool for active self-optimization, in this case the digital extension of the self. Elliott (2013) similarly emphasizes how using technologies to construct a self-narrative is an individualistic pursuit. While blogs are essentially a tool for the blogger to communicate to the reader, from this point of view they are used with a primary focus on the self. This shows that like self-tracking, we could understand personal blogging in terms of Foucault's conceptualization of technology of the self (1988).

Still, the social aspect of blogging should not be underestimated. Blogs are, after all, a form of communication to an audience that is intended to perceive the text a certain way. Blogs are not only read by the audience but can also lead to interactions between the author and the audience. Rokka and Canniford (2016, p. 1803) introduce the concept of "microcelebrity logic", which is the generation of attention capital that takes place through digital self-narratives like blogs and social media. According to them, attentional capital is form of currency that consists of online attention in the form of "shares, follows and likes" (Rokka & Canniford, 2016, p. 1803). The authors rely on Instagram to support their findings, but the conclusions are easily transferrable to other social sharing platforms or blogs. For example, many online guides exist to give bloggers tips and tricks on growing their online following or obtaining a higher level of engagement (Bharath, 2015; Connell, 2015; Si, 2015). The pursuit of attention capital might now be thought of as an additional motivator that plays a role in a bloggers' practices. Microcelebrity logic is important to be aware of in this research because it could shape the way bloggers represent themselves. This involves not only by the internal experience of the author, but also a desired perception and reaction from the audience.

2.3.2   Blogs as a staged performance

If we consider blogging not as a form of pure self-expression but as a social act, intended to provoke a certain reaction from the audience, a distance is implied between the private experience of the individual and the version of the self represented in the blogs. Here, Goffman's dramaturgical understanding of social interactions can offer a useful perspective. What makes personal blogs

unique is that bloggers have complete control of how they represent themselves through content on the blog (Trammell & Keshelashvili, 2005). According to Papacharissi (2002, p. 654), personal websites are used to "stage an online performance through which the individual's personality or aspects of it [are] revealed". With these words, he shows how blogs can be linked to Goffman's ideas of staged performances. In Goffman's dramaturgical perspective, social interactions between individuals are a series of staged performances. People use performances for impression management, an attempt to convey their perspectives and interests to the other (Goffman, 1959). Goffman (1959) differentiates between the front stage, the public appearance, and the back stage, which takes part in the private setting of an individual. While performances in the front stage are determined by the social construction of the role and setting an individual is in, the back stage is considered more authentic. In the early years of the internet, it was argued that electronic communication brings people a new medium through which to perform their identities (Miller, 1995). One common understanding is that in personal blogs, bloggers give the audience a glimpse of their back stage. Personal blogs appear to be relatively authentic self-representations. However, personal bloggers also make use of impression management strategies, to carefully craft the impression of themselves that they convey to their audiences (Trammell & Keshelashvili, 2005). Bullingham and Vasconcelos (2013) add that blogs are in the end a front stage setting, where bloggers create a persona that represents an edited version of themselves. This does not mean that personal blogs are entirely lacking in legitimacy. Bloggers often interact with either existing or new social contacts and are motivated by a need for social recognition. As such, it would not be sustainable for a blogger to represent a completely deceptive version of the self (Jones & Alony, 2008).

These insights into the characteristics and motivations of bloggers have significant implications for my research. They bring to attention that, while personal blogs might appear to be authentic representations of the authors inner life, in practice representations are selective and carefully manufactured but still may show something of a true self at its core. Knowing this, one of the challenges in this study is to draw out these moments of authenticity and see how those interact with impression management strategies and the prospect for attention capital that could influence how the bloggers represent themselves. At the same time, this adds a valuable angle to the research. Precisely because bloggers actively choose to construct their written self-representations a certain way, this study allows me to observe how they willingly make self-tracking part of their digital identities. Combining the quantified self with blog research has the potential to reveal which aspects or themes the blogger considers desirable to adapt into his or her digital self-narrative.

2.3.3   Commercialization of blogs

Aside from the dramaturgical perspective, which shows us that a bloggers' internal motivations can have an impact on the content of a blog, there are also external forces that may have some influence. One such factor is the growing commercial interest in blogs. Rokka and Canniford (2016) made it clear that attention capital brings a financial interest to personal blogging. Chia (2012) agrees that the blogosphere is increasingly commercialized. Personal blogs are forms of user-generated content (UGC), the result of consumer participation in the creation of online content (Chia, 2012) that can be and is exploited for profit. For business, this is valuable because UGC displays a product or service to a relatively large audience, without requiring much effort from the business. Instead, the content is created for free by the consumer. One particular strategy marketers use to capitalize on the potential of UGC is generating electronic word-of-mouth (eWOM)[1], which is considered a particularly useful way to engage a modern audience. Electronic word-of-mouth can be perceived as a credible source of information and impact consumers' evaluation of brands and products (Wu & Wang, 2011). When considered credible, eWOM can also impact consumer's purchase intentions and behavior (Jiménez & Mendoza, 2013). In the context of the research, a blogger sharing his or her personal experience with a quantified self technology, like an app or other product, could be considered eWOM. Marketers in diverse industries are aware of the impact that online blogs and reviews have on the public perception of their brands, services and products (Scott, 2015). Because of their personal nature, audiences consider information on personal blogs to be more credible than traditional media (Frey & Osborne, 2017). With their strong impact on their audiences, blogs have attracted the attention of marketers, who set up collaborations with bloggers for marketing campaigns (Liljander, Gummerus, & Söderlund, 2015). Bloggers who advertise products or services in their content engage in prosumption, the combination of consumption and content generation (Millington, 2016). Personal bloggers create economic value because of the amount of attention and influence personal bloggers potentially make on their audiences (Chia, 2012). In recent years, there has been a growing concern about the ethics of advertised content in personal blogs and the way advertising is disclosed. While regulation for advertising on traditional media is already in place, advertised content in blogs and social media remains a grey area for policymakers (Pollitt, 2015). In the United States, the Federal Trade Commission has issued an endorsement guide, which addresses paid sponsorship and product endorsements in blogs. While the guidelines are based on legislation which bans deceptive advertising in general, this guide consists of guidelines rather than

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[1] Electronic word-of-mouth (eWOM) refers to the personal experiences with products and services consumers share using digital communications technologies, including blogs (Wu & Wang, 2011).

hard laws. Bloggers who do not comply with the regulations to inform readers of advertised content are not actively monitored, but in theory run the risk of facing legal consequences for deceptive advertising (Federal Trade Commission, 2015). This means that bloggers, particularly those with a higher level of engagement and therefore more economic value for marketers, potentially receive financial compensation for their work. This could be in the form of a direct paid partnership. More commonly, blog posts can contain affiliate links or advertisements that provide the blogger with a compensation when it leads to a purchase, which could impact the way they represent their opinions and experiences. The result of these developments is that personal blogs have altered in their nature over time. Commercial forces have now become a part of the way personal bloggers construct their online identities that is not to be overlooked.

2.4   Conclusion

In conclusion, both quantitative and written digital self-representations can be considered technologies of the self in that they are techniques used for self-monitoring and self-optimization. By involving the quantified self in their narratives, personal bloggers make the quantitative self-representation a part of their written self-representation and public extended self. The perceived benefits and risks involved could contribute the way users relate to the technology. Personal blogs used in this research should be understood as a social act, used to communicate identity to the readers, influenced by social expectations and commercial interests. The way self-quantification is integrated in narratives on personal blogs shows how individuals adapt the quantitative self-representation in the self-narrative they carefully craft to share with the world. However, since self-expression, social contact and documentation of everyday life are key motivators for bloggers, personal blogs can at the same time reveal glimpses of the authentic experience of the blogger.

3   Methodology

The Methodology describes the design of the study using a grounded theory style approach, starting with the rationale and particular points of attention when using blogs for qualitative research. Then the sampling strategy and operationalization of key concepts are described. This chapter outlines the steps that were taken to collect, store and analyze the data. Finally, concerns about researcher reflexivity and ethics are addressed.

3.1   Research Design

3.1.1   Qualitative Content Analysis

The research is done using qualitative content analysis method. Qualitative content analysis is a systemic way to derive meaning from qualitative data (Schreier, 2014). Qualitative research methods are most suitable to give in-depth insight into the research material. In this study, the aim is to reach a deep understanding of the way personal bloggers describe their experiences with self-tracking technology. This makes a qualitative content analysis the most suitable method for studying blog posts (Brennen, 2017). The analysis was based on constructivist grounded theory approach. This style of analysis is considered useful for the methodological analysis of social behavior and phenomena (Glaser & Strauss, 1967). Grounded theory analysis was introduced with the rationale that theory should not be imposed upon data. Rather, explanations can emerge from the ground up in an inductive approach. A major argument for the grounded theory approach was originally that the data is analyzed relatively free from theoretical bias or pre-conceptions (Glaser & Strauss, 1967). However, the constructivist approach to grounded theory acknowledges that researchers can never be entirely uncontaminated by pre-conceptions and particular lines of interest in the research topic. Rather than believing a single version of reality exists and can be drawn out through research, it considers the research a process of meaning-making, leading to the construction of an understanding by the researcher (Clarke, 2003). I have selected this approach to content analysis because it emphasizes both rigorous systematic analysis and researcher reflexivity. While several variations of grounded theory analysis exist, I chose to follow the widely used outline for this approach to analysis by Strauss and Corbin (1990), which describes the following procedure: After the data is collected and the researchers it thoroughly emerged in the data, three rounds of coding follow. The open, axial and selective coding build upon each other, leading to the development of several final categories supported by the codes. This is an inductive methodology to systematically group together pieces of the data into overarching themes within the text (Strauss & Corbin, 1990). Each stage of analysis is documented in detail in the analysis section.

The aim of the research was to reveal which aspects of the quantified self the bloggers choose to discuss in their content and how they frame it. Current academic work available on self-tracking often takes a focus on either ethical or moral concerns or user experiences and behavior, framed by a specific theoretical concept, perspective or topic list chosen by the researcher. The approach used in this study gives new insights into the way users describe their experiences with self-tracking in their digital narratives with limited theoretical bias. An additional strength of this methodology is that unobtrusive observation leads to more authentic results because reactivity, altered behavior in the subjects because they know they are being researched, is avoided (Babbie, 2013). A cross-case analysis helped to discover recurring patterns in the data across different cases of personal bloggers (Babbie, 2013).

3.1.2   Blogs in qualitative research

Personal blogs present a unique chance to qualitative researchers for a number of reasons. First, they are easily accessible and give researchers the potential to reach individuals that were previously difficult to contact (Wilson, Kenny, & Dickson-Swift, 2015). Blogs give bloggers a freedom of expression on a wide range of topics and the amount of blog content available online is growing explosively (Jones & Alony, 2008). Blogs can be described as naturalistic, because the data is already created in its textual form and does not need to be altered by the researcher (Wilson et al., 2015). Second, personal blogs often contain rich and in-depth information of a personal nature (Jones & Alony, 2008). Their often descriptive nature make them align well with qualitative research (Wilson et al., 2015). Third, blogs are primary data that is not affected by the researcher in its creation (Jones & Alony, 2008). In his 2008 guide to qualitative research in personal blogs, Hookway (2008) notes that blogs are particularly valuable to social researchers in the fields of media and the social sciences because they provide insight into the way bloggers choose to represent themselves in their digital self-narratives (Hookway, 2008). It is argued that the relative anonymity, as opposed to face-to-face contact, make blogs form of candid and authentic information (Hookway, 2008). While this research focusses on the discussion of the quantified self in the blogosphere, it could likewise lead to interesting insights on practices in the blogger subculture as a whole.

While blog research is sometimes praised for its the authenticity and candidness of the data, there are several limiting factors that researchers should be wary of. Bloggers have been found to make use of impression management strategies to carefully craft a digital self-representation (Trammell & Keshelashvili, 2005). This makes it clear that blogs do not give entirely objective representations of the personal lives of bloggers. Rather, blogs show how bloggers choose to construct their extended digital selves. Personal blogs can be considered digital written self-representations that appear to be authentic views into the backstage of the author. The public

nature of blogs means they are carefully crafted self-representations subject to staged performances, tropes in the blogosphere, the pursuit of attention capital and the commercial interest in blogs that may limit authenticity. In addition, attention capital and the commercialization of the blogosphere may bring a financial interest to what is represented in blogs and how (Chia, 2012; Rokka & Canniford, 2016). While guidelines do recommend bloggers to be transparent about paid partnerships on their blogs, regulation in this area is still in development. For that reason, we cannot be sure of the extent of impact of commercial collaborations in a blog entry. Still, with a sufficient sensitivity that these factors may impact blog content, it is possible to reveal the recurring themes, thoughts and concerns in the data. Precisely because the blogs are used for the active construction of an extended self, it is possible to observe how these individuals choose to frame self-tracking as a part of their online identities.

3.2   Sampling

3.2.1   Units of analysis

The subjects in this research are a subset of individuals with specific socio-economic, demographic, psychological and motivational characteristics. This study focuses in on a particular group of people that area able to make use of new technologies and willing to share detailed personal information online. As found by previous researchers, bloggers tend to have a personality that is more open to sharing personal information, and more likely to be teenage or twenty- to thirty-year-old females from Westernized cultures (Nowson & Oberlander, 2006). Additionally, using self-tracking technology requires a certain level of skills and knowledge from its users (Pantzar & Ruckenstein, 2015), as well as access to the technology and an interest in self-tracking in the first place. An initial pre-examination of the research data confirmed these expectations. During the sampling process, I was careful to include blogs written by individuals who diverge from the expectations of this sub-culture for as much as they presented themselves.

