Unhappy? There's an App for That

Tracking Well-Being through the Quantified Self

Jill Belli

Abstract

This article analyses happiness apps, *a subset of quantified self (QS) applications focused on tracking and improving user subjective well-being or happiness. I examine these apps, the data they track, and the interventions they propose to explore the social, political, and ethical implications of QS practices associated with happiness apps. Despite their focus on science, data, and quantification, happiness apps are ideologically inflected, mediated through the influential research, rhetoric, and pedagogy of positive psychology. Positive psychology as the "science of happiness" applies research in order to maximise well-being globally, and it increasingly leverages technology for this goal. Through a close reading of the claims and functions of these happiness apps, I highlight their assumptions about the happy individual and good society. Happiness apps do not assess emotions objectively via user data; instead, they filter user emotions through positive psychology's theories of happiness that inform these apps' conceptions and standards of well-being. This article argues that happiness apps may function conservatively, teaching users to pursue happiness and the good life without recognizing that understandings of* happy *and* good *are not universal but inextricably bound to particular ideological assumptions, cultural contexts, and interpretations of what is positive, valuable, and desirable. The practice of tracking and operationalising user data via a happiness app is a complex, mediated practice. The data are mediated by the particular tool as well as users' individual understandings of and aspirations for happiness, which in turn are mediated by the rhetoric, ideology, and pedagogy of positive psychology. This triple mediation demonstrates that the QS is not neutral but instead embedded within social, cultural, economic, political, and ethical commitments.*

Introduction

The quantified self (QS) has seen dramatic adoption in recent years due to the current ease with which individual data can be collected, computed, and operationalised. A variety of digital tools for learning about one's bodily processes, activities, behaviours, moods, and thoughts exist, including *happiness apps*

designed to track and improve subjective well-being or happiness. This subset of the QS targets states and emotions such as mood, mindfulness, resilience, optimism, positivity, and, of course, happiness. As with other QS tools, happiness apps employ diverse technologies and methodologies for capturing data and improving well-being. Benefits of the QS include greater self-awareness and a resulting sense of control. People do not just seek self-knowledge, however; they also use data to implement changes in their lives. Users can manipulate the data from many happiness apps to stage interventions and experiments with the objective of achieving greater well-being. Viewed in this light, happiness apps and the QS seem useful and empowering.

Although happiness apps and the QS are often treated as positive developments, there are many social, political, and ethical questions that should be raised: How are the data mediated through various technologies, user subjectivities, and larger social, cultural, economic, and political contexts? Is it possible to gather objective data about emotions such as happiness? Even if this were possible, is this data useful and desirable? In whose interest is this tracking? What ideologies and stakeholder interests get embedded into the design of the technology and practices that facilitate self-knowledge?

This article analyses happiness apps, the data they track, and the interventions they propose to explore the social, political, and ethical implications of QS practices. Despite their focus on science, data, and quantification, happiness apps are ideologically inflected, mediated through the influential research, rhetoric, and pedagogy of positive psychology. Positive psychology uses applied research with the objective of maximising well-being and it leverages technology for this goal. Through a close reading of the claims and functions of these happiness apps, I highlight their assumptions about the happy individual and good society. Happiness apps do not assess emotions objectively via user data; instead, they filter user emotions through psychological theories of happiness that inform these apps' conceptions and standards of well-being. This article argues that happiness apps may function conservatively, teaching users to pursue happiness and the good life without recognizing that understandings of *happy* and *good* are not universal but inextricably bound to particular ideological assumptions, cultural contexts, and interpretations of what is positive, valuable, and desirable. By considering happiness apps in the context of positive psychology, this article offers an approach for exploring the ethical implications of QS practices and data as mediated through and in the service of particular agendas.

