NUDGING PRIVACY: BENEFITS AND LIMITS OF PERSUADING HUMAN BEHAVIOUR ONLINE

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1. Introduction

Nudge theory is a concept initially used in behavioural science to positively reinforce better decisions by users. It has now become a trend in political science, economics and public policy to promote healthier, smarter choices and avoid negative externalities – either financial or not. Nonetheless, nudging has also been pointed out as unethical, since it takes away from humans their rationality and autonomy. In this sense, critics believe a "nanny state" is then established[2].

This piece intends to be descriptive-only. The manuscript will delve into the reasons why nudging can be used to enhance privacy in the daily use of social networks and mobile applications, by presenting industry and academia cases where it has either a) been experimented; or b) to which it can be applied. As a general picture, the article will also present some concerns on the legal and ethical aspect of nudge theory, besides bringing up its use as an alternative to privacy notices – pointing out legal limits and its difficulties in ensuring long-term behaviour changes.

2. What is a nudge?

The nudge theory emerged from behavioural science and has found echo in psychology, political science and economics. The concept's general argument is that positive, indirect suggestions can influence a person's decision-making for the better, instead of direct legislation or enforcement on the same matter. The theory's most well-known works are those

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[2] Jachimowicz and McNerney, 2015.

connected to Richard Thaler and Cass Sunstein, who have popularised the nudge concept and amplified its use. In their words:

> A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not[3].

Nudges have been used as tools to provide better public policies and reduce governmental costs linked with bad choices consequences. Examples in the area of public health are the easiest to be found: providing awareness pictures of illnesses caused by smoking in cigarette packs and displaying salads in larger portions than high-calories snacks in public cafeterias are in place across different countries.

The nudge theory also benefits immensely from how human behaviour deals with default options: most of times, people stick with what it is offered to them. Thus public policy analysts have considered default options that take into account actions leading to positive externalities, whether financial or not.

> (…)Vastly more people in Austria are organ donors than in Germany, simply because the default is set differently in the two countries. Austrians have to opt out of organ donation, Germans have to opt in. (…) Sunstein and Thaler have given the name *libertarian paternalism* to the political philosophy that holds that such empirical findings should be exploited to drive citizens to make better choices[4].

Here, the concept of "good and bad" or "better or worse" choices is always connected to the idea leading to a behaviour that will reflect positively over the course of years, besides granting cheaper solutions to the public administration.

3. Behavioural science in an online world

With the increased use of social networking websites, smartphones and applications that constantly track users' habits and whereabouts, the concern for privacy in an online world has risen. Despite the amount of personal information voluntarily given away in social media, most internet users are not aware of how much extra personal data is needed to keep applications working silently in the background. Additionally, the privacy issue gains novelty concerns when it comes to online social relations because in this realm, perceptions and

[3] Thaler and Sunstein, 2008, p. 8.

[4] Kapsner and Sandfuchs, 2015, p. 455.

interaction behaviours vary from the real world. A new phenomenon, being called as *interpersonal privacy concerns* by field experts, has been studied.

> While individuals are free to decide what personal information they disclose, they often cannot control what others disclose about them, or how others may use the private information that they disclose. Likewise, people may share information that involves others in ways that violate their privacy preferences. This becomes an increasingly significant privacy threat with the emergence of SNSs [social network sites], as the digitized social platform combines an individual's self-disclosure with others' disclosure of information about the individual, records the information in rather permanent fashion, and often presents the information publicly, making it accessible to and beyond one's social circles[5].

Given the privacy challenges brought by the use of new technologies and the subsequent change in interpersonal relations, behavioural science has found room to apply the nudge theory in internet studies. Social experiments conducted by university scholars have demonstrated that different privacy nudges may cause users to review their behaviours and app permissions online.

4. Applying nudges to enhance online privacy

Research conducted primarily in the United States has pointed out at least five different designs of privacy nudges that could have a positive impact on how users interact online[6]. Non-profit organisations working around free and open internet access have ventured in this field too. This article will briefly present such strategies now, and what observed impacts they could lead to.