3.2.2   Sampling strategy

Because no universally complete list of all personal blog posts about the quantified self can be constructed, the research relies on nonprobability sampling (Babbie, 2013). The sample was selected through a purposive sampling strategy, a type of nonprobability sampling, that requires the blog posts need to meet specific criteria to be relevant to the research question (Babbie, 2013). Because of the quickly evolving nature of both quantified self technology and the blogosphere, only posts that are no more than five years old were taken into the sample to maintain relevance. For the scope of this research, a sample of 50 blog posts was selected to allow for an in-depth analysis of the data. This sample was varied enough to offer different perspectives on the research question and

lead to data saturation. Because personal blogs are published online publicly, the risks of access to an insufficient number of subjects was limited. In summary, blog posts in the sample meet the following criteria:

- The post is posted on a personal blog;
- The post describes a personal experience with self-tracking;
- The post contains at least 300 words;
- The post is no more than 5 years old;
- The post is written in English.

3.3   Operationalization

In this research, the main concepts are the quantified self, personal blogs and the construction of identity. The concept of the quantified self is understood as keeping track of and/or analyzing data of a personal nature (Lee, 2014). Examples of topics that are considered a part of this concept are smartwatches, wristband sensors, mobile phone applications, and monitors or sensors in the home environment (Swan, 2012). Biometric technologies are technologies used for measuring data of the human body (Epstein, 2016). Self-tracking is sometimes used interchangeably with the term quantified self and refers to the voluntary tracking of biometric data (Lupton, 2013). Personal health technologies are technological devices or applications that are portable and allow the self-tracking of biometric data of a single individual (Fox, 2017). Personal blogs are defined as a specific category of weblogs that involve the author describing personal life experiences (Chia, 2012) or a self-narrative (Hookway, 2008). An indicator of a personal blog is that it is an individualized self-production (Duffy & Hund, 2015). Personal blogs can be more general or connect to one specific topic (such as running or fashion) but still be considered a personal blog when it is created a by a single individual. Blogs generally have an "about" page where this information can be obtained. This approach to selecting blog posts can lead to a sample of individuals writing from a diverse range of interests.

3.4   Data collection and processing

One of the main challenges in using blogs for research is that they are not created on a single platform, but instead spread over the internet, which complicates the process of data collection (Bornmann, 2015). In his guide to blog research, Hookway (2008) recommends a number of searchable databases of blog hosting services, but unfortunately many of them are outdated. Moreover, this method disregards privately hosted blogs, which is more accessible and popular today. While focused on fashion blogs, Duffy and Hund (2015) propose a more recent and workable

data collection strategy that is transferrable to the purposes of this research. Bloglovin' is an online platform that allows bloggers to create a feed of their blog posts. Bloglovin' is not a native host of the blogs, but a directory that contains outbound links to blogs hosted on any platform, making it relatively inclusive. The options to search for specific topics, filter by blog type, country of origin and popularity make it a useful platform to find and save relevant blog posts. Bloglovin' can only be used when signed in to an account. To prevent algorithmic processes to influence the sample that was obtained, I created an anonymous account to conduct a search. A second approach used by researchers to find blog posts on specific topics is a basic search engine search using the search keyword combined with the term "blog" (Murray et al., 2016). An attempt to use this approach using the Google search engine led to some relevant results, but very few from personal blogs (many results came from corporate blogs, news websites and quantified self information websites). To obtain the most inclusive sample possible, the Bloglovin' and the Google search engine methods were both used to create a single body of blog posts meeting the sample criteria. The data sample was searched for and collected using an incognito web browser to prevent any impact of personalized search results. No distinction between blog genres had to be made, because the data collection method helped to find relevant posts from any type of personal blog. Even if a blog is in a specific genre or more topic-driven, such as a health blog or fashion blog, it still qualifies as a personal blog (Rettberg, 2014). When a blog post was judged to meet all sampling criteria, it was adapted into the sample.

Table 3.1. Used search terms

Quantified self	Activity tracker	Fitbit	Jawbone
Self-tracking	Fitness tracker	Garmin	MyFitnessPal
Self-quantifying	Health tracker	Apple Watch	
Lifelogging	Sleep tracking	Apple Health	
Wearable	Mood tracking	Google Fit	
Smart watch	Food tracking	Samsung Health	

Generally, casual self-trackers do not use the term "quantified self" in their discourse. Therefore, a list of more realistic search terms to find relevant blog posts was constructed. Table 3.1 displays the search terms that were used. The search terms emerged from the literature in relation to the quantified self used in this research. Terms like self-tracking, lifelogging and wearable are more general terms related to the quantified self. Others, such as Jawbone, Fitbit, and MyFitnessPal are some specific examples of quantified self technologies that are widely used and appeared in the

literature. Aside from the posts, information about the blogger's identity, demographics and level of privacy protection was collected because these factors may play a role in the way the authors construct their identities. This was done with the knowledge in mind that bloggers tend to show an over-representation of certain demographic characteristics. The final dataset reveals that indeed most of the articles were written by white women, many of them in their 20's or 30's. Eight posts written by men were included and there were some articles written by older or younger individuals. While an effort was made to find a diverse group of bloggers, only five of them have a non-white ethnicity, aligning with what was predicted by research on blogger characteristics. The most notable blog genres found were general, fashion and beauty, health and food, mommy and sports. These themes again underline the predominantly female perspective found in the blogs. The bloggers range from full-time professional bloggers to researchers, students, housewives, health or fitness professionals, and professionals in various occupations who blog as a side activity. In the sample are some bloggers who may be considered part of the Quantified Self movement, but the majority are everyday self-trackers. Surprisingly, the data search resulted in finding a community of people engaged in pen-an-paper self-tracking. Lupton and Smith (2017), prominent researchers in the area of the quantified self, confirm the prevalence of self-trackers using non-digital techniques to collect and store data. Because these posts technically meet the sample requirements and definition of self-tracking, they were included in the sample.

The search and collection of data took place between the 1st and 11th of March 2018. A table of the search results, with for each result a reference number, pseudonym, direct link and details on the blog (such as genre and demographics), was created in Excel, as recommended by Snee (2010) in her guide for blog analysis. The blog posts were scanned to determine whether they fit the selection criteria. Only posts that met the criteria were kept in the dataset. When posts by the same blogger appeared in the search results, the most recent post only was taken into the sample to have the most current data. Personal articles that were written for any other website than a personal blog, were also excluded. A complete table of the dataset is attached in Appendix A. The most manageable way to process and analyze blog data is by using a specialized software. The data was processed using the Atlas.ti software, which is designed specifically for qualitative analysis of data (Friese, 2014). To enter the data into the software, the blog posts were saved from a web browser as a text file. The text was studied in a qualitative manner, meaning context and the relationships between elements of the text are considered. Both the text in the blog posts as the images will be included in the analysis, as recommended by McKenna et al. (2017).

3.5   Analysis

3.5.1   Open coding

Table 3.2. Sample open codes

Extract	Coded for
"A smartwatch can track the time and quality of your sleep, which can help to improve your sleeping behavior."	Improving quality of sleep
"Being a mom, I guess I find this fascinating as no two nights of sleep are the same."	1. Being a mom 2. Being fascinated by the data
"Do you have a fitness tracker? Let me know all of your favorite ones in the comments!"	Asking readers to leave comments

The first phase of grounded theory analysis was immersion in the data, meaning the data is carefully read multiple times and annotated so the researchers knows the data well and is able to think of the text critically (Strauss & Corbin, 1990). In this phase, I familiarized myself thoroughly with the dataset. The second stage of analysis was the generation of open codes. The open coding consists of identifying and labeling features of the text. Open codes are shorthand descriptions of data extracts, that can be either descriptive or interpretive and make sense to the researcher (Strauss & Corbin, 1990). In this phase of coding, I limited the amount of interpretation and focused on descriptions of the data. I found that a single data extract could sometimes be coded for more than one concept. Table 3.2 displays a sample of the open codes with corresponding data extracts. In total, over 1500 open codes emerged from the data. Following the recommendations for qualitative research in social media and blogs by McKenna, Myers and Newman (2017), the data was filtered to exclude some of the data not relevant to the research and make the coding process more practical. After merging overlapping and similar codes (such as "tracking sleep" and "sleep tracking"), I was left with a dataset of 1250 open codes.

3.5.2   Axial coding

Table 3.3. Categories and sub-categories

Category	Sub-category
Writing for an assumed reader	Interacting with the reader
	Informative content
	Commercial collaborations
Digital representations of the self	Self-descriptions
	Personal images
	What is tracked
	Products and techniques used
Reflection on the self-tracking phenomenon	Social context of self-tracking
	The purchase decision
	Adaption of new technology
The self-improvement journey	Undesired situation
	Desire for self-improvement
	Obstacles
	How self-tracking helps
Interpretation of quantitative personal data	Self-understanding
	Discrepancy between reality and data
	Personal Technology
	Results and outcomes

In grounded theory analysis as outlined by Strauss and Corbin (1990), open coding is followed by axial coding. In this phase of analyses, all open codes are grouped logically together into categories. The groups are given a name that can describe collectively the open codes that are grouped within it. In the axial coding process, the open codes remain separated from their original context on the blogs. Axial coding is also free, for as much as possible, from theories or theoretical concepts. The open codes are disassembled from their original to form an axis, forming a base of potential themes that can be connected back to theory and context in the following selective coding phase (Strauss & Corbin, 1990). Appendix B contains a complete overview of the axial coding, including sample open codes within each axial code. The axial coding helped me to cluster the open

codes into five categories with several sub-categories each, as displayed in table 3.3. I will briefly describe each category and sub-category.

The first category, W*riting for an assumed reader*, contains open codes that reveal something about who the blogger thinks their audience is and how they attempt to interact with the audience. In the sub-category *Interacting with the reader*, the blogger directly addresses the audience by answering reader questions or inviting readers to leave a comment on the blog post. The sub-category *Informative content* contains content that is either factual or advising. For example, a blogger may review a self-tracking device, list its features and assess the quality. Alternatively, the blogger could offer helpful tips to readers interested in self-tracking. This content seems to be intended to help the audience. The sub-category *Commercial collaborations* groups open codes that overtly inform the reader of advertised content or affiliate links.

The category *Digital representations of the self* merges codes in which the blogger reveals personal information such as *Self-descriptions* and *personal images*. Frequently, these are descriptions of the blogger's private life, personality and characteristics. Photos of the blogger and screenshots of the blogger's personal data are also included. The posts contained detailed descriptions of which technologies or devices the blogger users, and which data they track. The sub-category *What is tracked* shows that what the bloggers track ranges from the more common steps taken or sleep quality, to the very specific, like the frequency of migraines or the amount of time spent in prayer. Finally, they also discuss in detail the *Products and techniques used*.

In the category *Reflection on the Self-Tracking phenomenon*, the bloggers discuss the concept of self-tracking in general. They sometimes address the *Social context of self-tracking*, for example by describing how the phenomenon seems popular in their personal environment. They frequently describe *the purchase decision* for a self-tracking device, including the time and money investment needed to take part in self-tracking. The bloggers also included narratives of their *Purchase decision* Open codes in this sub-category relate to the contributing factors and justifications they provide for purchasing a self-tracking device, application or service. The sub-theme *Adaption of new technology* merges open codes related to the bloggers' acceptance of self-tracking. The codes grouped in this sub-category tell the story of the blogger being uncertain about self-tracking initially, but eventually having changed their minds. This sub-category reveals some initial hesitations and doubts towards adapting this new form of technology and an eventual change in opinions.

Next, I remarked a recurring storyline in many of the blog posts. Several of the bloggers used the expression "health and fitness journey" or some variation of this. This led to the creation of The *Self-improvement Journey* as a category. This journey starts with an U*ndesired situation*, such as being a "couch potato" or experiencing physical discomfort. Then they express a *Desire for self-improvement*. Some common examples of the expressed desire are creating better habits, living a

better lifestyle, or becoming a better version of themselves. The journey can have *obstacles*, in the form of a slipping motivation or busy life getting in the way. Finally, self-tracking is presented as a solution which keeps the blogger in control, motivated and on track, and they explain *how self-tracking* help them in the self-improvement journey.

The final category that I identified is named *Interpretation of quantitative personal data*. As opposed to the act of self-tracking in general, this category captures the ways they relate to the data collected by self-tracking on a personal level. The sub-theme *Self-understanding* shows how the bloggers discuss using the data to better understand themselves, their behavior and how their actions impact their lives. The articles sometimes reveal a *discrepancy* between the bloggers' own experience and the feedback they receive from their apps or devices. The sub-category *Personal Technology* captures the bloggers' acknowledgement that self-tracking is or should be a personalized act. The expression "finding what works for me" was found repeatedly, emphasizing that the blogger the blogger's personal methods for self-tracking may not be suitable for someone else. They also discussed the customization of the technologies, either aesthetically (choosing the strap color of a smartwatch) or functionally (setting up personal quantitative goals). Finally, this category includes the bloggers' description of the *Results and outcomes* of their self-tracking practices.

