



UX DESIGN AS A HOOKING TOOL IN BABY TRACKER APPS

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SUMMARY OF FINDINGS

In this paper, I follow app-designing guidebooks¹, instructing how to use graphics and app design to influence and ‘hook’ the user toward the producers’ goals. I found a correlation between the guidebooks’ instructions and their manifestation in three baby-tracking apps (henceforth BTA) that I diagnosed. Although these methods are used in various types of apps, I focused on BTA, where the users are potentially sensitive, vulnerable, and easy to manipulate when caring for a newborn. As written in the guidebooks, the use of these tools is in the hands of the designers, which creates the need for awareness and regulation to protect the users.

¹ It is essential to note that the guidebooks I analysed rely on psychological theories but are not authorised psychological sources. My research aims to find a correlation between the books’ guidelines and how this knowledge was manifested in BTA.



INTRODUCTION

My claim in this research study is that in so-called baby-tracker apps (henceforth BTA), producers employ user experience design (henceforth UX) to manifest psychological pushes that can manipulate the users for the benefit of the tracker app business models. This issue is not unique to BTA.

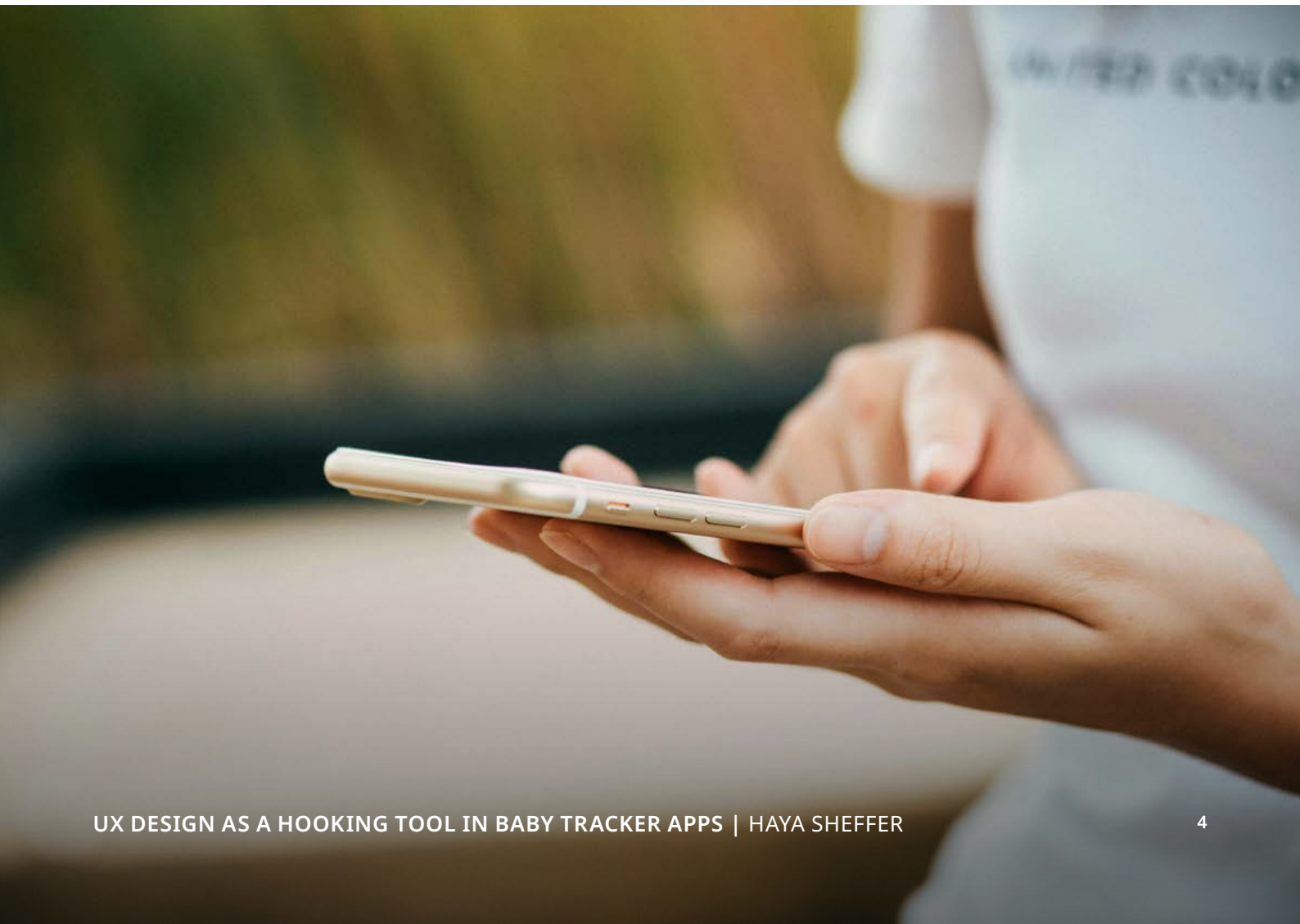
However, this manipulation is particularly concerning given the potentially vulnerable situation of parents who seek help in raising their infant through the apps.

Therefore, they can become targets for persuasion and be susceptible to what the guidebooks cited in my research refer to as *cognitive bias*. I will support my claim by intersecting three popular BTA with two popular design guidebooks, which guide app designers on harnessing UX to influence human perception and mental processes that can lead to what one guidebook signifies as 'hooked' users.

The *Hooked* guidebook (Eyal and Hoover 2019) suggests that app designers deploy a method to build habit-forming products relying on psychology fundamentals to gain competitive advantages benefiting the bottom line of their commercial stakeholders. Manipulating users' behaviour is presented in the guidebooks in my research as benefiting not only the producer but also the user, with their authors calling for responsible use of the psychological tools and methods they recommend. However, the ethics of manipulating user behaviour, especially in parenting situations, are clearly contestable and call for regulating the use of UX as a habit-formatting tool. Limitations: The research in this paper does not investigate the behaviours of BTA users or any impacts created by using the apps. It focuses on how a salient selection of BTA designers appear to have followed the guidebook's instructions on using app design to influence and to 'hook' their users. It is limited to the design aiming to manipulate the user and does not focus on further steps taken by the producer, such as unfair privacy policy or monetisation of gathered data.

THE APPS

BTA is a section of the parenting apps market valued at \$542.3 Mm and forecasted to grow to \$905.2 Mm by 2030 (Coherent 2024). They are designed to gather baby-related data logged by carers—such as diaper changes, breastfeeding, sleep schedules, milestones, etc. The apps, some of which use AI, analyse and present the baby’s patterns in charts, aiming to support the baby’s needs and their carers in the parenthood journey. Some provide extended features such as predicting patterns, reminder alarms, comparison with other babies, establishing sleeping habits, community, shopping, etc. In this research, I reviewed three BTA: (Glow 2016) (Baby Tracker 2015) (Huckleberry 2017). All three have surpassed half a million downloads each on the Google Play Store alone. For this study, I logged synthetic data and followed each one for one month.