The Quantified Self: Contexts and Critiques

The QS posits that individuals can gain self-knowledge and self-awareness through tracking personal data. Advances in technology support improved collection and utility of both active and passive data, and mobile phones and portable devices offer increased convenience and efficiency, allowing more seamless integration of tracking into users' everyday work, personal, and leisure activities. The digitisation of self-tracking practices via the QS reflects

technological utopianism, a belief in the value of greater self-knowledge and progress through technology. "The terms 'quantified self' and 'self-tracker' are labels, contemporary formalizations belonging to the general progression in human history of using measurement, science, and technology to bring order, understanding, manipulation, and control to the natural world, including the human body" (Swan 2013: 86). To this end, QS practices rely heavily on scientific method and experimentation, and claim objectivity through quantification. It is unsurprising, then, that the motto of the QS movement is "self knowledge through numbers."[1]

QS proponents believe that users become empowered through their data. Ideally, as QS movement co-founder Gary Wolf states, one will not only collect data but also operationalise these data into real life improvements: "If you want to replace the vagaries of intuition with something more reliable, you first need to gather data. Once you know the facts, you can live by them" (2010). The QS community has normalised self-tracking, demonstrating how the awareness of moods, behaviours, and actions aids targeted interventions users might desire. Ultimately, the goal is for users to become better versions of themselves (cf. Swan 2013: 93). QS advocates promote this transformative potential, yet this utopian outlook often conceals ethical concerns in connection with surveilling users, exploiting data for commercial gain through targeted marketing, encouraging normative behaviour, fostering individualism, ignoring or obscuring qualitative information, and privileging quantification, measurement, and empirical truth of the body and personal experience.

In affirming that a person can be known and that this knowledge can be accessed through her data, the QS relies on an essentialist view of the body. It belies a misguided trust in quantifying and measuring biological factors, behaviours, emotions, and thoughts as well as credence in tracked data as unmediated, uncontaminated representations of the user. In other words, the success of the QS hinges on the commonly held assumptions that tracking can fill in gaps in self-knowledge and that the data do not lie. However, while the QS can capture a great deal of user data and provide resulting insights, there remain aspects that the data cannot register and represent through algorithms. QS practitioners and theorists should always ask about these losses, just as they work to understand what can be gained from the QS.

With so much emphasis on eponymous quantified nature of the QS, it can be easy to overlook the important qualitative nature of this tracking. Narratives and stories shape the data captured from QS practices, and these user-generated meanings are crucial components of self-knowledge. As Jenny Davis (2013) states in her blog post, "The Qualified Self":

"Self quantification is a process bookended by self qualification. Yes, the numbers are important. Self-quantification is, by definition, self-knowledge through numbers. Those numbers, however, take shape qualitatively. They become the code with which self-quan-

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1   Cf. http://quantifiedself.com/.

tifiers prosume selves and identities into being. They are the bits with which self-quantifiers make sense of their atoms." (ibid)

Mood and emotion tracking promise to move the QS further towards the qualified self (cf. Swan 2013: 93-95), especially since they often rely on active, manual importing of subjective data (e. g., in response to a prompt like "how do you feel right now?"). This is in contrast to the passive, automatic tracking of many health and fitness devices, which routinely collect objectively verifiable bodily and environmental data via sensors and wearables. Such subjective datasets create problems for data accuracy and usability, and "emotion mapping remains a challenging problem" (Swan 2012: 224) that QS advocates hope to solve with the help of biometrics and "greater objective data collection" (Swan 2013: 92). Here, QS enthusiasts are optimistic about the revolutionary potential of the Internet of Things (IOS), of which the QS is a part: "Whole fields of study previously limited to self-reported information such as psychology could be radically supplemented and transformed with objective metrics obtained from the IOT." (Swan 2012: 248) Automating data collection may decrease the technical problems related to subjectivity (Swan 2013: 93) that introduce unreliability to data science approaches (Fawcett 2015: 254), but it would further obscure mediation of the data and simultaneously decrease reflection and mindfulness, two of the most valuable benefits of QS tracking (Nafus/Sherman 2014: 1785).

User identity, experiences, environment, values, and desires inflect QS data and their interpretation, contributing further complexity. Deborah Lupton's critical sociological perspective surfaces the interplay between tracking tools, collected data, and socio-cultural context: "Digital data are continually being generated when people interact with online technologies. Data assemblages, therefore, are lively digital objects: mutable, dynamic, responsive to new inputs and interpretations." (Lupton 2014b: 8) Once captured, user data folds into a larger matrix; no longer completely in the user's control, the data may be made to serve someone or something else's purposes.