3.6   Reflexivity

3.6.1   Validity and reliability

The research method used, holds most validity in drawing conclusions about the subjects' digital *representations of* their experiences and identity. In the course of completing this research, it was important to be aware of a potential selection bias in the sample of online content. Brake (2014) writes that online content creators are often part of a privileged minority. This related to both access content creators need to technology and the fact that individuals with specific personal characteristics are drawn to the act of online content creation. The same argument can be made for the quantified self movement, which represents individuals with both a certain position in society and interest in self-optimization. Specifically, personal blogs are more likely to be written by teenage- and twenty-something women with a more open personality (Nowson & Oberlander, 2006). Essential in qualitative research is reflexivity, understanding my personal perspective and being aware of potential bias in the research. I am aware that this study is limited in its ability to fully reveal the actual interactions or views the research subjects have about the quantified self. Essentially, self-narrative bloggers publish private content in a public space. For this reason, it should be noted that bloggers are engaged in self-representation and impression management (Hookway, 2008). Knowing this, I was careful not to draw conclusions in my analysis about the full extent of thoughts and experiences of the blogger.

3.6.2   Ethics and anonymity

In designing this research, ethical concerns were likewise taken into account. In the case of a qualitative content analysis, questions of participant privacy, respect and well-being become most relevant (Flick, 2008). In their *Recommendations for ethical decision-making in internet research*, the Association of Internet Research Ethics Working Committee (2012) recommend researchers reflect on a number of ethical questions when conducting research with personal blogs. The research should not harm the subjects in any way. While blogs are published openly and there is an academic consensus that the data is public domain and therefore can be freely used for research (McKenna et al., 2017), the blogger may still perceive the content to be private (Ackland, 2013). Researching personal blogs could reveal sensitive information of a personal nature. Therefore, sensitive issues were carefully considered after data collection. To avoid unintended effects, the bloggers and names of the blogs are anonymized. Each blogger was given a pseudonym, which will be used to refer to them in the results and discussion section. Furthermore, sensitive aspects of the data can be protected paraphrasing rather than quoting original text. The bloggers in the sample who evidently prefer to stay anonymous, by not releasing personal photos, their names or other personal details, are paraphrased rather than quoted to avoid them being identified.

3.7   Conclusion

In the Methodology chapter, I described the design and rationale for the design of this research using a qualitative content analysis methodology. By selective non-probability sampling using carefully selected search terms, I assembled a sample of 50 personal blog entries. While particular care was taken to prevent the demographic biases that may come into play when conducting blog research, the demographic information about the bloggers does align with what was predicted by the literature. For that reason, I must be mindful that this research addresses a group of individuals with a certain set of demographical and personal traits. Through a qualitative content analysis, based on a constructivist grounded theory approach, the articles were coded into 1250 open codes, which were then grouped into six overarching categories in the axial coding phase with a number of subcategories. The axial codes have been re-assembled using the available literature and theory to into final themes, which form the basis of the results of this research.

4   Results and discussion

The results of the analysis reveal two main themes in the way bloggers represent their experience with self-quantification. The data suggests that blogs are used to construct a Virtual presentation of the self, the first theme which contains a disclosure of the bloggers' personal life, notions of who the assumed reader is and evidence of the commercialization of blogs. The theme Reflexive self-analysis reveals that the use of self-tracking is embedded in an idealization of self-improvement in society. A contrast is found between experiences of disembodiment and the integration of technology, data and lived reality. Each sub-theme will be defined and illustrated in this chapter.

4.1   Selective Coding

Table 4.1. Themes and sub-themes

Theme	Sub-theme
Presentations of the self	Self-disclosure
	The assumed reader
	Commercialization of blogs
Reflexive self-analysis	Idealization of self-improvement
	Disembodiment
	Data and lived reality

During the selective coding, the final phase of analysis, the observed categories in the data were reassembled in connection to their original context and the theoretical framework (Strauss & Corbin, 1990). By connecting the open and axial codes to the known theoretical concepts on this topic, it was possible to create meaningful categories that help answer the research question. While the categories resulting from axial coding describe empirical observations in the data, selective coding aims to explain the observations (Strauss & Corbin, 1990). The result of the selective coding was the development of the three overarching themes and sub-themes displayed in Table 4.1. A complete overview of the selective coding process can be found in Appendix C. Each theme will now be discussed in more detail in relation to the research question. As this is a qualitative research, the results will be discussed in relationship to the literature and the data. The following section will cover the results and discussion.

4.2   Presentation of the self

4.2.1   Self-disclosure

> I am DEFINITELY a type A personality. (…) I am a list maker and things on said list
> MUST BE crossed off or it stresses me out to no end.

Rebecca, a dedicated runner in her blog post about the Garmin fitness tracker, sketches this aspect of her own personality. The fitness tracker, which she uses to track her runs, appeals to her for that reason. This is a typical example of the small bits of self-disclosure the blogs in this sample are packed with. Some of these things are relatively trivial *self-descriptions* of character traits, personal opinions or life circumstances, such as describing their weekend or saying they dislike clutter. On the other hand, some of the bloggers comprise more in-depth private thoughts and reflections. This includes the bloggers' stories of living with a physical or mental illness or particular emotional struggles.

> After I was first transplanted, I had a very hard time with the meds remembering
> what to do & when to do it. My best friend & I are big fans of to-do lists &
> checklists. We printed out sheets at the transplant house for a daily binder to
> keep things organized & on track when we first developed the routine.

A noteworthy example is Danielle, a young woman who blogs about her life with a rare chronic disease. In the blog post cited, she writes about how she uses technology to manage the lung transplant she has recently undergone. Like many other bloggers in this sample, she readily shares stories of her deeply personal physical and emotional struggles. Another example comes from Cathy, a woman who describes herself as a "holistic health coach". She writes:

> My personal period story should probably be saved for another post in and of
> itself, but, in a nutshell, here's why I am particularly conscious of my cycle. After
> suffering from amenorrhea as a teen (which involved seeing a pediatric
> endocrinologist at Stanford Medical Center), ignorantly messing with my
> hormones by taking spironolactone per the advice of a dermatologist to help
> hormonal acne in my early twenties, and then taking an oral contraceptive for
> three years, I have witnessed, firsthand, how both my lifestyle and medications
> have altered my body's natural ability to have a regular cycle.

In this blog post, she explains how she uses a mobile app to track her menstrual cycle. Like Cathy, she is not afraid to share the more personal aspects of what could already be considered a fairly private topic. In addition to self-descriptions, as the citations by Cathy and Danielle illustrate,

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the bloggers write about *what they track* and about the *products and techniques used* in relation to the quantified self. The following is written by Stephanie, whose blog covers travel, food and what she calls "lifestyle". Here, she blogs about a smart scale that automatically synchronizes tracked data with a mobile app.

> Here we are into the new year – how are you doing with your health and fitness
> goals? I am SO excited to say that I am down 5 pounds so far. (5 pounds, 15 more
> to go!) I lost the first 30 pounds so easily – it seems like the last 20 are the hardest
> of all. It's so easy for me to get distracted and just "cheat" a little bit – all day.

In the same blog post, Stephanie continues to show photos and screenshots displaying her personal data as measured by the smart scale and recorded in the app. My sample of bloggers also commonly share their personal workout regimes, eating schedules, or tables containing tracked biometric data. The bloggers in this sample commonly choose to make their self-tracking data and practices a part of the online narratives that represent their personalities and private lives. In addition to the self-descriptions and information about what is tracked, and the products and techniques used, another form of self-disclosure is *personal images* of the blogger and his or her relatives and friends. The interrelated written, visual and quantitative digital self-representations as identified by Rettberg (2014) all come together in these blog posts. This triggered my curiosity for the amount of privacy maintained by the bloggers in general. On their websites I found that most of the bloggers shared personal details such as their name and names of family members, photos, age, place of residence and contact information. Admittedly, the amount of privacy maintained did vary between the bloggers, but only two of the blogs had relatively anonymous authors. In general however, it seems that being found and identifiable is actually quite important to many bloggers in this sample. This is also visible from the way the bloggers redirect readers to their various other online pages, as blogger Diane does here:

> EatSmart is sponsoring a giveaway to all my readers – you can win one of these
> Getfit scales for yourself! I'm hosting this contest both on the blog AND on my
> Instagram. You can get entries at both places! So make sure you enter here and
> then head over to Instagram to enter an additional time.

Diane describes herself as a stay at home mother and blogger about health, fitness and family life. This citation concludes her post about various techniques to track health and fitness with a prize competition, used to encourage readers to engage with her and visit her Instagram profile. The desire for the bloggers to be found online became apparent from the way many of them, like Diane, included links or references to their various social media and other webpages, which they

invite readers to visit or follow. Evidently, the blogs are not stand-alone online presentations of the author. Instead, they are often a part of a larger overarching virtual presence maintained by the blogger (Smith, 2018), which for these bloggers surpasses the boundaries of their blogs alone. The virtual presence consists of a network of personal communication channels and webpages that shapes the digitally extension of the blogger's identity (Parkinson et al., 2017). From the sample in this research, these bloggers try to ensure that their virtual presence reflects their everyday lives. Jenna runs a personal blog, where she combines alternative fashion and beauty with some more general themes. Recently, she has found a renewed focus on health and fitness. To her readers, she explains that she has always written about topics like exercise and nutrition, but they will now become even more prominent:

> There is going to be an increase in this type of content likely on the blog moving
> forward. Why? I write about topics I know and are currently relevant in my life.
> This is how I am able to ensure that my content is 'real' – topics that have me
> both passionate and engaging.

Jenna wants to ensure to her readers that her content is an accurate representation of her occupations in everyday life. Maintaining a sense of authenticity is important to the bloggers for two reasons. First, authentic self-expression is one of the primary reasons for bloggers to share their stories online (Maltseva & Lutz, 2018). In these examples, the bloggers may "think by writing" (Nardi, Schiano & Gumbrecht, 2004, p. 225), using their blogs as a platform to engage in the individualistic construction of a self-narrative (Elliott, 2013). In that sense, the blog (and indeed, the entire network of webpages that makes up the bloggers' virtual presence) is to them like an extension of the self (Belk, 2013). Joyce, a blogger who focusses on family life and religion, draws a thought-provoking comparison between her journaling notebook and her blog to illustrate this point:

> I just write down whatever I did that day, and I can (briefly) include my feelings
> about it or not. It's just a record of my day. (…) Not everyone necessarily uses
> their journals this way, but I really like the idea of being able to look back on my
> daily entries years down the road. I've often said the same thing about my blog -
> it's nice to look back on old blog posts, and this to me is like a mini version of that,
> filled with the things that no one will find interesting but me, or things that I
> might not find time to blog about.

Blogs are used by the bloggers for self-reflection, and personal experiences of everyday life can be found within the words written by the blogger. Writing about the everyday experiences, be it in a physical journal or a blog, has been a way for human beings to work on a self-constructed

reflection of life since long before our digital age (Humphreys, 2018). Because writing self-narratives is used for the active shaping of a personal identity though self-reflection, blogging and journaling can be considered technologies of the self, which includes techniques used for deliberate self-construction (Foucault, 1988). For the bloggers, the process of identity building takes place online. The blogs are used as a technique to exert some control or power over how the digital extension of self (Belk, 2013) is shaped. Creating a representation of self that is not sufficiently authentic (partially) defeats the purpose of personal blogging and would arguably be unsustainable on the long term (Jones & Alony, 2008). However, there is a second reason for bloggers to ensure authenticity in the digital self-representations they construct, which relates to the readers of their blogs.

4.2.2   The assumed reader

As Joyce hinted in the previous section, she makes a separation between her private journal and her blog by considering what her online readers may find interesting. This sense of writing to an assumed reader was a recurring theme in the content of these blogs. In her digital vow to start incorporating healthier choices into her lifestyle, beauty and fashion blogger Linda writes:

> *I want to start changing my habits and sometimes the best way to stay motivated is to hold yourself accountable! By sharing this on the blog and making it 'public' I feel more accountable for my actions!*

Linda expects that by making her goals public, she will be held accountable to make progress. Not only does she assume the reader is interested in her personal life, but also that there will be some *reader interaction,* in which readers may ask or notify her about her lifestyle changes. The bloggers are not afraid to address the fact their content is indeed public, written with an audience already in mind. Remarkably, she looks to an external source - the reader- for validation in working towards her self-improvement goals. Similarly, Nina is a blogger in her 30's who writes about her lifestyle as a mother. Her blog is a typical example of the "mommy blogger" genre. About her first experience with a wearable health tracker, Nina writes: "You're probably starting to get curious, and I am sure that if you are anything like me, the questions are starting to roll in your mind". The content of Nina's blog revolves primarily around the bloggers' private life. Yet, in the quote she is directly addressing the audience and making assumptions about how they might relate to the blog post. Nina writes in a way that assumes a reader that is interested in her and her personal experience, expecting them to be curious about the product she just introduced. Whether or not there are such readers, this imagined audience fits with how she constructs herself through the blog and expresses her relation to the self-tracking device. Another example of a blogger addressing her assumed reader is teenager Daisy, who starts a blog post about her weight loss with a warning:

> This is a weird post. I get that. Teenage dieting does not always get the best reputation as it is often done in an unhealthy way. However, I did this 100% naturally and safely. I get so many questions about this – so I feel that it's important to share my experience.