THE BOOKS

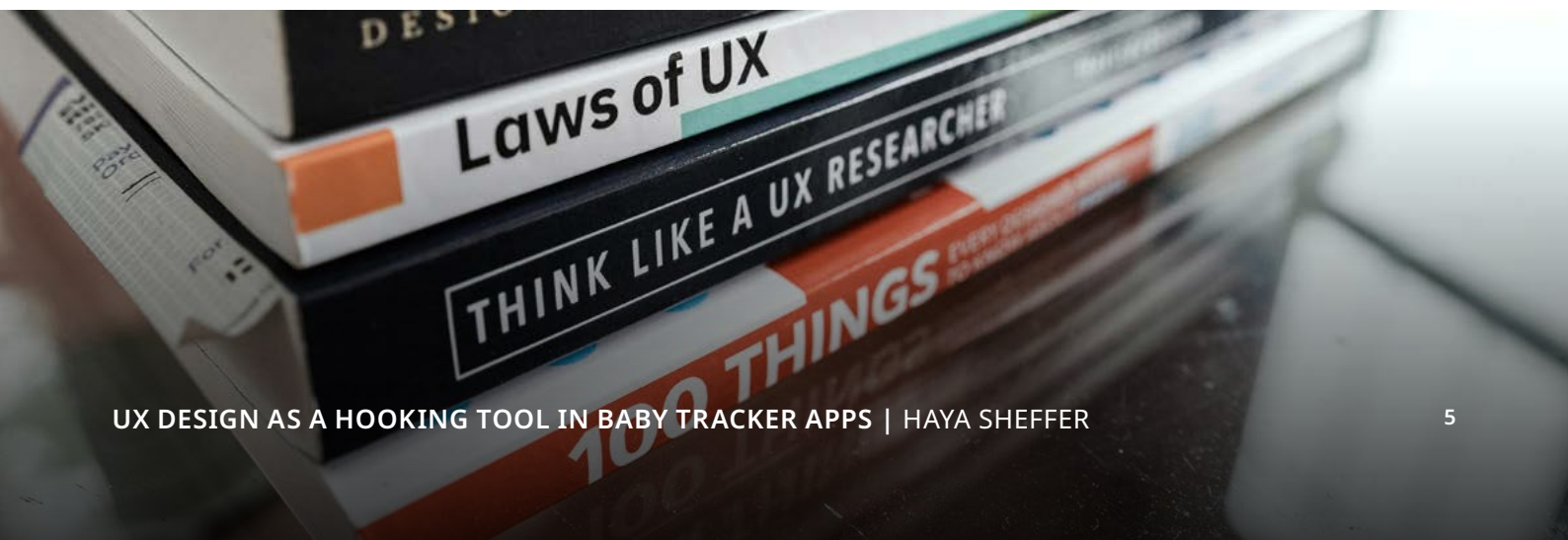
Hooked, How to Build Habit-Forming Products (Eyal and Hoover 2019), Amazon's second-best seller in the industrial and product design section, is described as the book everyone in Silicon Valley is talking about. Its mission is to guide app developers in creating a 'hooked' user by following steps in habit-forming technologies aimed at increasing repeat customers and customer lifetime value.

Laws of UX: Using Psychology to Design Better Products & Services (Yablonski 2020) is written by a graphic designer who sought psychological empirical evidence to support his design decisions when presenting to stakeholders. The outcome is a set of 'laws' that intersect psychological fundamentals with UX design, enabling designers to use these laws and harness psychology to affect human perception and mental processes.

While *Hooked* suggests a method, the *Laws of UX* supply the visual practice. Both books devote a section to acknowledging the questionable ethics (Yablonski 2020: 115-19) and morality (Eyal and Hoover 2019: 163-77) of the tools they provide. Unless otherwise noted, all the UX effects and affects analysed in this paper are taken from this book.

VITAMIN TO PAINKILLER METAPHOR

Eyal defines habits as behaviours done with little or no conscious thought. He presents an overarching concept in which habit-forming products often start as *nice-to-haves* (vitamins), but once the habit is formed, they become *must-haves* (painkillers). This transformation promises a significant competitive advantage to businesses that use the Hooked Model to create customer habits.





THE HOOKED MODEL

The Hooked Model targets the *habit zone*, correlating frequent use and perceived utility to create a default behaviour. It follows four steps of habit-forming technologies, presented in Figure 1: trigger, action, variable reward, and investment. A user's constant cycling through the model will produce a customer who is habit-formatted, hooked, and beneficial to the company. I will now present the steps and their manifestation in BTA design.

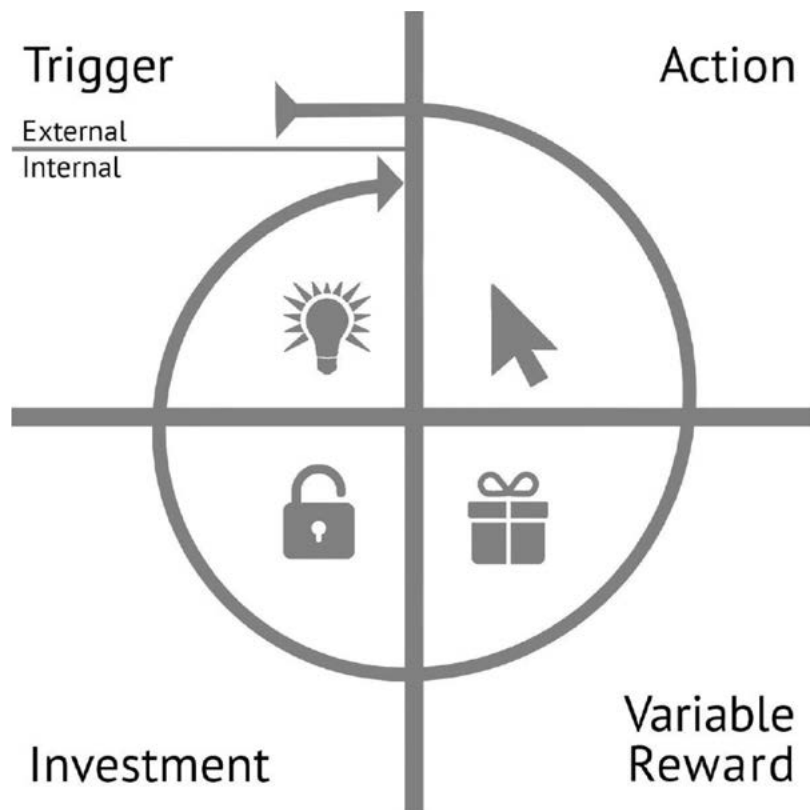


Figure 1: The Hooked Model (Hooked, p 6)

TRIGGER

A trigger is the actuator of behaviour. Providing frequent external instructions with explicit *calls to action* can make users associate them with emotions, such as good parenthood, social acceptance, etc., and eventually foster internal triggers, which are fundamental to habit-forming.