"Self-tracking is not only a technology of the self, but it is also a data practice. [...] These datasets are having an increasingly important role in shaping policy, commercial dealings, education, social welfare and healthcare, the management of groups and populations and in individuals' personal and everyday life." (ibid: 3)

There are complex, social, political, and ethical issues at stake in tracking user data and staging interventions based on it for "self-improvement and achieving one's 'best self'" (Lupton 2014b: 8). The QS may aid in the quest to optimise the self, but what are the standards to which this optimising adheres? Tracking relies on numbers and data as well as values and judgments, assessments of not only of what is, but also of what ought to be. While the norms may be transparent and clearly stipulated in certain cases (e. g., take 10,000 steps per day to remain fit), it is more challenging to parse the norms for subjective data such as emotions and moods.

Positive Psychology: A Mediating Ideology

While critiques of the QS are becoming mainstream, the influences of mediating ideologies and discourses that inform QS tools and practices are less often thematised. In what follows, I explore the mediating ideology of happiness apps, a particular class of QS tools that stem from the convergence of happiness research and innovations in technology. Happiness apps aim to track and improve emotional well-being and are driven by positive psychology, a popular movement that has branded itself "the science of happiness" and which is increasingly leveraging digital technologies to promote its particular version of well-being.

Since the turn of the 21st century, positive psychology has played a defining role in research and debates about the nature of well-being and the best ways to maximise it for individual and societal good. Founded by Martin Seligman in 1998 with a mission to study and cultivate the positive aspects of life (rather than continue psychology's long-standing focus on remediation), positive psychology is a growing field that researches subjective well-being and flourishing (cf. Seligman/Csíkszentmihályi 2000). Positive psychologists have made great strides in applying their findings to a variety of settings, such as economic policy, urban design, workplaces, and schools. One of the most influential applications is positive education, which teaches subjective well-being in schools and other educational settings. Underlying both positive psychology and positive education is the belief that well-being is not fixed but something that can be cultivated and taught. "If positive psychology aims to build well-being on the planet, well-being must be buildable. That sounds trivial, but it is not." (Seligman 2011: 31) The pedagogy of positive education focuses on nurturing individual strengths, and operationalising them for greater flourishing according to the positive psychology construct of well-being, condensed in the acronym PERMA: Positive Emotion, Engagement, (positive) Relationships, Meaning, Accomplishment (Seligman 2011: 16-20).

Positive psychologists and those inspired by their work view technology as a useful conduit for spreading and implementing happiness interventions. Seligman's influential book *Flourish: A Visionary New Understanding of Happiness and Well-Being* (2011) promotes "positive computing," using technology in the service of individual and societal well-being, a technological vision that has influenced the development of happiness apps. Seligman explicitly identifies the aim of positive computing as "go[ing] beyond the slow progress in positive education to disseminate flourishing massively" (Seligman 2011: 94). Enthusiastic about the possibility of improving well-being on a global scale through technology, positive psychologists offer optimistic claims about the transformative potential of positive computing. Technology will be a key player in the overall goal of helping the world to flourish:

"A necessary condition for large-scale flourishing, particularly among young people, is that positive psychology develop a delivery model for its well-being enhancing interventions that scales up globally. Information technology is uniquely positioned for assisting

individuals with their flourishing in a way that is effective, scalable, and ethically responsible." (Tomas Sanders, qtd. in Seligman 2011: 94)