Daisy acknowledges that the topic might be perceived as controversial and suggests that her readers indeed interact by asking her questions. Anticipating possible reactions from readers she may get, she takes precautions by addressing the concerns her readers may have from the start. She is aware of the impression her post might make on a reader and actively attempts direct it. By using impression management techniques (Hookway, 2008), these bloggers remind us again how blogs are in the end a front-stage setting (Goffman, 1959).

It was not uncommon for the bloggers to directly address reader questions like Daisy did, or simply thank them for reading. Blake, a woman in her 20's who blogs professionally about fashion, explains how she uses the Apple Watch to track personal fitness. She says that he was inspired by feedback from her readers to write the blog post: "Getting a ton of questions about my Apple Watch on Instagram lately, so I thought it would be helpful to share the details of how I use it." This shows how Blake uses her blog to facilitate an on-going conversation between her and her online audience, again covering her entire virtual network rather than the blog on itself. Blake assumes the individuals who asked her questions on Instagram will be the same people reading the blog post. The bloggers make no attempt to convey their blog posts as strictly private pieces of writing. It seems that an awareness of and certain assumptions about the bloggers' audience partially shape the content found in personal blogs. If the blogs serve as a platform for interaction between the blogger and the assumed audience, the bloggers in this sample see their blogs as a public front-stage setting, which is used to stage an online performance of self (Papacharissi, 2002). In doing so, personal bloggers have relatively much control over which aspects of the self they choose to reveal (Trammell & Keshelashvili, 2005). Joyce, Linda and Daisy all discussed reasons to write about certain topics on their blogs, considering how their readers may respond to it. We can conclude that in these blogs, as previous research suggests, bloggers represent carefully edited versions (Bullingham and Vasconcelos, 2013) or curated, staged performances (Papacharissi, 2002) of the self. Mona is another "mommy blogger", who dedicates a post to her new Fitbit:

> Hey guys I am writing a formal room for my Fitbit Charge 2. I wear it every. single. day. I have other nice watches that sit in the jewelry box now that I have this. I love being able to track my activity. It really helps me gauge how forgiving I can be with my food intake and it's inspired some really good habits. It has jump started my new 'ketogenic' lifestyle this year. More on that lifestyle decision later.

Mona directly addresses her readers and links her use of the Fitbit to her healthy lifestyle changes, which she refers to again later in the post. Typically, her blog contains photos of her personal style and family life, making this topic stand out somewhat. Knowing that bloggers are selective in which aspects of the self they choose to represent on their blogs, it is interesting to consider why they might write about their self-tracking practices and for what reason. Weiner et al. (2017) argue self-tracking is partially used to establish a fit and sporty identity. Possibly, blogging about being involved in self-improvement practices (as this sample is not limited to health-related improvements) and sharing the data contribute to establishing a desirable identity in a similar fashion. After all, if we consider blogs to be conscious constructions of one's performance of self, it means the bloggers actively choose to make their practices a part of their online self-representation. By sharing their self-quantification practices and efforts to improve their lifestyles, they display to the outside world what they are consciously doing to improve their physical health, following the line of discourse Lupton (2013) identified as healthism. The appeal of this type of content can be understood in the cultural context of aspiration, constantly reinforcing the idea of self-optimization (Schwartz, 2018). By choosing to integrate this content in their blogs, the bloggers show that collecting personal data and using it as a technology of the self, actively working towards improving one's own body or behavior, is considered something to actively showcase to the outside world for this group of people. There seems to be a connection between this tendency and the social desirability of engaging in self-improvement as described by authors like Currid-Halkett (2017) and Polak (2018). This socially desirable lifestyle is what these bloggers consciously choose to make a part of their online self-representations.

A second assumption that is made by these bloggers about the assumed reader, is that they are looking for *informative content*. Informative content can be helpful tips, instructions, inspiration, or product reviews, for example. Daisy, the teenager who wrote about her weight loss, does not only describe her own process, but continues to inform her readers on how to accomplish the same thing by giving her readers helpful tips on self-tracking, such as the following: "Don't forget to track drinks, condiments, and even weigh or measure your food so you can have the most accurate calorie count". More blog entries were found in this instructional style, giving readers directions and recommendations on self-tracking.

> Step counter, calories burnt, sleep monitor, reminders to move, they're all there.
> In fact, with a new fancy, high techy tech sensor installed, your Ionic can pick up
> more details about your health and wellbeing, even being able to pick up things
> like sleep apnea.

Writes Sharon, a tech blogger who regularly writes reviews in this style of the latest gadgets on her blog. Product reviews typically include a list of product features, assessment of quality, description of how to use the product and information about the price and point of purchase. This type of content was found in over half of the 50 blogs in this sample, some of them using the term "review" in the title. Especially bloggers who use self-tracking for specific lifestyle objectives (like runners and fitness professionals) base their assessment of quality on the accuracy of data measurement. Other common definitions of quality were related to ease of use, including physical controls, the readability of data visualizations and automatic synchronizing between apps or devices. Blog entries in this style sometimes include recommended links to additional resources.

Linda, the same blogger who mentioned she blogs about health and fitness to keep herself accountable, concludes her post telling readers she hopes "this helps you in your quest to become fit and healthy". She assumes that writing about her lifestyle changes will have some impact on her own behavior as well as that of her readers. In her assumption, the reader is not passively consuming the content. These bloggers expect their blog to have a real impact on the reader, by potentially inspiring them, altering their behavior or impacting their purchase decisions. Researchers like Scott (2015) and Frey and Osborne (2017) would agree that, because of their personal nature, blogs can indeed have a real impact on the purchases and behavior of readers. The bloggers direct their writing to readers that are looking for either factual knowledge or practical advice, and frequently expressing a hope to be helpful or make some impact on the reader's behavior. Despite the notions of self-disclosure found in these blogs, the perception of personal blogs as a personal diary (Nardi et al., 2004) is too limited. The blogs are used for an exchange of communication between the blogger and the reader. This has implications for the dynamics between personal blogs and personal identity. While in this sample personal blogs often appear to be authentic and reveal self-disclosing aspects of the person behind the screen, it is also clear that they know their blogs are public and make an effort to appeal to the reader. The bloggers represent themselves as a resource for information, advice or inspiration. Possibly, the bloggers are driven by a need for sharing knowledge and personal interests (Jones & Alony, 2008). But knowing that the bloggers are selective in what they blog about, keeping the interests of the assumed reader in mind, means they assume the reader to be interested in self-tracking or healthy lifestyle changes. The way these topics were integrated in a broad range of blogs, from blogs about running to domestic life or beauty and fashion, marks the universal appeal of informative or helpful self-improvement content.

4.2.3   Commercialization of blogs

Be sure to follow me on Instagram + Twitter to stay up to date on my fitness journey. I post vegan recipes + workouts on my Instagram page.

Christina is a full-time professional health and wellness blogger, who concludes her post about the Fitbit and her fitness goals with an invitation for the assumed reader to engage with her. Where she refers her readers to her social media pages, fellow professional blogger Joanna instead encourages readers to visit previous posts on her blog: "Check out my review of the Apple Watch 1st Series here and see all my wearable tech posts here" she writes, including corresponding links to the blog posts. Even more common was an invitation for readers to leave comments at the end of the blog post, usually combined with one or more direct questions, such as tech reporter Emily who asks: "Have you used any sleep trackers? Did they help? Share your experiences in the comments below!". Like the other two, Emily has professionalized her blog as a part of her career. While actively promoting one's writing may be expected from bloggers who write professionally, asking readers for engagement was done in approximately half of the fifty blogs analyzed. *Self-promotion* is the first tendency of the bloggers through which the commercialization of blogs can be observed. Numerous online guides for improving blog engagement recommend exactly what is done in these citations: Directly asking readers for engagement, ideally at the end of a post, to boost the amount of comments, shares and traffic to the blog (Bharath, 2015; Connell, 2015; Si, 2015). This sounds similar to the microcelebrity logic found in other digital media, Instagram in particular (Rokka & Canniford, 2016). Remarkably, the guides for blog engagement also recommend writing content that is valuable to the reader by giving them information or solving a problem. The pursuit of attention capital (Rokka & Canniford, 2016) then could be an additional reason for bloggers to write informative content. This pattern in the data draws attention to the commercialization of blogs. If the personal blogs can be considered an extension of the self (Belk, 2013), the underlying pattern of thought revealed is that the "self", or the digital construction thereof in a network of personal websites and social media, must be promoted in the first place. Unfortunately, it cannot be determined from the blog content alone to what extent the bloggers consciously applied techniques in hopes of gaining more engagement, as opposed to a genuine desire to share knowledge or find out what readers have to say in the comments section. In reality it may be a combination of both and differ between the bloggers. The bloggers, however, are engaged in promoting more than just themselves.

> Thank you Nokia for sponsoring this post. Visit the Nokia Body+ site for more info and start the new year off right!

The first thing health and travel blogger Stephanie writes in her review of a smart scale is that her post is that her post is a result of a *commercial collaboration* with Nokia. Aside from self-promotion, the bloggers in this sample are frequently endorsed to write about the products or services of commercial partners. Commercial collaborations with external parties make up the second component of the commercialization of blogs. The bloggers often inform their readers of

these collaborations at the beginning or the end of the post, using a disclaimer such as blogger

Sophie, a woman in her 30's who works in PR and blogs on the side, does here:

> Thank you Nokia for sponsoring this post. Invest in your health by purchasing a
> Nokia Steel HR for yourself! (…) I was selected for this opportunity as a member
> of CLEVER and the content and opinions expressed here are all my own.

Sophie is transparent about her commercial collaboration but does make an effort to ensure the genuineness of her review to her readers. I also found frequent affiliate links and several competitions that allowed readers to win a self-tracking device. Diane, the blogger who hosted a prize competition for a smart scale amongst her readers, is an example. Sometimes the bloggers would explicitly mention when their posts were *not* sponsored, aiming to emphasize the authenticity of the opinions expressed and perhaps setting themselves apart from the increasingly commercialized blogosphere. For example, running blogger Rachel claims: "This is not a sponsored post. I received a Garmin Vivoactive ® 3 as a Christmas present from my husband. However, this post does include affiliate links." This particular disclaimer reveals how readers have become wary of sponsored content when reading blogs, thereby only underlining how often it does happen in the blog, albeit not in this particular post. Clearly, commercial forces play a role in many of the blogs in this sample. Like Liljander, Gummerus and Söderlund (2015) explained, blogs are frequently employed by marketers to create marketing campaigns. It is difficult to estimate how the information and opinions presented in the blog posts may have been influenced by a commercial collaboration, or lack thereof. However, we can conclude that the commercialization of blogs is sufficiently prominent to be a recurring theme in the content of these posts. When I found disclaimers of there being *no* promotional content in a blog post, those only seemed to emphasize that collaborations are so frequent they have come to be expected by readers.

4.2.4   Presentation of the Self: Conclusion

The first overarching theme found in this study, *Presentation of the* self, consists of the sub-themes a*) S*elf-disclosure*, writing for an *b) assumed reader* and the *c) commercialization of blogs**. This research brings to light how, at least in these cases, each of these aspects have implications for the digital representation of the self. The online identities created by these bloggers consists of more than just a disclosure of the self, broadening our understanding of personal blogs as a personal diary (Nardi et al., 2004). The digital construction of identity of bloggers is like a bricolage, made up of different components coming together. First, there is the more implicit disclosure of the real, authentic self, which the bloggers actively ensure is represented in their blogs. However, the bloggers also openly acknowledge seeing their blogs as a stage for social interaction with the

assumed reader. That assumption is that they fulfil a need of the reader to be informed or inspired about self-tracking. Evidently, the bloggers' performance of identity is influenced by making a socially desirable impression on reader, the pursuit of attention capital and commercial forces. At the same time, bloggers reinforce this cultural ideal to their readers, who are encouraged to take part in similar behavior of self-construction. Personal blogs are part of an online narrative about the quantified self that contribute to the visibility and social desirability of the self-tracking.

We learned that blogs are part of a network that make up the bloggers' extension of the self (Belk, 2013). Therefore, our understanding of the digital extension of self can be updated to more closely resemble Parkinson et al.'s (2017) digitally extended self, which is an assemblage of different personal elements that make up the digital representation of a human being. Blogs are used by the bloggers for self-reflection, and personal experiences of everyday life are found within the lines. This shows us how we can understand blogging from the perspective of technologies of the self (Foucault, 1988), used for the active construction of self-identity, or in this case the digital extension thereof. For the bloggers, this pursuit takes place online, something that Belk (2013) argues is becoming increasingly more common. Humphreys (2018) adds that people have been capturing and indexing their lives even further back into history. However, now that a significant part of the identity construction takes place digitally, the dynamics have changed significantly. If the digital self-representation is like an extension of the self, it is not just blogs but a whole part of the bloggers' identity that is commercialized and under pressure to perform. In how they construct themselves, the bloggers must take into account their impression on assumed readers, the pursuit of attention capital, the demands of the commercial market and all the while, remain authentic. While this emerged from this sample of bloggers, it is not inconceivable the same applied for the blogosphere as a whole.

4.3   Reflexive self-analysis

4.3.1   Idealization of self-improvement

> When I was younger I was heavily involved in martial arts and doing so kept me in great shape. Unfortunately, in my early 20s I went through some pretty big health issues and as a result, my fitness was quickly shifted to the back burner. The result? I have gained over 50lbs, and am nowhere near the shape I was once in. Now that I have purchased my Garmin […] it's time to take the bull by the horns and make a shift in my day to day thinking in order to move back towards the lifestyle I used to know.