Figure 2 shows BTA's explicit external triggers: Try, View, Take, all in the form of a *call to action*. It also demonstrates the Von

Restorff UX Effect, visually distinguishing important key actions (2020: 8). The *call to action* purple fonts, the red dot, and the lighting background of all unread messages trigger the user to react. The inbox yellow bell icon alerting for 32 unread messages manifests the Zeigarnik Effect (Yablonski 2024), which claims that people are more likely to refer to and remember uncompleted or interrupted tasks.

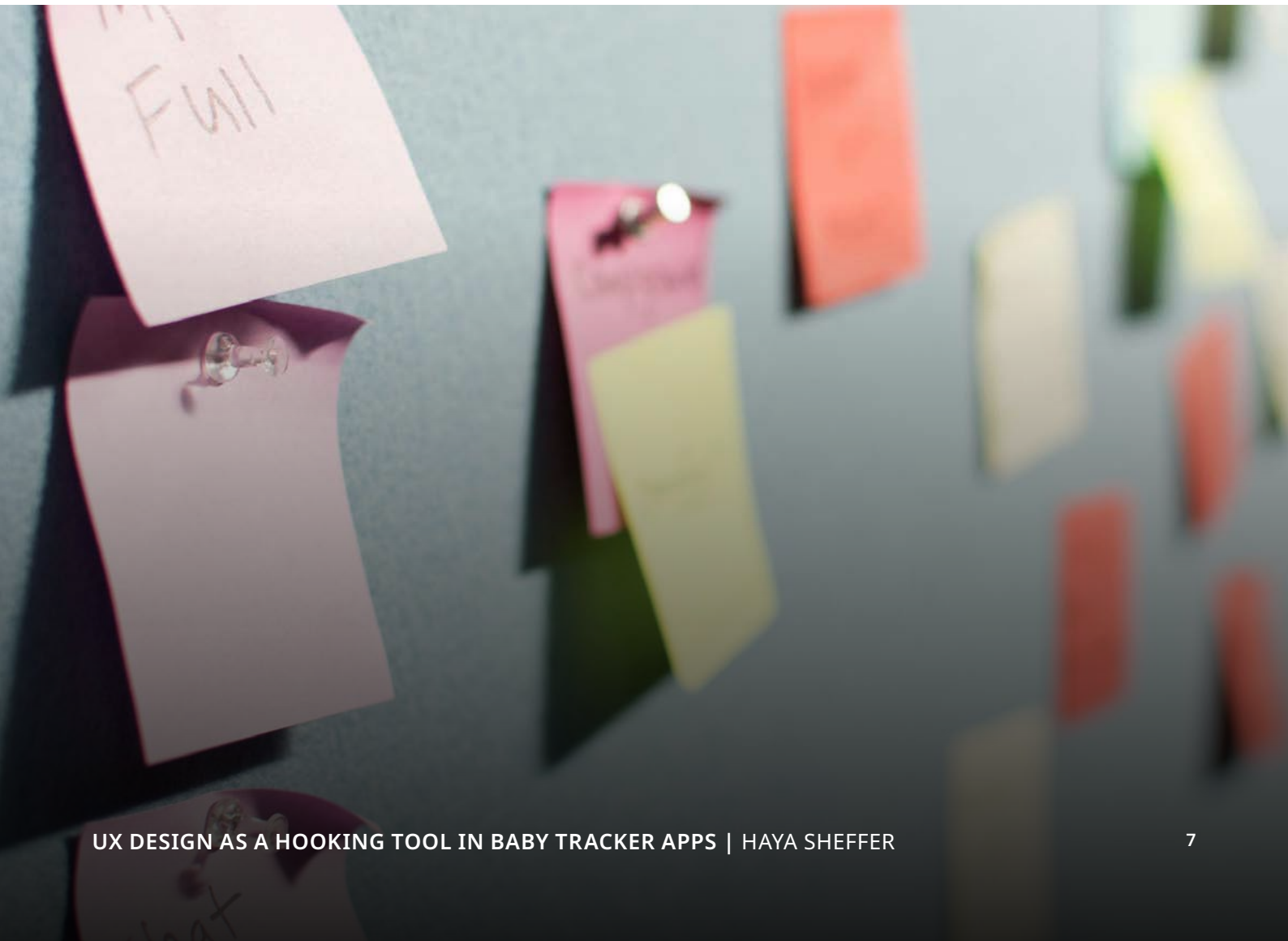


Figure 3 presents a *call to action* on the user's smartphone desktop, alarming the user several times a day. Fulfilling the task loops the user through frequent responses associated with emotions, such as a good carer. These external triggers urge users to respond frequently, potentially creating an internal trigger to visit the app, which is necessary to form a habit not depending on an external *call to action*.