Although investment in increased flourishing (Seligman 2011: 240) may be considered a welcome shift, this commitment must be evaluated against positive psychology's core values. Positive psychology prides itself on its grounding in scientific research and empiricism, offering these commitments up as primary support for its interventions' success (cf. Belli 2012: 78-82; Parks et al. 2012: 1222; Howells et al. 2014: 3-4). This focus on scientific objectivity obscures the field's ideological commitments, which promote a particular version of well-being skewed towards individualism and personal responsibility. As I will illustrate below, happiness apps often rehearse and reproduce this rhetoric, offering users ostensibly proven methods towards increasing well-being. Positive psychology's appeals to scientific objectivity dovetail with the QS emphasis on empiricism and quantifiability. Together, these discursive claims prompt users to learn about and stage empirical interventions into their own happiness, but they also obscure the visions of well-being built into technologies like happiness apps. A critical analysis is necessary to understand the reach of happiness apps and QS use more generally; data tracking involves "social and cultural ideas about what kinds of information are valuable or trustworthy. Remember: *claims about 'truth' are always claims to power*" (Boesel 2012, emphasis in original).

Under the mantle of scientific rigor and validity, positive psychology pursues the fraught task of assessing happiness and other positive emotions. It labels whatever it identifies as contributing to well-being positive and desirable, without articulating potential nuances or engaging in the difficult discussion needed for consensus (cf. Belli 2012: 96-98). Through science, positive psychology also attempts to distance itself from the liabilities and critiques of the self-help industry, though it actually reproduces many of them (ibid: 78-85). In particular, it posits the individual as the primary locus of improvement, instrumentalises social relationships for personal benefit, and teaching interventions that acclimate people to life the way it is (ibid: 87-91).

The self-reported nature of most subjective well-being research creates further complications. Research on happiness relies on methodologies that

"presume[s] the transparency of self-feeling (that we can say and know how we feel), as well as the unmotivated and uncomplicated nature of self-reporting. If happiness is already understood to be what you want to have, then to be asked how happy you are is not to be asked a neutral question. It is not just that people are being asked to evaluate their life situations but that they are being asked to evaluate their life situations through categories that are value laden." (Ahmed 2010: 5)

This critique can be extended to assessing emotion in QS methodologies, especially in happiness apps, which rely primarily on manually inputted subjective data. Furthermore, self-reporting evaluates happiness in the context of current circumstances; in other words, it assesses satisfaction with the status quo (Ehrenreich 2009: 170). If "[p]olicy itself follows from what is measured"

(Seligman 2011: 227), then these measurements fuel positive psychology's activist aspirations in a self-fulfilling prophecy, suggesting that a happy future may be built in the image of the present. As the data from happiness apps often contributes to positive psychology research, these QS tools have even farther reaching implications.

As this brief discussion exemplifies, positive psychology is inextricably bound to particular notions of the happy individual and the good life, to what constitutes the positive, and to instrumentalised, decontextualised, and individualised versions of flourishing. Positive psychology's assumptions and agendas must be critically considered, since the ideological commitments of positive psychology may be transferred over to its applications (in this article, literally "apps").[2] Any discussion of happiness apps should account for positive psychology's semantic and conceptual slipperiness, normative and conservative views of well-being, focus on the individual at the expense of structural problems, and instrumentalising tendencies.

Happiness Apps: Tracking Well-Being

Dreams of methods and means for measuring and quantifying individual and societal happiness are nothing new. From Jeremy Bentham's felicific calculus to proposed hedonometers to mood rings that change colours with a person's affect, visions of tools to track and visualise emotions have captured collective imaginations throughout history (cf. Davies 2015: 13-39). Happiness apps are the next step in a long line of tracking technologies aiming to assess subjective well-being. These happiness apps promise to track "high-valence data streams" (Swan 2012: 239) and are part of what some view as "self-tracking 2.0, where both quantitative and qualitative data may be collected with the object of improving quality of life in areas such as happiness, well-being, goal achievement, and stress reduction" (Swan 2013: 94). Below, I explore how happiness apps function rhetorically, ideologically, and pedagogically. Happiness apps and their users abound (cf. Eaton 2014), and this brief discussion is not intended to be comprehensive, detailed about any particular app, or an assessment on these apps' effectiveness in increasing well-being. Instead, it serves to highlight some social, political, and ethical issues within the QS as exemplified through happiness apps.[3]

A significant number of happiness apps are informed by the influential field of positive psychology in their claims to expertise, the interventions they

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2 Cf. Belli (2012: 64-106) for a detailed discussion of the rhetoric, pedagogy, ideology, and desirability of positive psychology.