This was written by Jenna in the blog post where she expresses her intentions to start 2018 with better health and fitness habits, notifying readers that this type of content will be more prominent on her blog as a result. For Jenna, her smartwatch is a purchase of empowerment to achieve a desired improvement of her physical body. What the bloggers commonly refer to as their health and fitness journey has a clear unwanted begin situation, a desire for improvement and obstacles along the way. The self-tracking technology is framed as a part of that journey that makes their desired outcome more attainable than before. According to Storr (as cited by Schwartz, 2018), this can be explained by the natural tendency of human beings to see themselves in a constantly progressing storyline, striving to get ahead of others. From his late-modern perspective, Giddens (1991) tells us that personal reflexivity and constant re-evaluation of personal lifestyle decisions have become normalized since the 20th century. However, Storr (as cited by Schwartz, 2018) argues today's aspirational culture emphasizes living up to our individual potential in life, adding that our competitive economy giving us the idea that anything is possible given that we work for it hard enough. The similarities between the individualistic contemporary society Storr describes and what was found in the blog posts are striking. As an example of how self-tracking is framed to facilitate self-improvement, health and fitness professional Angie tells readers when it would be helpful to start self-tracking:

> If the way you've been doing things hasn't gotten you to where you want to be, then maybe it's time to assess the situation. Using trackers to see where you are currently can help you determine what needs to change to reach your goal. (…) If you're always tired, always in pain, feeling depressed, etc, these are signs your body needs something different. You may need more water. You may need to take a walk a few times a week. Whatever it is, listen to your body! You should feel ok most of the time.

In other words, if the reader experiences any physical or mental discomfort, the reader should take action, in this case by self-tracking, to improve the situation. In the blogs, the importance of mastering one's physical body, habits or behaviors was stressed constantly, following the Foucauldian perspective on self-improvement as an individualistic moral responsibility (Depper & Howe, 2017). Relating to Foucault's idea of digital health technologies as regulatory and corrective, self-tracking and the quantified self are argued to facilitate and reinforce ideals of healthism (Lupton, 2013). The resulting neoliberal cultural perception of health and well-being as described by Depper and Howe becomes clearly visible in these blogs (2017) about regulating one's own body and practices. For example, beauty and fashion blogger Alessia starts off a review of a smart water bottle, saying: "The new year has begun and I'm sure many of your resolutions include "drinking more

water" as a good proposition". The bottle automatically tracks the amount of water the user consumes which, according to Alessia, everyone should know is essential to one's well-being. The blogs are routinely structured in a way that reveals an idealization of self-improvement.

> If you like to challenge yourself, a fitness tracker is an excellent way to motivate you towards your health and fitness goals, all while having fun! (…) Setting these small goals helps me gauge where I am fitness wise, and let's me know when it's time to step it up!

Being motivated and a sense of enjoyment, which nutritionist Lisa describe, were often mentioned by the bloggers as benefits of using a fitness tracker. This type of emotional engagement was found in previous research on self-tracking (Weiner et al., 2017). In fact, Lisa's blog post is entirely dedicated to how fitness trackers motivate you to make progress in the health and fitness journey. For these bloggers, clearly a self-tracker is being experienced as helpful by giving most users a sense of greater self-knowledge and control. Lola, who has used a meditation app every day for a year, writes that she "feels so much more in control of my thoughts instead of feeling like my thoughts control me." This citation is in line with the Quantified Self Movement's original ideology of obtaining self-knowledge in the form of quantifiable data (Wolf, 2010). Self-tracking gives the users a sense of self-understanding, feeling in control and staying focused on goals, all of which could be considered empowering. In these sections, self-tracking is linked directly to positive behavioral changes by the bloggers. Rettberg (2014) noted how health- and fitness related applications often follow a progress narrative to give users a sense of continuous improvement. This same *progress narrative* returns in the blogs and the way the bloggers narrate their use of self-trackers, and is the first component to reveal how self-improvement is idealized. By following this pattern, the blogs frame self-trackers as helpful or even essential tool to achieve personal goals of improvement. The bloggers describe problems in terms of their physical body, overall wellbeing, productivity, or other aspects of personal life and a desire to change their situation for the better. Self-tracking is introduced as a solution to this problem. The connection between quantitative data and the concept of progress is included in the blogs as a matter of course, as Angie writes: "There's a way to watch your every move and gauge your progress." She automatically connects tracking data and observing progress made. As Smith (2018) proposes, the normalization of collecting and sharing personal data is kept in place by the portrayal of self-tracking as a tool for personal optimization. The way self-tracking is idealized as something constructive that helps people's personal development, shows that their perception of self-tracking is rooted in the data doxa (Smith, 2018). Simultaneously, the bloggers contribute to keeping it in place by recreating the same narratives on their blogs and

encouraging readers to take part. The normalization of the self-tracking phenomenon has not gone unnoticed by the bloggers.

> One day I'm sure everyone will routinely collect all sorts of data about themselves. As personal analytics develops, it's going to give us a whole new dimension to experiencing our lives. (…) It won't be long before it's clear how incredibly useful it all is—and everyone will be doing it, and wondering how they could have ever gotten by before.

Writes Mark, one of the more dedicated self-trackers in this sample. He has kept exhaustive analytics of his personal and professional life, his records going back as far as 1989. While aware of being an exceptional case, he predicts a growing popularity of self-tracking in line with the perspective of Wolf (2010), one of the originators of the Quantified Self Movement. Some go as far as calling the self-tracking phenomenon a trend, craze or cult. More of the bloggers similarly address the *social context of self-tracking* and the way it contributes to an idealized image of self-improvement. Commonly, they mention being recommended or inspired to start self-tracking by a partner or friend: "My best friend had just bought a new Fitbit and talked me into doing the same", says Jess in a blog post narrating her first experience with the product. Another blogger says that she used to make fun of her self-tracking friends, but peer pressure eventually made her give in. Social pressure, either through friends and family or in online narratives on self-improvement, give encouragement and hopes on a positive outcome of self-tracking. More of the bloggers describe an initial resistance to self-tracking or to mindlessly following trends in general. It is not uncommon for people to need some *adaption time* before accepting and starting to use new mobile technologies (Sanakulov & Karjaluoto, 2015). Reading these texts, it becomes clear that the social context of an individual plays a role in the adaption of self-tracking technologies. In many cases, there is a social motivator that gets individuals involved in self-tracking, as 22-year-old personal blogger Lizzie tells us:

> *I used to constantly use My Fitness Pal but when a few of my friends joined the gym this year they all use 'Lose it' so I wanted to get it so we could all compare and things using the same app.*

Lizzie, who more commonly writes about beauty and fashion, explains here why she chose her favorite food-tracking application based on the practices of her friends. This and similar citations show that the social context is not only important to starting to use a self-tracking technology. Social comparison and gamification (Whitson, 2013) also contribute to how the users interact with the devices once the decision to adapt has been made. The value of the self-collected data is established

through comparison with peers. For example, a wearable intended to track running includes the feature of creating teams and challenges which Lily, whose website is not typically focused on running, finds motivating:

> If you're based in the North of England you should get involved, basically your
> data from your Nokia Steel is uploaded into your team (Manchester, Yorkshire,
> Liverpool etc) every day and you battle it out to beat each other.

She is one of many bloggers that were motivated to start their practice by encouragement from their social environments. It appears that self-trackers need some external validation to feel like they are on the right track, often being encouraged by some social pressure to engage in self-quantification. The social context provides an external pressure to engage in improvement of one's physical body or activities. We have already noted before that the blogs are used as an additional source of (social) accountability to stay on track towards self-improvement goals. We can conclude that the idealization of self-improvement in the social context plays a significant role in these bloggers' self-tracking practices. Slater (1997, p. 91) supports this finding, explaining how the self is seen "… as a narrative form, something to be constructed to individual choice and effort." In this ideology, because the physical body is something that we can alter and improve, we have a moral obligation to do so. Slater (1997) writes about the aspirational images and self-improvement advices presented in popular media then – likely television, movies and advertising. Today, consumers may find those ideas in the form of online content, including blogs and social media, but the message remains the same.

> I wanted to know why these things were so infamous and why EVERYONE at my
> work had one. (…) But looking at the "fit bit" brand online I refused to pay $200
> on a fitness tracker when I had no idea whether or not I would actually a) use it or
> b) like having a tracker on my wrist.

In this section Melissa, a personal blogger and student, makes it clear her social environment triggered her curiosity about activity trackers. Because of her uncertainty of how much she would use such a product, she eventually purchased a cheaper off-brand fitness tracker to experiment with the technology without investing what she considers a large sum of money. Such descriptions of *the purchase decision,* or assessments of whether a product was worth the money, were common. This shows how the idealization of self-improvement relates to consumerism, as tools for self-optimization commodify working on the self (Slater 1997). In this study, we see health consumerism (Fox, 2017) into play because it is both desirable and anticipated by the market.

> Getting to the gym or the park, getting your heart rate monitor on, and setting up
> your various apps shouldn't take more time than your actual workout. Time is
> already fleeting enough for most of us, don't let you workout get too shortened
> or your meal of real food get replaced by take-out because you're messing with
> all your tracking apps.

Aside from the monetary resources, bloggers like Danielle also address the time investment that may be involved in self-tracking. Self-tracking tools are presented as commodities that facilitate an optimized lifestyle. To obtain these tools, a trade-off is made by investing personal resources, both in currency and in time and effort. However, as self-optimization has been commodified by digital tools, arguably we pay with more than money or time alone. Digital self-quantification has turned consumer into prosumer of invaluable first-party data (Millington, 2016). To take part in the quantified self movement, consumers also need to pay in data and a piece of their privacy (Lupton, 2013). This new dynamic to the commodification of health seems highly noteworthy but remained remarkably underexposed in the blogs, even though the bloggers did show a clear alertness of the commercial aspects otherwise. According to the morals of today's zeitgeist, spending money on health, self-knowledge and life-enrichment is the right thing to do (Polak, 2018). As professional lifestyle blogger Christina illustrates in her review of the Fitbit smart scale:

> I highly recommend this scale – It's honestly worth the extra money, if you are
> serious about getting in shape, and becoming a healthier version of yourself.

The purchase decision is easily packaged as a moral choice in a blog post, in which the blogger can explain how substantial improvements to one's mental and physical wellbeing are worth the money. On the contrary, sacrificing privacy and personal data in trade for consuming yet another product of capitalism may be more difficult to justify as a conscious and well-informed choice to readers and even to oneself. Unfortunately, it remains unclear whether this trade-off is something the bloggers have a limited awareness of, or whether they simply choose not to address it in their blogs.

4.3.2   Disembodiment

> I get rewarded for standing up, I think. (…) It says my standing goal is 12 hours a
> day, which doesn't make sense because that seems like an awful lot of standing,
> so I think it's just rewarding me for not being dead.

This comedic point raises an issue that comes up several times in this research: a disconnect between the users' goals and what precisely the device is measuring. David, the comedy blogger who

wrote this, is skeptical whether the metrics his Apple Watch rewards his for are of any real value to him. Unlike some of the previous examples, he does not experience self-tracking as facilitating personal progress.

> While I wouldn't mind shedding a few pounds, I've learned that my health is so much more than the number on the scale or the number of calories on my plate. Instead of focusing on a number, I'm working to improve my overall health and wellness so that I feel better from the inside out. (…) To help me stay on track, I'm using the Nokia Steel HR, an innovative activity tracker watch that makes it easy to stay in control of my health.

Lauren is a woman in her mid-thirties who blogs about "living well" on a budget. Remarkable is how she explicitly claims to pursue personal health based on how she feels rather than numbers, then decides to use a self-tracking device to achieve that goal. She expects quantitative self-tracking to have an impact on her qualitative experience of life. Young (as cited by Danter, 2016, P. 56), notes the irony in this, proposing that the efforts to improve the lived experience of everyday life through digital self-tracking is exactly what causes disembodiment. This sense of being distanced from the physical body (which Lauren wants to reverse by prioritizing feelings over numbers) then contributes to the urge to self-track in attempt to feel more in touch with the body, closing the vicious circle. Some of the bloggers explicitly hinted at a general resistance towards the growing role of technology in the experience of everyday life. "By far, one of the biggest perks of me having the Apple Watch is that my kids don't have to witness me glued to my phone", states professional blogger and content creator Allison. This type of comment on how wearables decrease smartphone use, was recurring. In fact, avoiding smartphone addiction and living in the present are yet more popular advice for how to better live our lives. Similar to Young's (2012) thoughts on combating disembodiment with the use of just another technological device, it seems somewhat counter-productive that Allison may not be glued to her phone anymore, but now has another device attached to her wrist instead.

Describing their desire for self-improvement, many bloggers in the sample tend to use ambiguous qualitative terms such as getting fit, healthy, sleeping better, feeling better and reaching goals. However, they are not always able to define their objectives clearly. They express a desire for living an optimized lifestyle without a tangible vision of what that entails. Instead, the bloggers depend on the technology to *define their health and fitness goals* for them. Allison uses the Apple Watch, which has an interface to display insights into her daily activity:

> This is what I work towards–my exercise goal. I want to complete this green ring
> every single day. To achieve it, I must work out for at least 30 minutes (you can
> modify this at any time). This green circle motivates me like nothing else.