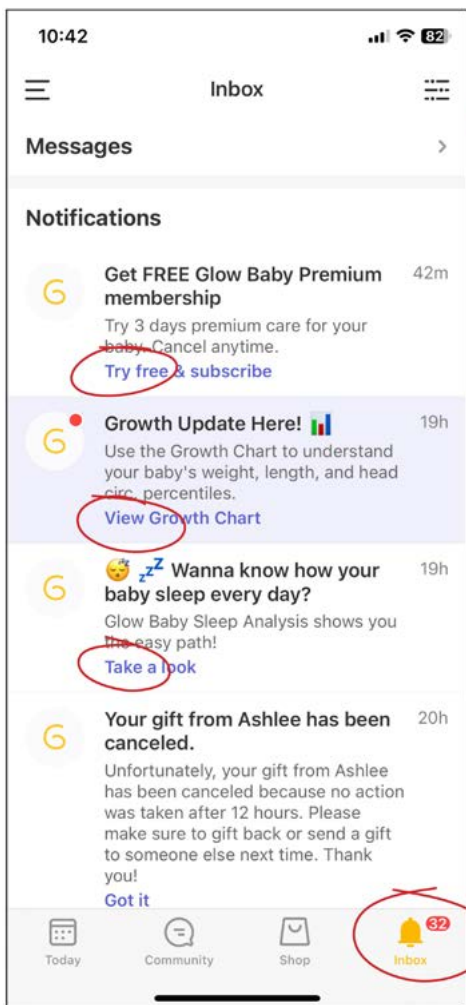


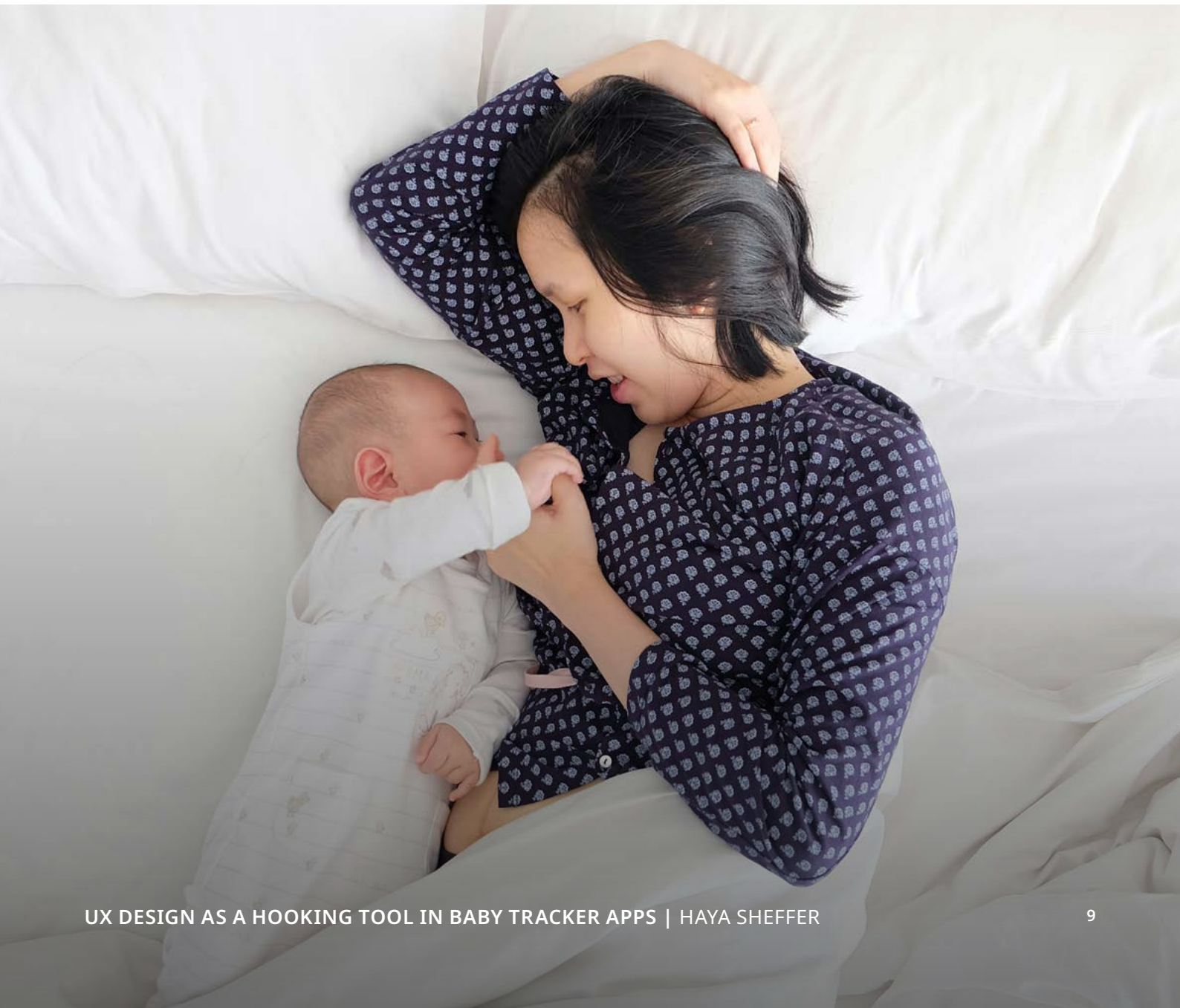
Figure 2:
A screenshot from the 'Glow Baby' app



Figure 3:
A screenshot from a smartphone desktop showing alarm note from the 'Baby Tracker' App

ACTION

Once the user is triggered, they must take action—the second step to forming a habit towards hooked users; if they don't act, the trigger is useless. Next to the trigger, two more simultaneous parameters are needed to create an act: ability and motivation (Fogg 2024). For example, the carer was triggered to log Ella's diaper changing, but now they need the *ability*, i.e. physical access, time, mental focus, etc., and the *motivation*; they must *want* to do it.



ABILITY

In their design guidebook, Eyal and Hoover advise: ‘To initiate action, doing must be easier than thinking. The more [physical or mental] effort required to perform the desired action, the less likely it is to occur’ (2019: 61). Ability can be influenced by parameters such as time, money, physical effort, and brain cycles; thus, reducing the steps to complete a task will increase user adoption rates. Parents of infants, for instance, lack time and free hands; hence, BTA emphasises that logging diaper changes, feeding hours, and sleep patterns can be made with a quick one-handed tap (Baby Tracker 2015).

This is illustrated in Figure 4, where the time is set as current by default, and the nappy status is presented to choose, saving the carer from manually typing details in. Such design is essential to keeping the users’ frequent visits and preventing them from abandoning the app.