Third-Party Cookie Opt-in Nudge

Starting with the work promoted by open access groups, it is important to shed light on a setup modification promoted by Mozilla, the nonprofit foundation behind the Firefox browser. In February 2013, the organisation released an update patch for its privacy settings, relying on the fact that users generally stick with the default options assigned for their use. The update forbids third-party cookies to be accepted by default while browsing the internet. Third-party cookies are those belonging to different domains than the one currently being

[5] LAMPINEM et. al *apud* Jia and Xu, 2015, p.2.

[6] Studies were put into practice mostly by Carnegie Mellon University, Syracuse University and Pennsylvania State University researchers: WANG, Y. et. al (2013) and Jia and Xu, 2015.

visited and are commonly used in online banners and pop-ups. Their default acceptance gives room to tracing users' browsing history on the internet.

While maintaining the choice option – users can, at any given time, modify such configuration –, the update positively increases privacy, since only websites actually visited will have their cookies allowed. The main characteristic of a nudge is then maintained. Needless to say, online advertisers were not happy with this modification and have issued public statements on the matter, besides looking for U.S. legislative support against the action:

> Users have the right to decide if they want to utilize third-party cookies. Any browser that blocks third-party cookies by default, as Mozilla intends to do, restricts consumer choice. It is instead the browser that is choosing the user's experience[7].

Although third-party cookie tracking is anonymous, data can be linked back to the users with the help of data mining tools. Mozilla's intention was pro-privacy, and the patch has not been removed from the browser.

Audience Nudge (or Profile Picture Nudge)

Moving on to research developed in academia, the first presented nudge of its kind is the Audience Nudge. Social network users are usually not aware of the reaching limits of what is posted online, nor completely remember who is linked to them as a "friend" or a "follower". Privacy settings are difficult to go through and such options, once again, are kept in default mode (obviously, when dealing with social networking sites, this setup will maximize data collection on behalf of the platform). Due to these reasons, posts and photos might reach unintended audiences. To address regret and compromising situations, researchers at Carnegie Mellon and Syracuse Universities designed a tool to allow users to consider the broad scope of people their online communications might come across to:

> Our profile picture nudge attempts to encourage users to pay attention to their audience by displaying five profile pictures, randomly selected from the pool of people who could view the post being created. These profile pictures serve as visual cues to remind users of the potential audience for their post. (…) [T]he profile pictures are displayed as a user starts typing in the "post" text box. The nudge also displays a notice to the user based on the user's current sharing setting. For example, if the post is to be visible to friends of friends, the notice states, "These people, your friends, AND FRIENDS OF YOUR FRIENDS can see your post[8]".

[7] Interactive Advertising Bureau (IAB) *apud* Schmidt, 2013.

[8] WANG et. al., 2013, p. 1321.

It is important to highlight how much of personal information humans are aware to give away in social networks considering the effect of instant gratification, measured by interaction with the posts. Therefore, there is plenty of room for regrettable situations to emerge from simple Facebook posts.

When tested in a controlled environment with university students, most of the feedback for this nudging tool was positive: participants have confessed they actually had forgotten who they were friends with. Some of them adjusted their privacy settings while others cleared down their friends' list. This nudge can, consequently, assist users with better decision-making online[9].

Timer Nudge

To address possible regrettable situations, Syracuse scholars came up with a second nudge design, one to encourage users to reflect on what has been written on networking platforms. The researchers' goal was to predict angst or negative situations published online to develop into disproportional outcomes.

> When a user starts typing a status update or comment, a message with a yellow background appears stating, "You will have 10 seconds to cancel after you post the update." After the user clicks the "Post" button, the user is given the option to "Cancel" or "Edit" the post during a ten-second countdown before the post gets published on Facebook. There is also an option to circumvent the timer by clicking a "Post Now" button[10].

Results measured for this kind of design were good, but not as promising as the Audience Nudge. Some participants considered it a nuisance, while others reported ignoring the notices after some days. Those acknowledging the 10-second delay used it to correct grammar mistakes or to edit the tone of the message, sometimes even cancelling it overall[11].