This section accentuates how Allison is motivated by the exercise goal automatically set by the device. She later re-emphasizes how, thanks to the visual cue on her watch, her exercise frequency has greatly increased. Even though she can choose to adjust the goal to her personal preference, Allison feels like he should meet the 30 minutes set by the device and feels driven by this goal. She trusts the device to make the decision for her. Karen, who blogs about celebrating "midlife" at the age of 56, was inspired by a fellow blogger to invest in a step tracker.

> I knew that I definitely wasn't doing the magic 10,000 steps a day. I presumed I
> was close to the right number but not quite making it. It's hard to know how
> much walking you do and how many steps you take when you have nothing to
> measure it with. I have been doing a morning walk for the last few years (…) but
> was that enough?

For Karen a step tracker not only tracks her steps but also provides an optimal number of steps for her. She responds positively to this, later in the post writing: "I was shocked at how far below the optimal 10,000 I had been doing previously". To meet the arbitrary step goal set by the device, she has started taking evening walks in addition to her regular morning ones, showing how a self-tracking technology can become an authoritative tool that determines which quantitative goals the user should aim for (Didžiokaitė et al., 2017), even if it is not experienced as authoritative or controlling (but in Karen's case, as informative) by the user. This raises the question of whether the goal is in line with what an optimized lifestyle actually means to the bloggers. Karen later reveals that her primary motivation to be more active is to "lose a few kilos" of weight, and she seems hopeful but uncertain how walking exactly 10,000 steps per day may contribute to that. I cannot help but wonder whether these individuals are really reaching their goals, or just doing what the technology tells them an optimized lifestyle looks like in numbers, tables and graphs. When mommy blogger Lauren, as she tells later in her post, "checks the app in the morning when [she] wakes up to see how well [she] slept", would she also consider how rested she feels physically to assess her quality of sleep?

It should be added that some of the bloggers were able to articulate more specific self-improvement goals. Some were dealing with particular mental or physical health issues. Technology reporter Sharon, for example, uses self-tracking specifically to treat high cholesterol. Still, she found it difficult to stay dedicated to her lifestyle changes until she started using a fitness gadget. The

bloggers who use digital self-tracking technique not only have a tendency to place the goal-defining work in hands of technology, but also show a tendency to *keep them accountable* in reaching their goals in terms of data instead of the embodied experience. It was noteworthy how Allison, the blogger with the Apple Watch, claims to be motivated by the data-based results, a green ring on a screen, rather than the physical outcomes of meeting her exercise goal. This notion of being driven by "data-based gratification" (Smith, 2018, p. 2) appeared numerous times. Perhaps one of the more outstanding cases in this sample, Sarah, illustrates this point animatedly in her story of joining the Fitbit community:

> Right away I was hyper aware of my every movement, checking my stats every
> time I walked past my computer. I was always just ahead of or just behind
> someone, so I was extremely selective about when I sat down. (…) I consciously
> chose my sitting time only when I deemed it worth it so that when I saw blank
> spaces I felt only joy at the memory of sitting and visiting with friends, rather than
> guilt at time wasted with mindless internet surfing.

Sarah is highly motivated by the drive to outperform her friends with data, instead of the physical outcomes of being more active. The gratification comes not from reaching individual data-based goals but from the social competition in the app used by the blogger. This shows of how gamification elements (Whitson, 2013) effectively encourages behavioral change in Sarah. Self-trackers are driven by a desire for quantitative performance, social competition and a desire to see the results of their efforts back in data. This tendency can be seen in context of a more broadly identifiable performative health culture (Depper & Howe, 2017).

Data-based gratification is experienced more often, like by Marnie, who also uses the Apple Watch with its colored rings as a visual cue: "It's SO satisfying to see the circles build throughout the day, and an easy way to glance and check how you're doing." Some bloggers describe feeling like physical exercise did not count when it was not tracked. For example, some devices' sensors fail to recognize walking when the wearer is using a baby stroller or grocery cart, making the users feel like the they do not get sufficient credit for the exercise. Another blogger writes about the years before starting self-tracking as "lost". In these accounts, the bloggers show signs of data fetishism (Sharon & Zandbergen, 2016), seemingly placing a greater emphasis on the collection, progress and social comparison of the data than the actual embodied experience of their altered behavior. As avid runner Lucy sarcastically remarks in her critical piece about the Garmin, a smartwatch mostly used by runners, "If the run wasn't recorded, then it didn't happen". Lucy's sarcastic tone implies she is in fact criticizing the way fellow runners are too preoccupied with recording their runs. We can see how self-tracking makes the ideal of progress more about data than the outcomes that they wished for in

the first place. While the authoritative qualities of self-trackers are experienced as motivating by some, other bloggers describe what Smith (2018) summarized as *performative behavior*, based on social analytics and data-based gratification. In addition to the defining of quantitative goals and accountability, this is another way in which self-tracking devices are discussed in a way that can be related to disembodiment.

4.3.3   Data and lived reality

> You go out for a long run or finish a hard workout, head home, refuel, jump on
>
> the foam roller, hit up the shower, start to rehydrate, and then BAM... you get
>
> that pesky notification from your Garmin to MOVE!

Frequent runner Rebecca illustrates how nudges can be perceived as unhelpful and create unnecessary pressure when there is *discrepancy* between the **data and lived reality**. She experiences a sense of frustration because her self-tracking device gives her advice that is unhelpful or even seems criticizing, because it does not properly understand the user's behavior throughout the day. Fellow runner Don expresses a similar experience:

> After 3 days of easy paced running to work on my aerobic side, it said I was
>
> overreaching and my fitness had dropped. I would respectfully disagree.

Don, who as a professional marathon runner likely has a good understanding of his own fitness level and how exercise contributes to it, disagrees with the assessment of his health made by his smartwatch. Author and professional blogger Jasmin, in a blog entry about how she spent a yoga class entirely pre-occupied by logging her activity to meet her daily exercise goal, also expresses her frustrations: "I want the reality of my reality to be enough instead of seeking confirmation on a screen. I want my brain back." These bloggers show an awareness that depending entirely on technology and data is unhelpful or even counter-productive to their desire for self-improvement. They report a sense of irritation, feeling guilty, pressured or bad about themselves as a result. The technology is experienced as an external source of real-time feedback that monitors and attempts to regulate the user (Kappler et al., 2018) but does not sufficiently "understand" the user. On a few occasions, the bloggers decided against continuing to self-track. As a solution, digital sociology blogger Aaron proposes the idea of the "qualified self", tracking not numbers but qualitative experiences of life. Being one of the more involved self-trackers in this sample, Aaron predicts a future in which self-tracking technology is able to capture more complex personal stories and deliver more valuable feedback as a result. His idea comes with an entirely new set of concerns, such as to what extent people find it acceptable for a device to know and predict their behavior. Remarkably,

Aaron is not unique in writing about the qualified self. In her book titled *The Qualified Self*, Humphreys (2018) makes the case that humans have historically collected personal data on the mundane aspects of everyday life. According to her, the capabilities of today's technology have only altered the techniques we use to record these details. She explains the human tendency to shape a sense of self through these bits of collected data.

> I feel like I am finally on the right path. Fitness and health is one thing, but actually understanding what is happening on the inside of your body is a totally different ballgame – and I've finally found the perfect solution that can help me with exactly that.

Family life blogger Nina relates to self-tracking as a way to gain a sense of self-understanding. Instead of a discrepancy between data and actual experiences, which bloggers like Rebecca, Don and Jasmin described, Nina's experience sounds more like an *integration* of data and their personal lived reality. To her, the technology is an empowering extension of self (Belk, 2013) that helps her get to know her physical body better. Seeing the self-tracker as a part of the self implies a sense of ownership and control over the technology. This was highlighted by variations of the phrase "you have to find what works for you", which was repeatedly found in the blog posts. The bloggers reveal an awareness of the inherently personal nature of self-tracking, emphasizing the individualistic characteristics. For example, about personalizing the goals on her fitness tracker, professional fashion blogger Blake writes:

> I set my active daily calorie goal to 450 (based on my weight/height) and I usually only achieve my move goal on the days that I run. (…). To change the move goal (your active calories) you go to the activity app (the one that looks like three rings) and hold your finger down on the three rings until an option pops up that says 'change move goal.'

This emphasis on the *customization* suggests that, to these users, a self-tracking tool in and on itself is not sufficient to make any contribution to meeting the users goal. It must be customized before it can be of any real value as a tool for self-optimization. By customizing their devices, they actively attempt to achieve a better integration of data and their personal reality. Similarly, the bloggers discussed customizing the way the data was displayed by their devices to give access to the information they deemed the most relevant. As writer and musician William explains on his blog:

> Because the nature of a watch makes changing what's on screen a rare but important event — and because the screen is so small — the choices of what to

put on screen need to be constrained to as few options as possible and prioritized
severely. Things you don't do often need to be kept out of the way, and things
you never do need to be hidden entirely. Then, with a tiny control like the Digital
Crown, you have to put your high-priority options in places that are dead-easy to
reach.

The Apple Watch's Digital Crown[2] allows William to customize how data is represented to
him. What follows is an elaborate description of how he customized his device to be the most
insightful to him personally. The bloggers express a sense of personal agency over the way they use
and relate to the technology (Danter, Reichard and Schober, 2016). This is in direct contrast with the
previous notion of the authoritative and controlling aspects of self-tracking technology. Here, the
technology is not framed as an authoritative "other" that dictates the blogger how to live, but rather
as a personal asset over which the user exerts some level of control. This is where the three pen-and-
paper trackers in the sample diverge from the other bloggers. All three of them make use of "bullet
journaling", an elaborate system of creating to-do lists and tracking personal habits and practices.
What makes this technique significantly different from digital self-tracking, is that the users start with
a paper notebook and manually draw tables and graphs to record data in. Melanie, who blogs about
crocheting, explains:

You can make special pages to keep track of what books you read, movies you've
watched, places you've traveled. Some people also use them like a traditional
journal, writing about their feelings and reflecting on the day's events. You can
buy a premade planner, or buy a blank notebook and completely construct your
own layouts. The sky's the limit with your bullet journal.

The versatility of the system is what attracts people like Melanie to bullet journaling.
Melanie, who has made a business selling her crochet creations, uses her journal to organize and
track her productivity on orders. Like the other two bullet journal users, she also tracks personal
experiences of life like habits and her daily mood. How the pen-and-paper trackers use this system
for self-analysis is remarkably similar to those who use digital devices. University student Amber
writes about her bullet journal:

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[2] The Digital Crown is a feature of the Apple Watch that serves multiple functions, including allowing users to
navigate between customized watch faces.

> In addition to tracking my sleep, I have been tracking my workouts. Now I've only
> gotten through two weeks of this, but I love the feeling of being able to check it
> off my list. (…) Again, it's simple, but it helps keep me accountable because I hate
> seeing boxes go unchecked.

Amber sets quantitative goals for herself, which motivate her and keep her accountable in her efforts to improve her health-related habits. Instead of data on a screen, hand-drawn checkboxes serve as her visual cue. But in contrast to the digital self-trackers, what these individuals track is not determined by the technology they use. Instead, they have full control over the goals that they set and which quantifications they deem relevant. They do not express the sense of disembodiment or discrepancies between the data and lived reality like some of the digital self-trackers. Because they have individual agency over what they track, they experience the data as being integrated with lived reality. Family and religion blogger Joyce considers her paper self-tracker a record of daily life, writing: "I know I'm going to find it interesting to look back on my day-to-day life when a few years have passed".

Aside from the customization of goals and data visualization, physical customization of self-tracking devices is surprisingly important to some bloggers. In her review of a smartwatch, avid runner Rachel addresses that aside from the functionality, aesthetics of a wearable device should also be considered, because in the end they are worn on the physical body. She states: "I'm glad someone finally created a watch that is a great running watch + fitness tracker + looks like a watch you would actually want to wear!". Like Rachel, many of the bloggers placed an emphasis on the aesthetics and options for physical customization of the various devices used. Especially the more fashion-oriented bloggers users terms as "chic" or "beautiful" to describe their wearables, accompanied with photos of them wearing the tracker in a fashionable look. From the way aesthetics are discussed, it becomes particularly clear that the bloggers in this sample write from a predominantly female perspective. For example, professional blogger Hannah writes:

> And last but not least: this smartwatch makes you feel pretty too! I've tried
> several sporty activity trackers before, and though they we're working very well,
> it never ever matches my all day every day casual look at all. This smartwatch
> almost looks too pretty to believe it's a smartwatch – if you ask me.

Hannah suggests that the physical appearance of the device transfers to how she feels about her own physical appearance. Not only the biometric data, but also the physical device, are experienced as extensions of the physical self (Belk, 2013; Parkinson et al., 2017).