3 While my primary focus here is on "apps" that can be downloaded and used via mobile phones or tablets, this discussion extends to other web-based happiness applications, which may employ mobile features such as text messaging to assess individual happiness throughout one's daily routine (e.g., *Happy Factor*, cf. http://howhappy.dreamhosters.com/).

propose, and the visions of happiness and the good life they endorse. These apps do not merely track user data about well-being; they also orient users to a particular understanding of what type of happiness is desirable. The rhetoric of happiness apps derives from the twin influences of positive psychology and the QS, which both maintain that an individual can be improved through attention to one's emotions and the application of various expert, allegedly scientific interventions.[4] The developers of happiness apps reproduce positive psychology's claims of efficacy grounded in science and empiricism in order to set their apps apart from those representing the "non-researched self-help industry" (Howells et al. 2014: 4). This appeal to science manifests in various ways, such as the inclusion of resources outlining the scientific evidence behind happiness interventions and experts from the field to guide the users' quest for greater well-being. Some apps, like *Live Happy* and *SuperBetter*[5], even have popular publications associated with them (Lyubomirksy 2007; McGonigal 2015).

A particularly evocative example is the introductory video of the iPhone app *Live Happy* launched in 2009 as companion to Sonja Lyubomirksy's book *The How of Happiness* (2007). Lyubomirksy narrates this video, providing her credentials as an academic psychologist and author as ethos and logos to support the use of the app. She states: "As a scientific community we've learned how to measure a person's happiness, and armed with this ability to assess how different activities affect one's measured levels of happiness. As it turns out, there are sets of activities that one can engage in, that have been scientifically supported, to help people become happier."[6] The rhetoric and pedagogy of the popular tracking tool *Happify* also relies heavily on science, reassuring users that "the science of happiness is a serious and legitimate area of study, with a great deal of validated research and studies supporting it."[7] *Happify's* "experts" and "happiness tracks" creators are firmly entrenched in positive psychology, with titles such as "positive psychology coach" or as authors of related books such as Gretchen Rubin's *The Happiness Project* (2009) or Shawn Anchor's *Before Happiness* (2013). Furthermore, *Happify* claims that "Your Emotional Wellbeing Can Be Measured" and, in its "The Science Behind Happify" section, provides an article on "Happiness by the Numbers," which attempts to quantify various factors associated with happiness.

In this way, these apps are aligned with the positive psychology mantra that increased happiness is desirable and achievable through scientific inter-

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4   Many happiness apps caution that they do not provide "medical advice" and are not a substitute for the attention of a doctor. Instead, like positive psychology, they aim primarily to increase flourishing, a functional and qualitative difference from apps focused on remediating unhappiness from a medical perspective (e. g. compare *Moodtracker*, which specifically targets medical disorders and *Track Your Happiness*, which is informed by positive psychology and seeks to increase happiness), cf. https://www.moodtracker.com/ and https://www.trackyourhappiness.org/.

5   Cf. https://www.superbetter.com/.

6   Cf. https://www.youtube.com/watch?v=BGrwPnXdtJM.

7   Cf. http://www.happify.com/.

ventions, and they work to spread the positive psychology gospel, one of the major goals of "positive computing" as outlined and theorised by Seligman and other leading positive psychologists. By leveraging mobile technology, users can "perform happiness-boosting activities as a natural part of their daily lives, wherever they are, and in different situations" *(Live Happy)*. These happiness apps offer a variety of activities, exercises, motivational strategies, feedback loops, and visualisations to develop self-awareness, one of the primary goals of the QS.

