Longitudinal perceptions of gamified loyalty programs (GLPs): a mix of slot machines and entertainment toys

José Varela Lopes
Department of Management, University of Minho School of Economics and Management Braga, Portugal, and
Beatriz Casais
*Department of Management, University of Minho School of Economics and Management Braga, Portugal and
Interdisciplinary Centre of Social Sciences of Universidade Nova de Lisboa, CICS. NOVA.UMinho Braga, Portugal*

Abstract

Purpose – This paper seeks to understand users' perceptions of their experiences in mobile applications (apps) with gamified loyalty programs (GLPs) that use rewards as the primary engagement vehicle. The research focuses particularly on the motivations to further interact with GLPs and the motivational changes occurring after successive interactions.

Design/methodology/approach – The authors conducted weekly open qualitative interviews over a month (four rounds of interviews) with five Portuguese active users of the mobile app *Yorn Shake It*, from Vodafone, which is a relevant case study to illustrate GLPs in mobile apps.

Findings – Participants' motivations to interact with the mentioned GLP are shaped by the reward incentive and users' perceptions of the gamified interactive experience. Motivational changes occur regardless of the presence of external contingencies and depend on contextual changes or perceived results of the gamified experience. This means that rewards also satisfy intrinsic needs, but users may remain connected to the system as long as fun experiences are provided without exhausting perceptions. Also, motivation may turn to reward contingencies when the challenge becomes boring.

Originality – This is the first qualitative study explaining the perceptions of gamified experiences after continued participation, extending knowledge about the importance of a fair balance between the value and achievement of rewards and the entertainment of the challenge provided after continued exposure. The findings provide insights to GLP marketing managers and developers to better engage target audiences according to their needs and past experience, creating levels of challenges and fair rewards to maintain motivation and prevent abandonment after continued exposure.

Keywords Gamification, Rewards, Intrinsic motivation, Extrinsic motivation, GLP engagement, Mobile loyalty app, Continued use, Longitudinal study

Paper type Research paper

1. Introduction

The benefits and motivational capabilities of gamification have led to its adoption in various contexts (Johnson *et al.*, 2016; la Cuadra *et al.*, 2019; Suh and Wagner, 2017), with diversified design and objectives of gamified experiences (Groening and Binnewies, 2019; Klock *et al.*, 2020; Koivisto and Hamari, 2019). One important use of gamification is on

mobile applications (apps), particularly in gamified loyalty programs (GLPs) (Hollebeek *et al.*, 2021; Kunkel *et al.*, 2021), contributing to important outcomes in marketing effectiveness (Hofacker *et al.*, 2016).

The literature about GLPs has been mainly focusing on metrics of performance and participation, using essentially quantitative research techniques (Tobon *et al.*, 2020). Only a few examples (eg. Nobre and Ferreira, 2017) seek to obtain via qualitative research the users' experience on gamification. Kunkel *et al.* (2021) also found that rewards, competition, sense of achievement and gaining knowledge represent the main motivations for using GLPs. Understanding the motivations for engaging in gamification, and the users' perceptions of what are fun experiences in this context is of major importance (Alsawaier, 2019; Rapp, 2015), requiring qualitative research (Tobon *et al.*, 2020), because it is a deeply individual activity (Huotari and Hamari, 2017).

There is a dearth of research on how time affects the users' perceptions of experiences in GLPs and the changes that occur in motivation after continued participation. This was one relevant suggestion for further research proposed by Tobon *et al.* (2020). To the best of our knowledge, only Kunkel *et al.* (2021) conducted a longitudinal study, but with a quantitative method, to measure the impact of app affordances on loyalty and attitudinal change toward the service. There is still a gap regarding how the gamified elements affect consumer motivation and engagement with the GLP after continued use (AlMarshedi *et al.*, 2015; Feng *et al.*, 2020; Kunkel *et al.*, 2021; Nacke and Deterding, 2017).