4.3.4   Reflexive self-analysis: Conclusion

The three components that shape the second overarching theme found in this study, that of Reflexive Self-analysis, are *a) Idealization of self-improvement*, *b) disembodiment* and *c) data & lived reality*. Reflexive self-analysis takes place within a cultural *idealization of self-improvement*. The data suggests how these bloggers follow the healthism (Lupton, 2013) ideals of taking personal responsibility of optimizing one's physical and mental wellbeing. By emphasizing the desire for perfecting the self in a progress narrative (Rettberg, 2014), self-quantification is repeatedly introduced as an empowering tool to reach the desired goals by keeping the user accountable and motivated through visual cues, social comparison and gamification elements (Whitson, 2013). The way self-tracking technologies are framed as a helpful tool brings to light how the practice is rooted in the data doxa (Smith, 2017) and help to keep it in place. Social comparison is not only important for the way users relate to the personal data, but also plays a role in the normalization of self-tracking and the decision to start self-tracking in the first place. The extent to which the bloggers have a clear, quantifiable sense of what those "goals" are varied between them. Often, the desire expressed by the bloggers is more qualitative in nature, relating to an overall sense of health or well-being. Yet, quantifying the body is presented as a tool to achieve this. Young (as cited by Danter, 2016, p. 56), suggests that the efforts of improving the lived experience of everyday life through digital self-tracking causes the disembodiment that users often describe. This includes questioning what exactly is tracked by their devices, experience data-based gratification or performative behavior that undermines what they actually try to accomplish.

This sample reveals a tension between two perspectives on the relationship between *data and lived reality.* Some describe self-tracking technology as an "other" that monitors and attempts to regulate the user by providing real-time feedback (Kappler et al., 2018) They seem to consider their data-based representations of self an alternative perspective on reality, which can be authoritative or controlling, lead to disembodiment or data-based gratification and may not be properly aligned with the users' experience of reality. On the other hand, some users experience self-tracking as empowering, aiding them in a sense of self-knowledge, control and enjoyment. Here, the technology is not framed as an authoritative "other" that dictates the blogger how to live, but rather as a personal asset over which the user exerts some level of control. These bloggers, who often emphasized the personalization aspects of self-tracking devices, perceive the data as insights integrated with lived reality rather than something separate from it. By exercising a certain agency over the way they use the technology as a tool, they obtain the desired results. While some bloggers in this sample are becoming more conscious of their own tendencies towards data performativity, others simply consider it a motivating aspect of self-tracking. Either way, the data reveals how

quantitative personal data can feel like a very real part of a person's identity and evaluation of

progress towards an idealized self.

5 Conclusions

5.1 Purpose of the research

Self-tracking of personal, quantitative data has come a long way from being reserved for the highly involved Quantified Self community. Smart devices make it possible for us to capture an increasing amount of details of our personal daily lives. While the quantified self creates representation of self in data, graphs and numbers, personal blogs are a more qualitative digital self-representation. By writing about their experiences of everyday life, bloggers are involved in self-reflection and the conscious, selective construction of a virtual presence. In this research, both were observed as technologies of the self (Foucault, 1988), used actively to work upon the self by creating a digital extension of one's identity and therefore having a significant impact on the user's experience of everyday life.

Popular (news) media are not afraid to express their worries when they observe these developments, arguing that technologies used for self-representation and -optimization have made us more aspirational or selfish (Stein, 2013). Self-tracking is widely considered a helpful tool for individualistic self-optimization. At the same time, the large amount of personal data that is generated by self-tracking devices is invaluable to commercial forces. These concerns surrounding the quantified self have also stimulated an academic debate on healthism (Lupton, 2013), the moral and ethical implications and the individual experiences of such technologies. Depending on the lens of the researcher, the implications of the integration between humans and technology vary. This study explores the intersection of self-tracking and personal blogging to observe how the technologies have integrated with identity. The result is new insights into the way technologies like blogs and self-trackers are used to construct a digital identity. The research contributes to the academic debate by taking an inductive approach, focusing on what self-trackers naturally express online to learn what aspects of self-tracking they most prominently experience. The original question that framed this research is "how is self-quantification integrated into digital self-representations of personal bloggers?".

To answer the research question, a qualitative content analysis was conducted using a sample of 50 blog posts, written by personal bloggers about their experience with self-tracking. The group of bloggers that write about self-tracking online primarily represents young, white females in positions of relative privilege. The blog posts were subjected to a qualitative content analysis performed in a grounded theory style approach. As a result, two primary overarching themes were found in the data. The first, the *presentation of the self*, shows that the digital representation of the self in personal blogs is like a bricolage made up of the bloggers' self-disclosure, what is assumed of

the reader and the commercial forces in the blogosphere. The second, *reflexive self-analysis*, exposes how the practice of self-tracking is grounded in a cultural idealization of self-improvement, but can lead to disembodiment. There is a tension between self-tracking devices being experienced as either a controlling structure that represents an alternate version of embodied reality, or as a resource of empowering insights into lived reality.

5.2   Theoretical implications

Before we begin to address the main conclusion, it should be re-emphasized that it is too simplistic to claim technologies have *made* us more self-centered. Indeed, this study made it clear how technological developments, including blogs and self-tracking, have a significant impact on how identities are constructed. This can be explained by the inherent human tendency to think of themselves in a constantly progressing storyline (Storr as cited by Schwartz, 2018). People have been capturing and indexing their lives far back into history, working on a self-constructed reflection of their everyday life experiences and decisions (Humphreys, 2018). The phenomena captured in this study were at times remarkably similar to what has been written about human behavior in times when blogs or wearable self-tracking devices were still far from being created. Although it may be tempting to ascribe the phenomena captured in this study to technology, we should avoid technological determinism. Instead, I would argue that technology has simply given us new tools through which the human inclination to capture and identify with reflections of the self manifests. This particularly holds true in economically thriving societies, where the basic physiological and social needs have been fulfilled and there is more room for both the individual and the market to focus their attentions on the pursuit of self-actualization (Pedraza, 2013).

Personal biometric data and networks of personal websites have expanded the boundaries of the self. As the digital extension of self is assembled of many digital components, Parkinson et al.'s (2017) conceptualization of the digitally extended self offers a useful new way of understanding Belk's (2013) extended self. Personal blogs and self-tracked data, which have been observed in this researched, are just a small part of that. This leads to new considerations about the role of Foucault's (1988) technologies of the self in the modern, digitized world. Depper and Howe (2017, 2017, p.100) cite Foucault on how surveillance and control of the physical body frames self-mastering and optimizing of the self as a "duty for each and objective for all". The state of the self is seen as a direct reflection of our moral decision-making, behaviors and actions in everyday life. The written, visual and quantitative digital representations of self (Rettberg, 2014) found in blogs and in the form of the quantified self have become extensions of who we are as a human being. It logically follows that we now have more "self" that must be actively optimized. This is further amplified by the data doxa (Smith, 2017), the cultural belief that the data-driven technological tools such as self-tracking devices

available to us are helpful, empowering or even necessary in our quest for self-actualization. Not only do we have more aspects of self to work upon, we also believe we have more technologies available to do so. With an increased cultural, moral, social and economic pressure to optimize the self, Foucault's conceptualization of technologies of the self have become more relevant than ever.

Through this realization, it is possible to shed some light onto the way personal bloggers use their blogs and self-tracking technologies as digital representations of self to construct a digital extension of personal identity. We can conclude that the experience greatly varies between the individuals analyzed in this study. The portrayal of self-tracking as a constructive tool for constant progress is often critiqued. The same is true for the individualized productions (Duffy & Hund, 2015) of self found in blogs and social media. However, critiquing technologies as external forces that simply imposes problems upon us, is unhelpful. To understand the relationship between technology, data and human identity, we must consider the complex ways people interact with technology. By changing our discussion of technology, we can stop thinking of it as either a commodified tool or as a threat imposed upon us. I would invite a more open dialogue that includes a broad variety of perspectives about the various digital representation of the self (Rettberg, 2014). This research reveals how the growing role of technology in our construction and perception of self comes with unique new social implications for the way we experience self-identity and the physical body.

5.3   Social implications

First, the pressure for performative self-optimizing behavior has increased due to the availability and visibility of technologies of the self. The social context of individuals is key in their motivation to engage with the quantified self. It appears as if these bloggers are outsourcing their motivation to improve the self, both by using self-tracking devices and through publicly writing about goals and progress in blogs. Remarkably, those writing about their self-tracking practices online were mostly female. The gendered body or idea of gender identity was not so explicitly mentioned in the blogs. However, it became apparent that what was observed is a strongly female-oriented discourse of self-tracking. For example, several expressed their gratitude to find a wearable device that looks "pretty", highlighting how the majority of self-tracking devices do not appeal to a more feminine aesthetic. So even though self-tracking is not an implicitly female pursuit, this research has effectively captured the online discourse of it through a platform of expression dominated by women. These bloggers perceive their blogs as an on-going conversation between them and their readers, and they expect this interaction with the readers to keep them accountable. For this group, external stimuli then play a significant role in the compulsion to engage in self-optimization. This was one of the more surprising findings. If human beings so strongly desire an optimized lifestyle and to work upon the physical body, why are the behavioral change and the embodied outcomes not

motivating enough for their own sake? If we really want to exercise more, why do we need to invest our resources in devices which tell us to get up and move? Why do we rely on graphs, nudges, gamification and social competition to make us do something we already wanted in the first place? Perhaps social pressure, in the form of self-optimization culture and the progress narrative, drives people to become more self-critical and performative. Today's culture of individualistic aspiration (Currid-Halkett, 2017) stresses the moral obligation of mastering the self through technologies of the self (Foucault, 1988). If this external context is what motivates one to enhance aspects of the physical body, maybe it is not so surprising they also need external validation to determine whether they are doing well enough. Luckily, external validation is now within arm's reach (or less). That is, if one chooses to engage in health consumerism (Fox, 2017) to invest in the self-tracking technologies conveniently available on the market. With wearable devices and smartphones that can track a wide range of personal data with minimal time or effort required from the user, the accessibility of the self-optimization tools has greatly increased. People interested in tracking quantitative personal data in the past were confined to manually collecting and storing the data that they could. Qualitative experiences of life were recorded in diaries or photobooks (Humphreys, 2018). Today, their devices do most of the hard work automatically. One can capture a snapshot of life and share it with the world from the palm of his hand.

Slater (1993, p. 91-92) argued how the state of the physical body in consumer culture is presented as a reflection of identity. He connects his argument to Foucault's perspective of the constructed self as the outcome of choices an individual has made as a consumer and as an ethical human being. Slater (1993) claims, in agreement with Foucault, that the body is seen as something that should be worked upon for the plain reason that it can be, using the commodities available to us. In the digital age, our identity has expanded beyond the boundaries of the physical body to include the digital extensions of the self (Belk, 2013; Parkinson et al., 2017). Blogs, social media and the quantified self have all become a part of who we are, reflections of the self which we are equally capable of working upon. If the neo-liberal discourse of healthism (Lupton, 2013) dictates it is our moral responsibility to perfect the aspects of self that we have any control over, today that responsibility overarches both the physical body and the digital representation of the self. Self-optimization is no longer just about doing or consuming the right things, but now includes getting the digital representation of self right. Following the Foucauldian line of thought implies that, as we have more technologies of the self available to us, we automatically have a greater responsibility to use them.

The pressure is additionally increased because the progress narrative (Rettberg, 2014) is repeated by self-tracking tools, in the interfaces of application and by those writing about it on blogs. This leads to more visibility of self-optimizing practices. It seems that self-trackers follow the data

doxa (Smith, 2018) outlook, which frames the collection and storage of personal data as empowering and desirable: Collecting quantitative data on everyday life can help the self-tracker to make better choices and therefore improve their lives, is the leading line of thought. Simultaneously, the bloggers help to keep the data doxa in place by re-telling the same narratives. There is a pressure to perform in how bloggers present themselves. They want to create an identity that is health-oriented, self-reflective and makes conscious choices (Polak, 2018). Even showing off self-optimizing behavior could be considered performative, an attempt to create a front-stage representation of a health-oriented identity. Subsequently the readers, who seem to turn to blogs to be inspired and to gain practical tips and advice, are made to believe they should do the same things. There is no need to copy the blogger exactly: Readers should "do what works for them". But the core message remains they should *do something*. The message that the physical body is work in progress that should be constantly improved, is reinforced this way. This is framed by a cultural context of aspiration (Currid-Halkett, 2017), constantly reinforcing the idea that individuals need to live up their full potential in life, a highly competitive economic environment (Storr, 2018) and the development of a new social elite based on making well-informed, conscious lifestyle choices. The result is a high level of pressure to perfect the embodied self as well as the digital representation of self.

Secondly, commercial forces play increased role in the construction of identity, starting with the commercialization of blogs. Bloggers in this sample show signs of engaging in self-promotion techniques, such as deliberately writing content that is valuable to the assumed reader, pro-actively encouraging readers to interact and referring readers to their other social media pages, all in attempt to gain attention capital (Rokka & Canniford, 2016). This expands our understanding of blogs as an extension of self (Belk, 2013). If we can see blogs as an extension of one's identity, it logically follows that the bloggers work to optimize this part of the self by collecting followers, likes or comments. The attention capital directly contributes to the optimization of self for these bloggers. The promotion of external commercial entities additionally shapes the content of personal blogs. Many of the bloggers were transparent about this, although it remains difficult to estimate to what extent commercial forces impact the opinions and thoughts expressed by the bloggers. Disclaimers of there being *no* promotional content in a blog post suggest that readers have come to expect or even be wary of such practices, underlining their frequency.

In addition to the blogs, health and self-improvement are subject to commercial forces. Self-tracking tools can be considered commodification of healthism (Lupton, 2013). In this study, we see health consumerism (Fox, 2017) into play because it is both desirable and anticipated by the market. The link between self-optimization and consumerism has been long made. However, as a part of our identity and the optimization therefore now plays out digitally and data has become a new currency, we pay with more than money alone. The personal data that is generated by self-trackers is equally

valuable to external parties like businesses and marketers. Self-optimization has not only become commodified, it has turned consumers into prosumers of invaluable first-party data (Millington, 2016). This new dynamic to the commodification of health seems noteworthy but remained remarkably underexposed in the blogs. It is unclear whether self-trackers are insufficiently aware of these risks or choose not to address these issues on their blogs, where they may be more concerned with presenting themselves as conscious, well-informed consumers.