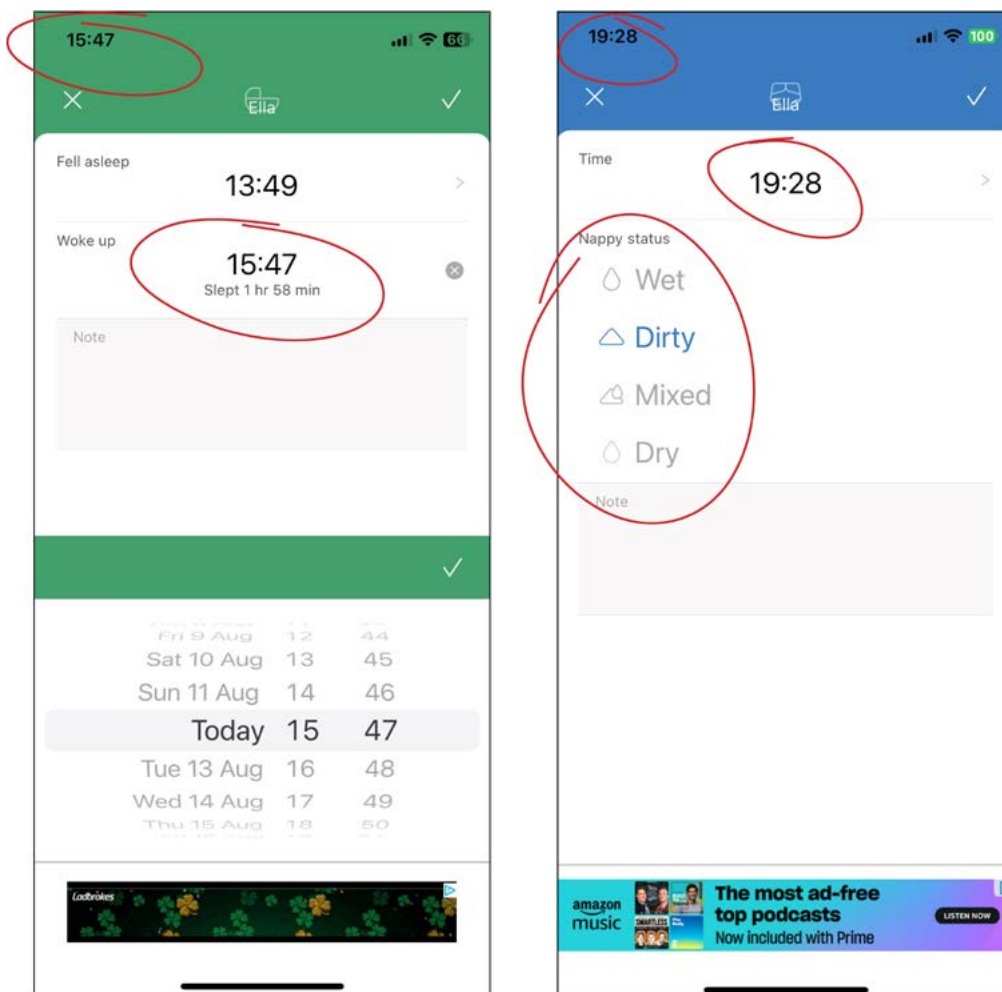


Figure 4: Two screenshots from the ‘Baby Tracker app’

MOTIVATION

Motivation is not as easy to create as ability, and designers are guided to boost users' motivation by using heuristics, the mental shortcuts humans take to make decisions. While heuristics can help people in daily functions, they can also be used by app designers to manipulate one's assumptions, judgments and moves. This study presents four popular heuristics used in BTA.

The Scarcity Effect states that people value things more when they are perceived as limited or scarce. The Glow Baby app's messages on the phone desktop, in Figure 5, present the user's rarity as a 'selected newcomer', increasing their value. Secondly, they present the precious time left to redeem the benefit. Third, they bond 'your baby's health' with the time left to get the discount, creating the framing effect discussed next. All three above heuristics build the motivation needed to follow the *call to action*.

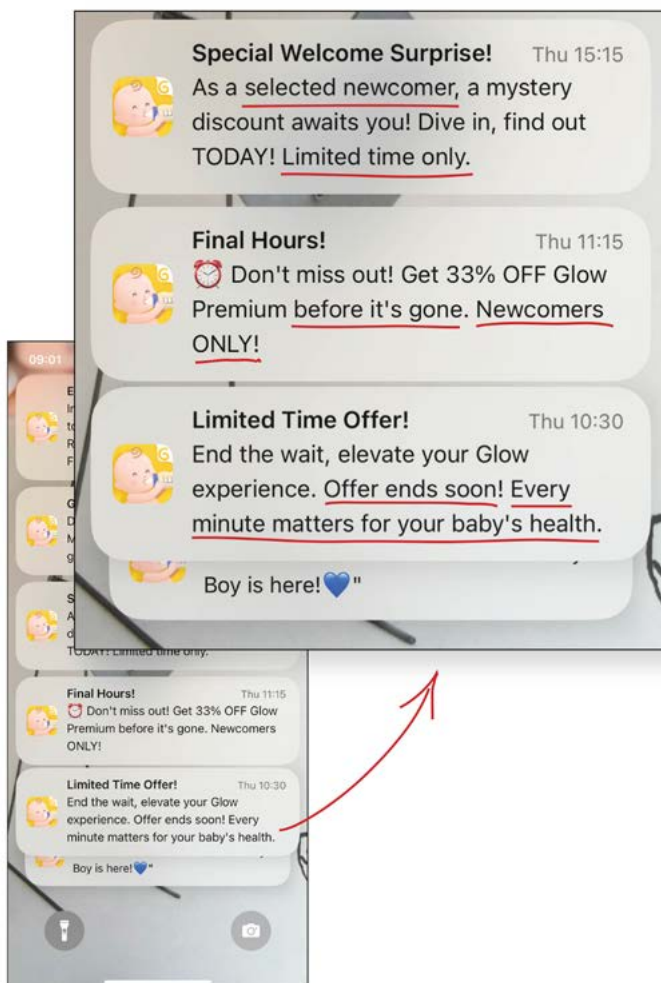


Figure 5: A screenshot from a smartphone desktop

The Framing Effect shapes decisions and behaviour when the mind takes shortcuts and makes quick judgments influenced by a given context: this can be useful but can also lead to wrong assumptions. In Figure 6, the app presents the message: ‘Bath Time Buddy. Monitor weekly bath sessions! Ensure hygiene & keep baby squeaky clean’. By framing monitoring with hygiene, the app is creating a presumption that not monitoring means less hygiene. Here, we can see how the three parameters for an act are simultaneously manifested, urging the user to act: the trigger (notification), the heuristic-framed message (motivation), and the link with the *call to action* ‘Try it now!’ (ability). In addition, the producer’s goal in creating this note is to encourage the user to press the link and start a cycle through the ‘hooked’ model. Thus, placing the ‘View Activity Analysis’ call adjacent to the note manifests Fitts’ widely used human-computer interaction law (Yablonski 2020: 13-22), optimising the time it takes to select a target based on its physical distance and prominence.