To keep users motivated on their quest to achieve greater happiness, happiness apps often gamify the process of tracking and increasing well-being (Howells et al. 2014: 18). Gamification is seen as an integral component of engaging users in tracking and behaviour change (Swan 2012: 240, 242). *Happify's* slogan is "Happiness. It's Winnable." Suggesting one can "win" at happiness hints at the instrumentalisation infusing these apps as well reliance on both "grit" and "resilience" (buzzwords in positive psychology, and factors integral to the "accomplishment" element of well-being construct PERMA). *Happify* boasts, "Our cheerful games and activities are deceptively effective," and the app offers a "Savor quest" and a "Negative knockout" to help users destress and uplift themselves. *SuperBetter*, an app for building user happiness and resilience, has gamification at its core. Its creator Jane McGonigal is an experienced game design researcher and practitioner who tries to leverage gamification strategies to increase well-being. Upon signing up, a user is prompted to choose a "challenge" and then use "Power Ups, Bad Guys, and Quests" to overcome this challenge. Gamification converges with the appeal to scientific expertise, as research is embedded into and informs the app: "As you play SuperBetter, you'll find science icons hidden throughout your missions. Clicking these icons gives you access to the science of SuperBetter – including links to the research articles that everything's based on. You can see an overview of the science behind SuperBetter at ShowMeThe-Science.com."[8]

Besides motivation through gamification strategies, many happiness apps encourage user reflection, either explicitly endorsing mindfulness (e. g. *Happy Factor*, with the slogan, "Be Mindful, Be Happy")[9] or otherwise promoting attentiveness to emotions as conducive to positive interventions (e. g., *gottaFeeling*)[10]. Mindfulness of behaviors, emotions, thoughts, and habits is actually one of the greatest benefits of the QS; in fact, some users find that *"the awareness one develops through self-quantifying may be as beneficial as (if not more beneficial than) the collected data itself"* (Boesel 2012, [emphasis in original]). Some exercises and activities, such as the "Best Possible Self" activity in *Live Happy* prompt users to write, imagining future selves. This reflective composing is a qualitative, open-ended exercise that stands in contrast to some of the more transactional, functional activities that many of these apps endorse or require (cf. Kurtz/Lyubomirsky 2012; Parks et al. 2012).

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8   Cf. https://www.superbetter.com/.

9   Cf. http://howhappy.dreamhosters.com/.

10   Cf. http://gottafeeling.com/.

Although reflection exercises and data reflection offer benefits, the data collected do not objectively represent unmediated user emotions. These "happiness boosting" activities, gamification strategies, and interventions come contextualized against a backdrop of norms about what it means to be happy within the positive psychology framework. There is an unacknowledged standard of flourishing that users are evaluated by and pushed to aspire to when they use these apps. Whether users are aware of this influence or not, the "data assemblages" (Lupton 2014b: 8) produced by these apps are generated in relation to the popular and powerful ideology and discourse of positive psychology. Therefore, users do not merely gain self-knowledge of their individual subjective well-being; rather, they amass a reflection of themselves through the lens of positive psychology's version of the normative version of a happy individual and the good society.

Furthermore, happiness apps often shape the potential responses that users can provide, limiting the data set to pre-determined, unrepresentative categories. For example, *gottaFeeling* asks the question, "How do you feel?" but only offers the following potential answers: "Happy, Caring, Confused, Sad, Angry, Inadequate, Hurt, Fearful, Lonely, Guilt/Shame."[11] *UniThrive Wellbeing*, an app to "[p]ractise positive psychology," assesses mood as follows: "Bored, Content, Excited, Fortunate, Frustrated, Gloomy, Grumpy, Happy, Hopeful, Inspired, Lonely, Loved, Okay, Overwhelmed, Sad, Worried."[12] *The Emotion Diary*, another app explicitly "based on the principles of Positive Psychology,"[13] provides a bare-bones classification of emotions, with only three images – an unhappy face, neutral face, and smiley face – as options. These constraints built into app-design funnel QS tracking (and by extension, visualisation, sharing, and interventions) through external parameters for what constitutes valid moods, for what counts as happiness data. These apps, then, perpetuate the lack of consensus of defining and assessing happiness, and may fail to capture important data about a person's emotions or circumstances. If there is no category provided for what a user is feeling, her emotions cannot be registered and tracked as data.