The literature is polarized regarding the effect of rewards on long-term user motivation, with a division between the decrease in intrinsic motivation due to the supposed extrinsic role provided by rewards (AlMarshedi *et al.*, 2015; Mekler *et al.*, 2017) and the satisfaction of motivational needs, motivating the user intrinsically (Feng *et al.*, 2020; Xi and Hamari, 2019). Longitudinal studies on the effects and utility of certain game elements help in understanding the evolution of user perception (Feng *et al.*, 2020; Rapp, 2015; van Roy *et al.*, 2019). This paper proposes a contribution to fill in the gap regarding interaction with GLPs after continued exposure, and the psychological and behavioral effects on the user. It also seeks to discuss, inspired by the self-determination theory, the premise that rewards are extrinsic and lead to a decrease in intrinsic user motivation after continued participation (Deci *et al.*, 1999).

This paper is a longitudinal qualitative study on the motivations to use GLPs after continued exposure. Research on gamification user motivations and experience after continued use may prevent the progressive loss of user engagement with the app, which might lead to the total abandonment of the gamified system. This research has important implications for marketing managers, who may better understand the experiences that rewards provide to consumers and the engagement effects after continued participation. This allows for better consideration of the game design to be implemented.

This paper is particularly relevant for the marketing field, because gamification has emerged as one of the most innovative solutions for designing and managing customer–brand engagement (CBE) (Harwood and Garry, 2015; Hammedi *et al.*, 2019, 2021), through the implementation of systems that provide different, interactive and fun experiences (Yang *et al.*, 2017). Gamified platforms allow for better brand exposure and CBE, while motivating users to achieve the goals supported by the gamified system (Xi and Hamari, 2020). Gamification also facilitates the collection of consumer preferences and the creation of tailored communities, encouraging customer loyalty and co-creation, ultimately extending customer lifetime value (Nobre and Ferreira, 2017).

The authors conducted a longitudinal study applied to a case study – "Yorn Shake It", a mobile app belonging to Vodafone. The research began by analyzing the corporate strategy behind the creation of this GLP, through an exploratory interview with two marketing managers of the company. Then, researchers conducted five open longitudinal interviews with users of the app, on a weekly basis over approximately one month, with the

purpose of discussing the users' motivations to engage with the app, and their motivational changes after successive interactions. A total of 20 open interviews conducted with five participants in four weekly rounds underwent an initial phase of open coding, followed by a second phase of focused coding. Then, the researchers developed a thematic content analysis.

2. Conceptual background

2.1 Gamification

Gamification is the incorporation of gamelike elements in the design of a core offering, with a purpose and functional elements other than gaming (Schöbel *et al.*, 2020). Gamification is an utilitarian phenomenon whose tools are hedonistic in nature and allow users to be motivated to achieve certain goals or behaviors (Koivisto and Hamari, 2019). It is common in the adoption of game elements such as points, levels, scorecards (rankings/leaderboards) (Mekler *et al.*, 2017), badges and rewards (Seaborn and Fels, 2015). Although less common, narrative elements, stories, avatars, competition and collaboration systems are also featured (Xi and Hamari, 2020). These elements are strictly imported from video game design, or gameful design (Deterding, 2015) and can be considered game experience providers (Koivisto and Hamari, 2019; Suh and Wagner, 2017), following the interpretation of motivational affordances, in line with Gibson's affordance theory (Gibson, 1977). A gamified motivational affordance is an action created by the user by employing a gamified artifact for the own experience (Suh and Wagner, 2017). For example, the gamified element of scoring allows the affordance of individual progress to be formed for one user and of competition for another. These elements provide the user with psychological experiences of video games (Seaborn and Fels, 2015), such as entertainment or recreation (Schöbel *et al.*, 2020), flow (Hwang and Choi, 2020) or hedonic value (Suh and Wagner, 2017), with cognitive, emotional and social benefits (Granic *et al.*, 2014). This phenomenon culminates in behavioral effects, such as involvement, motivation, encouragement and engagement, and can also facilitate user behavior change (Koivisto and Hamari, 2019).

Recent empirical results show different outcomes regarding gamification applicability (Helmefalk, 2019), thus resulting in different perceptions of gamified experiences (Groening and Binnewies, 2019). An individual's perception of a gamified experience may depend on the nature of the activity, its context and personal characteristics (Koivisto and Hamari, 2019). Furthermore, there are contradictions regarding the positive (Domínguez *et al.*, 2013) or negative effects (Kyewski and Krämer, 2018) on user motivation. In this sense, there is a need to study game elements in isolation in order to discern the psychological and behavioral effects caused by each element individually (Klock *et al.*, 2020; Mekler *et al.*, 2017).