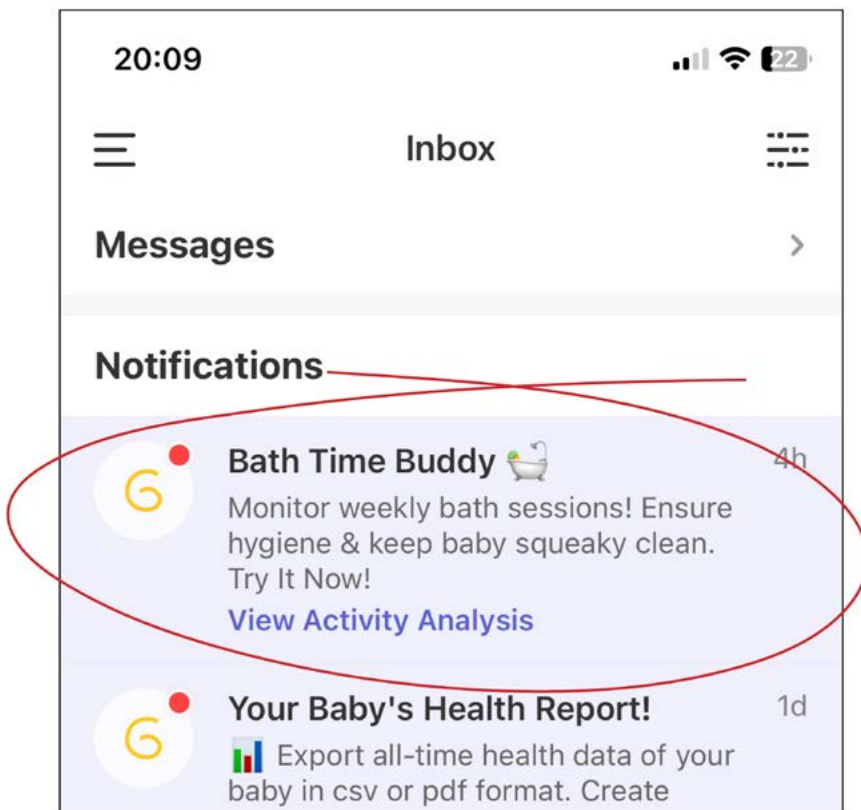


Figure 6: A screenshot from the ‘Glow Baby App’

Figure 7 shows another use of the framing effect. At the last step of Glow Baby's *Gift-It-Forward* user manual, the app presents an updated list of the TOP 11 GIFTERS and praises Emmy, who offered 111 gifts. The effect here is to help the mind create a heuristic shortcut, link gifting with excellence, and anchor 111 gifts as a target.

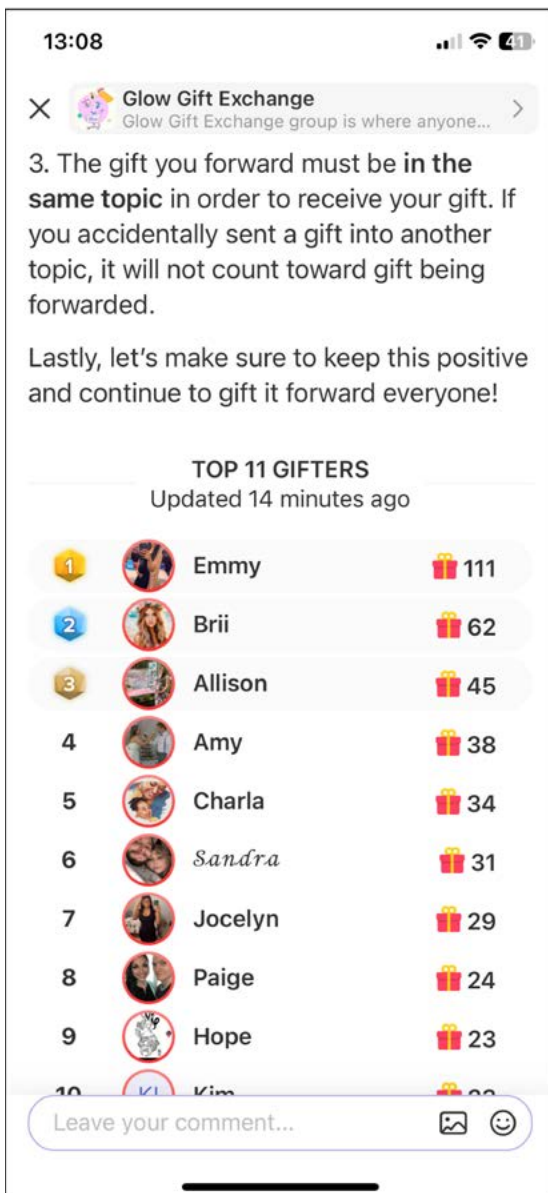


Figure 7: A screenshot from the 'Glow Baby App'

The Aesthetic Usability Effect occurs when the aesthetics of a system’s interface affect users’ perception of its usability (Yablonski 2020: 65-68). Appealing design can reduce the *perception* of complexity and help create motivation to perform a complex task. Figure 8 shows how the task of logging various sleeping details is designed to create a feeling that it is less complicated than it actually is. I lack the tools to analyse the necessity for these details for the babies’ well-being; however, I can point out the benefit for the app developers that offer this variety of in-depth features, requiring the user to invest additional time in the app and, by that, enforce the hooked model. The aesthetic usability effect serves here to reduce the user’s perception of the complexity of the task and encourages them to fulfil it.

