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Some tech devices try but fail to make us minimize our carbon footprint

One idea to improve their success rate is to focus more on community-building and peer comparison, writes Gerdien de Vries

For a couple of weeks now, I am the proud owner of a wireless wrist device that tracks my physical activity, heart rate and sleep. It gives me real-time feedback and nudges me towards a healthier behaviour. Along with the device comes an app that allows me to monitor my weight, calorie- and water intake. The app further provides a friendly community, benchmark information, and tips for a healthy lifestyle.

Adopting a healthier life style was the main reason why I bought this device. But I was also driven by

academic curiosity. How would it feel to be my own Tamagotchi (a virtual pet)? And how easy or difficult would it be to nudge my own behaviour? As a behavioural scientist I know how hard it is to change behaviour, especially when it concerns your own habits. However, I am also aware of the psychological mechanisms that contribute to the effectiveness of persuasive health technologies; interactive systems designed to aid and motivate people to adopt behaviours that are beneficial to them and their community while avoiding harmful ones (Orji & Moffatt, 2016).

One of the main psychological factors that drive the power of persuasive health technologies is the fact that they unburden you. They tell you exactly what to do to and when to do it to become healthier ("Take 194 steps now to complete your hourly 250-step goal!"). We love being nudged because we are 'cognitive misers'; people tend to afford as little cognitive effort as possible (Fiske & Taylor, 1991). Health devices also use the power of the social norm; by providing benchmark and best-practice information you can compare yourself with your peers. We are very sensitive to how others like ourselves normally behave, and we do not like to deviate too much from these social norms (Goldstein, Cialdini, & Griskevicius, 2008). Information on social norms, as such, can easily influence our actions. Furthermore, the use of competition and gamification (collecting badges and medals), and the visualisation of results tap into psychological mechanisms underlying the effectiveness of persuasive health technologies.

The popularity and effectiveness of persuasive health technologies have inspired organisations in other areas of human well-being to copy the format. For example in the energy domain. In order to reach international climate goals, we need to reduce our carbon footprints (IPCC, 2013). We can adopt a greener lifestyle for example by turning down the heater, taking the train instead of the car, and eating less meat. And if direct feedback on our healthiness can trigger a positive behaviour change, why would not direct feedback on our "greenness" do the same (McCalley et al., 2006)?

However, persuasive technologies nudging towards a greener lifestyle are not as successful as technologies nudging to a healthier lifestyle. That is, the numerous green apps that help people to act more sustainably have a low download rate, and their use is also low. Furthermore, the few "green" devices comparable to the health wearable I have – including a carbon counting phone and a wristband – are underdeveloped or still in a conceptual stage (Brauer et al, 2016). In contrast, smart meters – household technologies that provide feedback on domestic energy use – appear to be effective in triggering more sustainable behaviour (e.g., Darby, 2006; Schubert, 2017). However, smart meters only give feedback on one type of behaviour instead of a general set of behaviours, therefore I tend to leave them out of the comparison with technologies that nudge general behaviour.

So, what can explain this lack of success of persuasive green technologies, compared with the success of persuasive health technologies? First of all, it is difficult to (automatically) measure green behaviour. It is much easier to measure heart rate or number of steps taken. Stated differently, a technical issue hinders the success of persuasive green technologies since it is not (yet?) possible to automatically track carbon footprints. A more psychological than technical barrier to success lies in the reward you get from a change in lifestyle. A greener lifestyle is not as tangible and proximal as the reward you get from a healthier lifestyle.

That is, if we adopt a healthier lifestyle, we feel fit, might lose weight (or gain some, depending on our goal), and sleep better within a couple of weeks. If we adopt a greener lifestyle the reward is not very visible, and it lies more in the future (Spence, Poortinga, & Pidgeon, 2012). Those aspects do not go well with our need for instant gratification.

Because I would not like to end this blog with a gloomy message without offering a solution, I would like to share my ideas on how to increase the adoption and success of persuasive green technologies. Due to the power of social norms – especially in the domain of green nudges (e.g., Schubert, 2017), I expect that the success rate could go up if these technologies focus more on community- building and peer-comparison. Furthermore, I anticipate a near future in which goods and services are labelled with a QR code sharing carbon information, our mobility behaviour is automatically tracked, and smart meters are fully integrated in smart phones. This might help to maximize the success of persuasive green technologies and minimize our carbon footprints. Let's wait and see.

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