Limited response categories become even more problematic when happiness apps go further to help users understand their data and assess potential interventions by offering users visualisations of their data and progress. These representations vary from the color-coded lines of individual data (e.g., *MoodJam*)[14] to more sophisticated collective data visualisations, such as the "Global Happiness" graph from *Happy Factor*. These visualisations are primarily basic representations of manually imported user data, which is consistent with much of the QS: "In fact, most QS apps do little more than present attractive graphs of the user's data and depend on how to spot patterns and correlations – or assume that only trends are interesting." (Fawcett 2015: 255) These data visualisations reinforce

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11   Cf. http://gottafeeling.com/.

12   Cf. https://itunes.apple.com/us/app/unithrive-wellbeing/id914756577.

13   Cf. https://itunes.apple.com/us/app/the-emotion-diary/id568740836.

14   Cf. http://moodjam.com/.

the possibility of tracking and representing subjective emotional states for either personal gain or public good. They also position data as something objectively existing in the real world that just is waiting to be captured and graphically rendered, rather than fluid, mutually constituted social and cultural practices.

Though QS is primarily an individual endeavour, happiness apps connect users to larger networks of well-being. Placing individual data in conversation with those of other users represents a shift from "private self-tracking" (Lupton 2014a: 5-7) to "communal self-tracking" (ibid: 8-9). This push towards networked affect is driven by the positive psychology finding that a supportive social network is key to happiness and motivation. Positive psychology professes to move beyond individual happiness to nurturing positive relationships and, ultimately, larger positive institutions (cf. Seligman 2011: 20-24). These happiness apps reinforce this mission, encouraging sociality and at times even mandating it. When opting for the private mode on *Happify*, for example, the user is exhorted to choose sharing settings, because "[s]cientific research shows that social support and positive feedback are key to staying motivated on your happiness journey." The app also has a heading for "Give Encouragement, Get Encouragement," which affirms that social networks aid individuals in the quest for more happiness. *gottaFeeling* exhorts users to "[i]mprove your relationships with gottaFeeling, an application to track and share your feelings." *Moodpanda* presents "featured mood diaries on their main site that users can browse and comment and offer affirmations, creating a motivational support network for its users."[15]

Some happiness apps go further, allowing users to not only share but also to build social comparison into the feedback loop (e.g. *Moodstats*)[16]. Ironically, research shows that this type of comparison (or competition, perhaps) contributes to unhappiness, as is shown in studies of well-being, affect circulation, and emotional contagion in social media (cf. Kramer et al. 2014; Sabatini/ Sarracino 2014; Trumholt et al. 2015). The socially mediated happiness app experience raises other critical questions about how accountability to a network is different from accountability to the self, the problematic nature of self-reporting emotions, and the fact that users may over-represent their feelings of well-being when they know that this information will be public. Some happiness apps such as *Happy Factor* are explicitly (and perhaps inextricably) integrated into existing social media, providing the option for or requiring using another login, such as *Facebook*, to use the tool; *Expereal*, an app or tracking and visualizing mood, even mandates a login via *Facebook* (cf. Shu 2013). For those QS tools offering or requiring a third party social network login, further ethical consideration arises about how data will be used and privacy maintained within these corporate, global networks that commodify their users along with the data and content they produce.

In addition to market interests, happiness apps' "data practices" (Lupton 2014b: 3) and "data assemblages" (ibid: 8) frequently feed positive psychology

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15 Cf. http://www.moodpanda.com/.

16 Cf. http://www.cubancouncil.com/work/project/moodstats.

empirical research. For example, *Mappiness* indicates that app use contributes data for a research project[17], as does *Track Your Happiness*, which was created for a doctoral study at Harvard.[18] *Mappiness* highlights this partnership between users and researchers on their website, with clear sections labelled "what's in it for you?" and "what's in it for us?" Data, feedback, analysis, and benefit extend beyond individual users to the positive psychologists who view happiness apps as an important research opportunity:

"Technology provides an exciting opportunity to close the gap between research and implementation. [...]. The use of smartphone technology adds an additional layer of realism, allowing researchers to create phone-based interfaces for interventions and then, as participants use these interfaces, track participants' behaviors and moods as they occur." (Parks et al. 2012: 1232)

Happiness apps are just one aspect of what I term *digital happiness* in order to summarise efforts of positive psychologists and affiliates to utilise technology for increased well-being. In addition to the QS, digital happiness initiatives employ data mining, network analysis, social media research, and sentiment analysis (e. g. the World Well-Being Project, Twitter's *Hedonometer*, the social network *Happier*)[19]. Happiness apps and digital happiness initiatives are altering how individuals and societies conceptualise, measure, and experience happiness, and they frequently serve activist agendas for creating greater well-being globally, e. g. *The H(app)athon Project*; *Happy Barometer*; *Happiness Apps Challenge*[20] (cf. Havens 2014; Business Wire 2015).