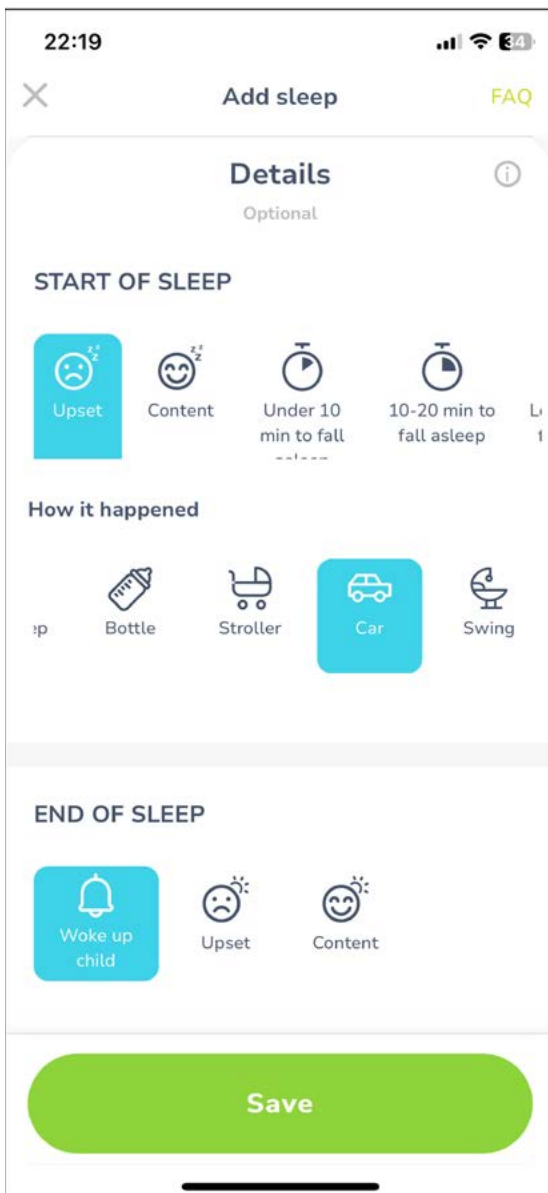
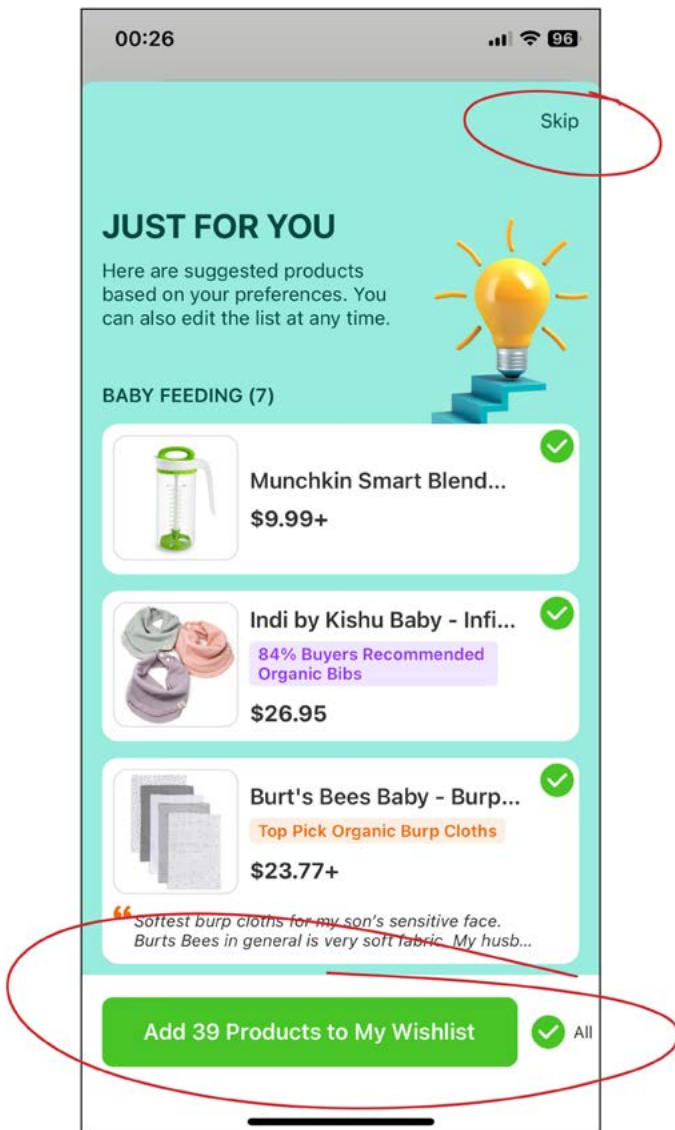


Figure 8: A screenshots from the 'Huckleberry App'

The Anchoring Effect occurs when users place significant weight on the first piece of information they encounter, which increases its perceived value and influences their judgments even when it is unrelated to the decision they should make. The first screen that opens after filling in preferences for the Glow Wishlist is presented in Figure 9. As seen on the top right, this is not essential to the process and can be skipped. Yet its appearance creates the anchoring effect as the right and necessary thing to do. As it is the first thing presented, alongside a bolded *call to action* button, it uses the anchoring effect to motivate users to add 39 products (that are not shown) to their Wishlist.

² For more information, see *Laws of UX: Using Psychology to Design Better Products & Services* by J. Jablonski



App designers harness these UX tools and many more² to manipulate and increase users' motivation for action—the second step in the Hooked Model.

Figure 9: A screenshot from the 'Glow Baby App'

VARIABLE REWARDS

Variable reward, the third phase of the Hooked Model, is a method derived from the gambling world. When experiencing an unexpected reward, spiking dopamine levels (three or four times more than a regular reward) are released to the *hedonic hotspot*, triggering feelings of pleasure and satisfaction. The system was biologically developed for survival, and its modern application, when one's neurons become obsessed as a reaction to unexpected *random digital triggers*, could be considered a disorder (Margalit 2021). As Margalit suggests, 'Dopamine [is] the most popular molecule in Silicon Valley' (ibid: 173), meaning that access to the user's dopamine is key to a successful app and pointing to variable reward as a popular method to achieve it.

This phase comes after trigger and action, helping to form a habit. As seen in Figure 5, the Glow Baby app adopted this method, flooding the user with random alerts from community members or with the app's system reminders. The notes promise various rewards, such as gifts, surprises, and discounts. More sophisticated still are the app's premium plan discount offers presented in Figure 10, which are sent to the free model users on different occasions and platforms. They suggest random discounts in various situations, creating excitement and expectations for the coming offer.