Sentiment Nudge

The last tool tailored by Syracuse and Carnegie Mellon researchers was the Sentiment Nudge, designed to intervene with immediate content feedback.

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[9] Idem, p. 1332.
[10] Idem, p. 1321.
[11] Idem, p. 1331-1333.

> We designed a sentiment nudge that combines a countdown timer with a notice regarding the content of the post (…). After the user clicks "Post," the timer and a notice highlighted with a yellow background will appear below the text box. We refer to this nudge as the "sentiment nudge."
> (…)[W]e used an open-source sentiment-analysis module to analyze the content of each post[12]. This module uses AFINN-111 – a list of 2,477 English words and phrases manually rated as negative or positive, on a scale between –5 (negative or very negative) and 5 (positive or very positive)[13]. For each post, any words in the wordlist are scored, creating a weighted sum for the entire post. A text message corresponding to this sum is shown to the user. For example, a slightly negative weighted sum would lead to the message, "Other people may perceive your post as *negative*[14]."

After the notice, users would have the option to edit the post, if needed. This design was the least effective, according to the participants. Some of them considered that the sentiment analysis module was taking the sentences out of context by isolating the analysis, word by word. Other users felt a social network site's job was not to be judgemental about feelings or expressions as a real person – which confirms the platforms' use to gain instant gratification as well as to vent frustrations[15].

Data-sharing Awareness Nudge

Another study by a different group of researchers at Carnegie Mellon University demonstrated that people tend to pay more attention to how much personal data is being shared by online applications once they are told such information. Research analysed how efficient permission managers[16] are when combined with privacy nudges. For this experiment, an app called AppOps was used. It released notices about how many times personal data had been shared and how many different third party companies received such pieces of information.

> The researchers found that app permission managers were helpful. When the participants were given access to AppOps, they collectively reviewed their app permissions 51 times and restricted 272 permissions on 76 distinct apps. Only one participant failed to review permissions.
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> But once the participants had set their preferences over the first few days, they

[12] SentiMental by GITHUB. Available at: <https://github.com/thinkroth/Sentimental>. Accessed on: 27 mar. 2017.
[13] Hansen et. al. apud Wang et. al., 2013, p. 1322-1323.
[14] Wang et. al., 2013, pp. 1322-1323.
[15] Idem, p. 1329-1333.
[16] Once installed in smartphones, permission managers are applications that centralize information on privacy settings for the user.

> stopped making changes. When they began getting the privacy nudges, however, they went back to their privacy settings and further restricted many of them. During this phase, which spanned eight days, users collectively reviewed permissions 69 times, blocking 122 additional permissions on 47 apps[17].

Every participant was alarmed at how much sharing can happen in the background. One piece of location data, for instance, could be linked to several apps, in some cases leading to more than 5,000 data sharing updates within 14 days.

> In interviews, the research subjects repeatedly said the frequency of access to their personal information caught them by surprise.
> "4,182 (times) – are you kidding me?" one participant asked. "It felt like I'm being followed by my own phone. It was scary. That number is too high." Another participant's response: "The number (356 times) was huge, unexpected[18]".

The research results have addressed that the ordinary user is unaware of how applications behave in the background – and even for a new technology-savvy user, the overwhelming number of existing functionalities and apps, each demanding its own privacy setting, can certainly become a problem. Nonetheless, once people have the power and information about the real volume of data sharing, they act upon it.

Unfortunately, AppOps operated only for Android users and was discontinued. Apple operating systems do have a privacy manager, but "it does not tell users how often their information is used or for what purpose and does not nudge users to regularly review their settings"[19]. The promising results of such kind of awareness nudge, however, have been embraced.

Interpersonal-Privacy Nudge / Comparison-based Privacy Nudge

One last nudge design was proposed by researchers from the Pennsylvania State University. It connects to the studies of interpersonal privacy concerns. Currently, it is very demanding to assess privacy behaviours from an individualistic approach. Thus, this tool was developed to trigger concerns about others' privacy when tagging them in one's own pictures.