Conclusion

Regardless of the particular happiness app or its particular inflections, the message is clear: users will benefit from and should engage in tracking happiness habitually. "Clean your teeth, wash your face, measure your mood. A daily must-do."[21] *(Moodscope)* This imperative to monitor subjective well-being through QS tools passes the responsibility for creating and sustaining happiness onto individual users, who then must manage their emotions via these happiness apps. Happiness apps might then participate in self-monitoring, normalcy, and discipline in the Foucauldian sense (Nafus/Sherman 2014: 1793), just as self-help (cf. Rimke 2000; McGee 2005) and positive psychology and happiness studies

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17   Cf. http://www.mappiness.org.uk/.

18   Cf. https://www.trackyourhappiness.org/.

19   Cf. http://www.wwbp.org/, http://www.hedonometer.org/, https://www.happier.com/.

20   Cf. http://happathon.com, http://happybarometer.com/, http://www.happinessapps.com/.

21   Cf. https://www.moodscope.com/.

might (cf. Belli 2012; Binkley 2014).[22] Happiness apps teach users to be hyper-vigilant of personal well-being and to change themselves for increased happiness, adjusting their satisfaction to the world as it is rather than critically approaching it. In this view, progress and self-improvement are promised by an app, its set of interventions, and the adoption of the positive psychology worldview they endorse, rather than achieved through engagement with the structural conditions in which users find themselves. These apps carry the assumptions that understanding and increasing one's happiness is a desirable end and within an individual's control. These may seem like obvious and benign statements (users come to various QS tools and methods to learn about and improve their lives), but they bear explicitly stating and critically interrogating. As the specific context of positive psychology makes clear, happiness apps endorse visions of the happy individual and the good life that are not objective and user-centered, but instead aligned with positive psychology's version of the positive, happy, and good.

The popularity and prevalence of happiness apps suggests that they resonate with many QS trackers who desire greater awareness of and strategies for personal well-being. Like other QS tools and methods, they can effectively generate self-knowledge, fuel personal discovery, and guide choices that align users with idealised versions of themselves. However, as the above discussion of happiness apps demonstrates, the QS is infused with values and commitments, and its users are not merely tracking objective data that they can then control via archiving, aggregation, visualisation, interpretation, and operationalisation.

The data captured by QS tracking are always already subjective and fraught, especially so when what is being tracked is mood, happiness, well-being, or other emotional states. Furthermore, users are always already caught up in larger social, cultural, economic, political, and ethical contexts, as are the data that circulates in their bodies, their perceptions, emotions, and beliefs, QS tools, and the larger information economy. "Self-tracking as a phenomenon has no meaning in itself. It is endowed with meaning by wider discourses on technology, selfhood, the body and social relations that circulate within the cultural context in which the practice is carried out." (Lupton 2014b: 2) In the case of happiness apps, they reproduce the central tenets of positive psychology and participate in solidifying individual and societal understanding of well-being according to this field's mission (cf. Howells et al. 2014).

The practice of tracking and operationalising user data via a happiness app is a complex, mediated practice. The data are mediated by the particular tool as well as users' individual understandings of and aspirations for happiness, which in turn are mediated by the rhetoric, ideology, and pedagogy of positive psychology. This triple mediation demonstrates that the QS is not neutral but instead embedded within complex ethical contexts that merit further exploration.

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22   Cf. Davies (2015: 215-243) for an overview of big data efforts to track mood and discussion of how these developments may participate in surveillance and normalising behaviour.

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