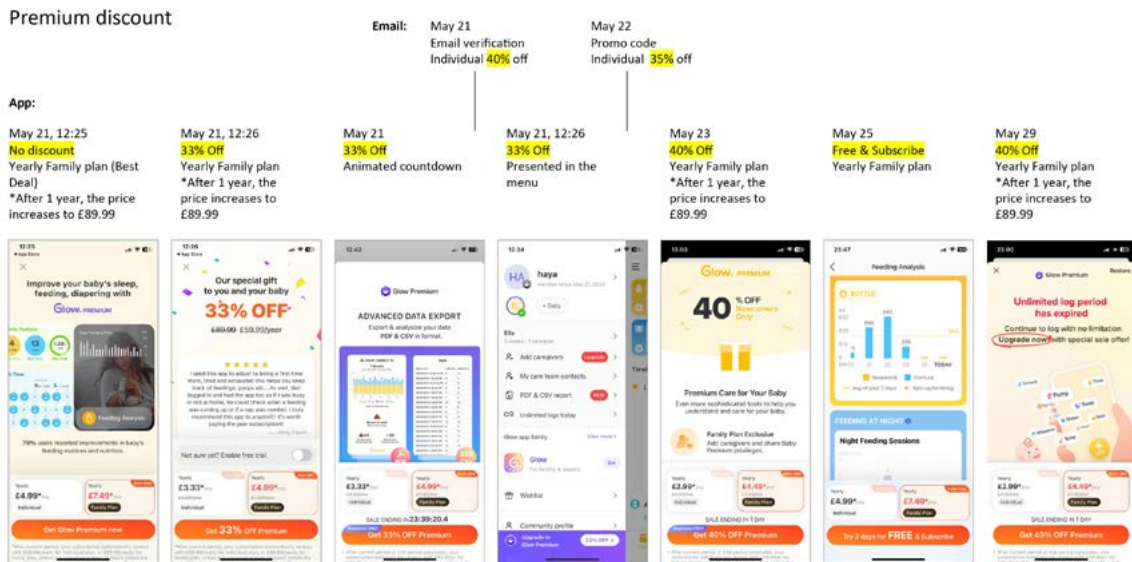


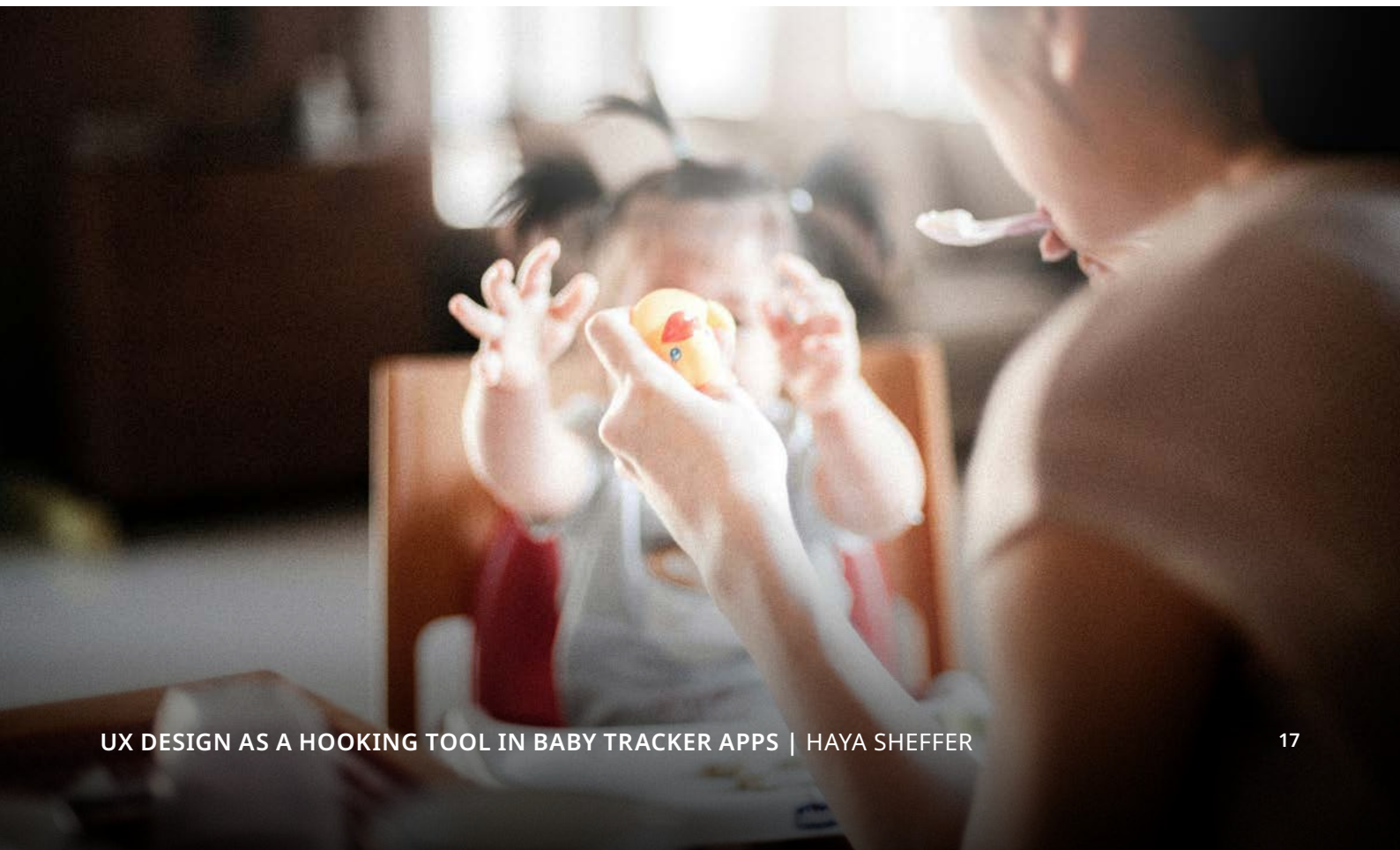
Figure 10: Various screenshots from the 'Glow Baby App'

INVESTMENT

The fourth step towards formatting a hooked customer is the investment. Unlike the former steps, which supply instant gratification, this phase concerns anticipating future rewards. It is essential as it increases the user's perception of the product's value and serves as the string that pulls the user to start a new successive cycle of the Hook Model (see Figure 1). The more users invest in an app, the more they value it, leading to rationalisation and reasoning behaviour designed by the app's producer. Investments could include data, networking, money, gaining operation skills, etc. In BTA apps, logging data and content is at the core of the app, and with the help of the first three phases, data

recording would finally become a habit, effectively hooking the user to the app.

Glow Baby app offers a social platform that, on top of the data-logging investment, invites the users to invest money and social efforts, tying them even more to the app. Figure 7 in the *framing effect* section shows a list of "gifters" who invested both money and social effort in 'gifting' to other users - while hoping to win \$500. According to the Hooked Model, 'Emma's' high investment in 111 gifts can support a process where the emotional and psychological investment in the app alone would help her rationalise buying all these gifts.





CONCLUSIONS

Both books reviewed in this research study devote a chapter to dealing with the morality of using psychological tools to manipulate human decisions and behaviours they provide. They raise the ease with which, during the development of an app, the entrepreneur's original intentions switch to taking advantage of the user. 'Human vulnerabilities often get exploited on digital platforms that lose sight of the human problems that they once sought to solve' (Yablonski 2020: 117). Yablonski asks when "time on site" became a 'more meaningful metric than whether a product is actually helping people achieve their goals or facilitating meaningful connections?' (ibid: 117). Eyal points out that habit-forming could be harmful when used for nefarious purposes (2019: 98). Since there are no regulations

on how designers can manipulate users, both authors flag the issue but leave it, ultimately, in the apps' developers' hands, calling on them to use these 'hook' methods responsibly and ethically.

Reviewing the BTA sample analysed in this research study suggests that the app entrepreneurs and the developers might have initially developed their products intending to *help* users, but that in the event, they came to design an interface purposefully aiming to *manipulate* and 'hook' app users for the benefit of the company's bottom line. I suggest that this outcome and effect, not the original vision and intention, highlights the need for further research and future regulation in this space.

* Figure 1 is taken from Eyal, Nir and Hoover, Ryan (2019), *Hooked: how to build habit-forming products* (Updated edition; London, England: Penguin Business). Figures 2-10 are screen grabs taken from the apps I analysed. In the context of this scholarly article, all falls under fair use.

KEY THEORETICAL SOURCES

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