[17] Spice, 2013, p. 3.
[18] Idem, p. 2.
[19] Idem, p. 3.

> The friend's previous photo-sharing frequency is shown to indicate strict privacy rules and to assist the user in consideration of whether this sharing activity may be conflictive with such rules and if protective behaviors, such as withdrawal of information or communication in private channels, should be taken[20].

Facebook has already implemented a verifying approval tool for tags in posts or pictures – but as an opt-in, not a default option. Hence, some sort of notice as '*Your friend XYZ has tagged herself in 2 photos over the course of 12 months. Are you sure you want to proceed?*' could lead users "to consider the potential conflicts between their own privacy rules and their friends'"[21] and avoid future embarrassing situations.

This nudge design is in tune with recent European research, which promotes the adoption of a comparison-based privacy approach to deal with the matter. It is known paternalism is generally more accepted in the old continent than in the U.S., despite most of the studies on the topic coming from the other side of the Atlantic[22]. Nonetheless, it was on that territory that research grants on the social aspects of privacy behaviours have flourished, apart from legal definitions:

> To enable self-adaptive, user-centric privacy nudges, we make the following three observations. First, comparison is a natural human behavior. People compare themselves to their peer groups every day based on a wide set of criteria ranging from salary to health. Second, comparison does not require ground truth or training data. Instead, self-reflection and decision making is rather guided by relative values. The aggregated behavior of the peer group dynamically provides individual 'ground truth' for people to evaluate their own decisions. Third, people usually compare not to random strangers. They compare to people from their social environment who they can individually relate to, e.g., people with the same profession, age, or other demographics. In doing so, they harmonize individual and social factors that influence their decision-making process[23].

The use of privacy nudges as a complement to existing regulation on the matter has already been object of scrutiny by the European Commission. In 2015, it released an extensive policy report acknowledging how nudges are an alternate tool to enhance proper privacy notices and concerns[24].

5. Ethical implications of the nudging theory

Criticism on behavioural science often revolves around the paternalistic idea that

[20] Jia and Xu, 2015 (?), p.2.
[21] Idem.
[22] Hacker, 2016, p.305.
[23] Ziegeldorf et. al., 2015.
[24] Monteleone et. al, 2015.

humans are not fully capable of sound judgement and therefore need to outsource their choices to someone or something else. In addition, critics believe that autonomy and rationality, intrinsic human features, are ignored by behavioural science.

On the opposite side of this realm, policy analysts and researchers who defend nudging claim its main characteristic as a way to keep humans aware of their possibilities: choice. It is a choice architecture that it is being developed, and for it to work choices must be presented. Nothing is banned.

Issues of concern about ethics in any study or scientific area will always arise. According to literature, there should be a four-step evaluation on a nudge policy, in order to verify its ethical standards: (A) is there an increase in people's well being?; (B) is autonomy partially/fully affected?; (C) is people's integrity partially/fully affected?; and (D) what are the practical, tangible policy implications of applying such nudge?[25] While checking such questions, users and analysts can make a better prediction of long-term scenarios with and without the use of the nudge.

While assuming the best decision for the user, nudge designers need to ponder what is good and bad from the long-term perspective they want to achieve: in public policy, this is often connected to cheaper, safer, healthier choices and programs that will not overload the government's financial or legal capacities. Obviously, such matters are not foreseen in instant gratification tools, such as social networking posts.

6. Final considerations

Nudges are slowly becoming a mechanism to ensure better protection of online privacy. There is still room for iterating the designs here presented, but it has already become clear to several governments and internet users that such novelty can assist in the protection of personal data. As it is widely expected, lawmaking does not function on the same rhythm as innovation and creativity. Therefore, nudging can enhance protection when combined with governmental regulation and private-sector notices.

It is also important to highlight that the more connected the individual's sphere is to online social interactions, different ways of perceiving privacy must emerge, taking into account risky situations that affect both oneself and others. Nudging has the potential to avoid regrettable sharing, while still keeping options open to the user.

[25] Schubert, 2016, p.2.

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