As a final conclusion, the tensions between the empowering and controlling aspects of the quantified self, as articulated in the theoretical framework, are mirrored in these blogs. The data reveals two distinct understandings of the relationship between the quantified self and identity. On the one hand are the empowering aspects of self-tracking technologies. Some self-trackers perceive personal data as insights into their lived reality rather than something separate from it. They consider the technology a tool that can be used to their own best judgement. By customizing the technology both aesthetically and functionally the user exercises agency over the technology. This is in stark contrast with seeing self-trackers as an authoritative, controlling device that determines which arbitrary goals users should work towards, rewarding data-based results rather than embodied outcomes. From this perspective, the technology seems to present an alternate version of lived reality. These are the users who set ambiguous goals like "becoming fit and healthy" and leave it up to the device to define what that looks like quantitatively. The device dictates to some extent how the physical body of an individual should look, weigh or measure. To some, the real-time feedback received can be unhelpful or plain disruptive. Young's (as cited by Danter, 2016, P. 56) ideas of disembodiment caused by self-tracking can be observed in some of these bloggers, but not all. Whether this takes place, seems to depend on the amount of control taken by the self-trackers over the way they use and relate to their devices. Equally unconstructive are the experiences of self-tracking for those who are more occupied with the data and performativity than the real, embodied experience of their lifestyle improvements. In these cases, the device determines how people evaluate their physical bodies and its relative performance. Ironically, self-trackers turn to technological devices to feel more in touch with, or in control of, their physical bodies. The research gave a look into the way technological capabilities determine how we evaluate ourselves. Some easily available metrics, such as sleep duration or physical activity, are commonly used to evaluate how well self-trackers are performing on their self-imposed health ideals. We can conclude then, that the physical abilities and limitations of technology partially determine which quantifications we use to represent our lives and relate to the physical body. When sensors advance, and other quantifications become available to us on our smartphones or other, yet to be developed monitoring devices, will that continue to change how we assess our bodies and the righteousness of our day-to-day decision making?

5.4   Limitations & Recommendations

Although the sampling was limited only by the topic of the blog entries and some technical criteria, the search for blogs reveals that bloggers mostly conform to a specific set of demographic descriptors. Despite efforts made to obtain a diverse sample of bloggers, the expected socio-demographic groups are more strongly represented in the blogosphere, which is reflected in the age, ethnicity and gender in the sample. The fact that this research concerns a selective group of individuals with shared characteristics, is a possible limitation to the research. Their interactions and understanding of self-tracking may not be shared with people outside this sample. One of the primary drawbacks of a qualitative research approach is its unsuitability for guiding conclusions about the general public's experiences of self-tracking. However, what this study does effectively is observe common practices and patterns within the blogging community, which consists for a significant part of young women in positions of relative privilege. Knowing that this study mostly captured the concerns and practices of females, for future research it would be worth considering how it is experienced and discussed (perhaps much differently) by male self-trackers. Additionally, Pedraza (2013) explained that the pursuit of self-actualization is most relevant for those in a stable socio-economic position, with their basic needs for survival and social belonging sufficiently fulfilled. Indeed, most bloggers in this sample appear to come from such a background. Self-tracking and blogging as an act of active self-construction, which both can be considered techniques to reach self-actualization, are more likely occupations for individuals on the fortunate end of the digital divide. Through blog research, it is more difficult to observe the use and experience of self-tracking in other socio-economic groups, in which blogging (or self-tracking) is a less pressing concern. Lupton (2013) adds that these people are less likely to use self-tracking technologies in the first place due to a limited access. A further limitation to the methodology that became apparent throughout the research, is that personal blogs consist of more than the author's honest experiences and opinions alone. Although the literature suggests blogs do contain authentic expressions of self, we cannot be sure the blogs contain the whole story. For example, even though the bloggers appeared to be transparent about commercial collaborations, it remains difficult to assess to what extent that influences the views and opinions expressed in blogs. A possible theoretical limitation comes from the fact that most of the classical theories used, such as Belk's extended self and Foucault's technologies of the self, address critical issues addressed from a male perspective. More recent scholars approach these issues from a stronger feminist performative perspective. The inclusion of the concepts introduced by such scholars could have shifted the weight of the research and would be recommended to future researchers.

For future research, it would be useful to engage bloggers in an open conversation about the role of commercial forces and the pressure to impress or engage the assumed reader, to learn how they perceive the impact of those factors on their digital construction of identity. I would encourage researchers not to see blogs as an online diary or separate unit of research. More interesting would be to learn about personal blogs as part of a network of digital self-representations, including social media, self-quantifications and other technologies modern individuals may use to construct their virtual presence. It was revealed that many blog posts are part of an on-going interaction with the assumed reader. In that regard, a study focused on the readers of blogs could shed light on how the narratives and advices in blogs actually impact the readers in relation to self-tracking or self-optimization.

Altogether, the findings of this research can be used as a guideline for future studies into the experience of self-tracking using more personal in-depth methodologies, such as interviews or focus groups. This study brought out valuable insights into which aspects of the quantified self are most prominent in the experience of bloggers and perhaps those who consume self-optimization content online. The analysis gave insights into the way the people relate to self-tracking and personal data relatively uncontaminated by intervention of the researcher. Moreover, it was possible to reveal consequential points about the role of blogs in the construction of digital identities and the underlying narratives in performative self-optimization culture. The themes and concerns found in this study provide a useful framework to show researchers in this discipline where to direct their lines of questioning. I would recommend future studies to dive deeper into the compulsion to optimize the self, knowing that the perception of "self" can surpass the physical boundaries of the individual. From the Foucauldian perspective, applying surveillance and control to master the self are seen as an individual responsibility. Now that we have stretched our sense of identity to include what is experienced as a digital extension of the self, which we can also actively work upon to continuously improve, the social and commercial pressure has also extended to perfecting the digital aspects of our identities.

Some issues frequently addressed in academic literature, such as the ethical and privacy concerns, were underrepresented in the data. This study has brought to light some possible explanations, one of them being that bloggers work actively to present themselves as conscious, morally justified citizens. In that context, it may be difficult to address the issues of privacy and ethics that go hand in hand with the quantified self. However, personal devices and data can be experienced as very real extensions of self-identity and drive altered behavior and decision making. Especially for individuals who use self-tracking diagnostically, to help them live with physical or mental issues, the reliability of the technology is essential. Given the role and potential outcomes of quantified self-tracking, it seems essential that more research is conducted into the reliability and

regulation of the applications and devices. The various concerns and problematic aspects of self-tracking remain underexposed in the discourse by everyday users on this technology, which calls for a greater awareness. Despite its limitations, this research has succeeded in showing new ways to deepen our understanding of the interactions between technology and our digitizing identities from the perspective of the everyday self-tracker. I would encourage academia to carry on the conversation with self-trackers and personal bloggers alike about the technologies that continue to play a role in how we experience everyday life.

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Appendix A. Dataset

Ref.	Pseudonym	Genre	Gender	Age	Ethnicity	Author details
01	Mark	Science and technology	Male	50's	White	Researcher in technology & science
02	Robert	Sports	Male	50's	White	Triathlete and tech author
03	David	Personal	Male	30s	White	Cartoonist and author
04	William	Personal	Male	30s	White	Writer and musician
05	Daniel	Personal development	Male	40's	Asian	Developer and blogger
06	Emily	Personal development	Female	30s	White	Blogs about technology in everyday life
07	Sharon	Technology	Female	20s	White	Tech blogger and reporter
08	Christina	Lifestyle	Female	20s	White	Professional blogger
09	Lauren	Mommy	Female	30s	White	Blogs about family life and saving money
10	Sophie	Mommy	Female	30s	White	Works in PR and blogs about family life
11	Hannah	Food & Health	Female	20s	White	Professional blogger and vlogger
12	Sam	Personal	Female	20s	White	Writer and photographer
13	Rebecca	Personal	Female	30s	White	Runner and has a family
14	Marnie	Health	Female	30s	White	Fitness and health professional
15	Angie		Female	30s	White	Fitness and health professional
16	Melissa	Personal	Female	20s	White	On a gap year after graduation
17	Lisa	Health	Female	30s	White	Educated in health and nutrition
18	Karen	Midlife	Female	50s	White	Blogs about celebrating midlife
19	Jenna	Personal	Female	30s	White	Works in social media and studies
20	Anna	Personal	Female	Unknown	White	Shares little personal information
21	Joanna	Beauty and fashion	Female	20s	Asian	Professional blogger
22	Ashley	Living with a disorder	Female	30s	White	Writer, speaker and consultant
23	Cathy	Health	Female	20s	White	Holistic health coach
24	Joyce	Mommy and religious	Female	20s	White	Dental hygienist, blogs about family life and religion
25	Melanie	Crocheting	Female	20s	White	Blogs about crocheting
26	Rachel	Running	Female	30s	White	Runner and freelance consultant
27	Don	Running	Male	30s	Black	Professional marathon runner
28	Lucy	Running	Female	30s	Asian	Runner blogging about her life in NYC
29	Blake	Fashion	Female	20s	White	Professional blogger
30	Aranka	Personal	Female	20s	White	Professional blogger

Ref.	Pseudonym	Genre	Gender	Age	Ethnicity	Author details
31	Jenny	Fashion and beauty	Female	20s	White	Accountant and blogger
32	Stephanie	Personal	Female	40s	White	Blogs with her husband about health & travel
33	Danielle	Living with a disease	Female	20s	White	Blogs about her rare disease and lung transplant
34	Allison	Personal	Female	30s	White	Professional blogger and content creator
35	Nina	Mommy	Female	30s	White	Blogs about family life and lifestyle
36	Lizzie	Personal	Female	20s	White	Early 20's, blogs about personal life
37	Amber	Personal	Female	20s	White	University student
38	Katherine	Mommy	Female	30s	White	Blogs about home and family life
39	Alessia	Fashion and beauty	Female	20s	White	Professional blogger
40	Jasmin	Personal	Female	30s	Black	Author and blogger
41	Daisy	Personal	Female	<20	White	High school student
42	Lily	Beauty and fashion	Female	20s	White	Works in marketing
43	Mona	Mommy	Female	20s	White	Blogs about family life
44	Jess	Personal	Female	30s	White	Aspiring author
45	Linda	Personal	Female	30s	White	Blogs about fashion and lifestyle
46	Aaron	Digital sociology	Male	30s	White	Digital sociologist and social media consultant
47	Eric	Health	Male	20s	Unknown	Blogs about weight loss
48	Diane	Health	Female	30s	White	Blogs about food and family life
49	Sarah	Mommy	Female	30s	White	Blogs about family life
50	Lola	Personal	Female	20s	White	Professional blogger

Appendix B. Axial codes

Axial code	Sub-code	Sample open codes
Writing for an assumed reader	Interacting with the reader	Inviting discussion in the comments Thanking readers Responding to reader questions
	Informative content	Description of app functionality Self-tracking advice Good battery life
	Commercial collaborations	Disclaimer: Affiliate link Disclosure of commercial collaboration
Digital representations of the self	Self-descriptions	Being a mom Type A personality Sharing personal workout schedule
	Personal images	Image: Blogger in fitness outfit Image: Screenshot of personal data Image: Blogger wearing smartwatch
	What is tracked	Coffee intake Daily steps taken Sleep quality
	Products and techniques used	Fitbit Sleepcycle Smart water bottle
Reflecting on the self-tracking phenomenon	Social context of self-tracking	The future of personal analytics Activity tracker cult Following trends
	The purchase decision	Fitbit is expensive Product is worth the money Time spent self-tracking
	Adaption of new technology	Eye-opener Initial resistance to fitness trackers Used to make fun of Fitbit users

Axial code	Sub-code	Sample open codes
The self-improvement journey	Undesired situation	Weight gain Feeling unhappy Being a couch potato
	Desire for self-improvement	Becoming fit and healthy Changing habits Exercise is important
	Obstacles	Life is complicated Being busy Difficult to stay motivated
	How self-tracking helps	Staying on track Tracking keeps me focused Using the app as a reference
Interpretation of quantitative personal data	Self-understanding	Becoming aware of own feelings Learning by analyzing data Seeing patterns
	Discrepancy between reality and data	Extreme measures to collect data Frustrated by feedback Desire to think for oneself
	Personal technology	What works for me Customization options Aesthetics
	Results and outcomes	Being more active Quick access to information Having fun

Appendix C. Selective codes

Selective code	Sub-code	Sample open codes
Presentation of the self	Self-disclosure	Being a mom Type A personality Sharing personal workout schedule
	The assumed reader	Thinking readers can relate Recommending readers what to track Writing the article to help others
	Commercialization of blogs	Disclaimer: Affiliate link Disclosure of commercial collaboration
Reflexive self-analysis	Idealization of self-improvement	Becoming fit and healthy Tracking keeps me focused Activity tracker cult
	Disembodiment	Feeling pressured by tracker Fitbit made me unhelpfully competitive Being preoccupied with self-tracking
	Data and lived reality	What works for me Customization options Disagreeing with recommended recovery time