2.2 GLP engagement

Recent trends in the literature have demonstrated the benefits of gamification in the field of marketing, particularly within digital applications (Hofacker *et al.*, 2016). These benefits include an increase in purchase intent and electronic word-of-mouth (Al-Zyoud, 2020), improved brand recall and brand awareness (Hsu and Chen, 2018) and better customer experience (Noorbehbahani *et al.*, 2019). Gamification has a positive influence on consumer behavior (Tobon *et al.*, 2020), considering that consumers enjoy fun environments, obtain rewards, experience competition and social interaction (Nobre and Ferreira, 2017) through a narrative of progress and reward systems (Eisingerich *et al.*, 2019; Hofacker *et al.*, 2016).

CBE is a behavioral motivation toward a brand or company beyond the act of purchase (van Doorn *et al.*, 2010). This motivation is driven by the power of interaction and experience with a focal object (Brodie *et al.*, 2011). Nowadays, companies are looking to establish platforms that allow them to cultivate engagement, create relationships with their

consumers and maintain them over the long term (Pansari and Kumar, 2017). Gamification can be used to differentiate market offerings and promote such engagement (Hammedi *et al.*, 2019, 2021; Yang *et al.*, 2017). Gamified experiences can facilitate interactive, immersive and fun brand interactions (Feng *et al.*, 2020; Nobre and Ferreira, 2017; Xi and Hamari, 2020). GLPs are marketing strategies to foster brand loyalty via rewards and incentives, whose higher value interactions and moments of co-creation increase the consumer's perceived value and recognition of the brand (Gorlier and Michel, 2020; Nobre and Ferreira, 2017), contributing to both CBE and loyalty (Hsu and Chen, 2018). Members' intrinsic and extrinsic motivations lead to GLP engagement, which is measured by GLP-related behaviors (purchase/recommendation) toward the brand. GLP effectiveness is measured by the CBE value (Hollebeek *et al.*, 2021).

Gamification has already proven to be effective in mobile apps, reversing the trend of disinterest shown in traditional loyalty programs (Hwang and Choi, 2020). However, issues regarding the implementation of elements of gamification on these platforms and their long-term motivational effects (AlMarshedi *et al.*, 2015; Feng *et al.*, 2020) still hinder the continued adoption of GLPs (Helmefalk, 2019), leading to a research opportunity.

2.3 Motivational theories applied to gamification

Since gamification aims to target user behavior through the creation and control of motivational impetus, this phenomenon is often studied on the basis of motivational theories as a way to explain its motivational effects on users (Bovermann and Bastiaens, 2020) and how this motivational value is created (Sailer *et al.*, 2017).

- Flow theory

Csikszentmihalyi's flow theory (Csikszentmihalyi, 1991) describes the psychological state of optimal experience, which is characterized by an individual's capacity, immersion, focus, alertness to the activity and responsiveness to the requirements of a challenge, being proportional to the challenge faced (Nakamura and Csikszentmihalyi, 2002). In this state, the sense of self-consciousness disappears, and the activity is perceived as an automatic state of mind and body, free of any sense of time (Csikszentmihalyi, 1991).

Flow theory can explain user intention and exploration behaviors (Hwang and Choi, 2020) and act as a gauge of interactivity, immersion and engagement with a gamified experience (AlMarshedi *et al.*, 2015; Bittner and Shipper, 2014; Hammedi *et al.*, 2019) by assessing its effectiveness (Hollebeek *et al.*, 2021). Flow theory is considered in gamified design construction models (AlMarshedi *et al.*, 2015; Deterding, 2015).

- Self-determination theory

The self-determination theory explains how an individual's self-determination (freedom from external control) impacts their motivation to act (Peng *et al.*, 2012). The theory identifies two types of motivation, intrinsic and extrinsic (Deci, 1971), placed on a continuous spectrum (Peng *et al.*, 2012). Intrinsically motivation, or self-determination, occurs when an individual performs an activity through autonomy, through the pleasure and satisfaction of performing such activity (Deci, 1971). The more intrinsically motivated an individual is, the more control they feel over their behavior (Ryan and Deci, 2000b). Extrinsic motivation occurs when an individual performs a function to achieve a goal unrelated to the function itself, such as a reward for example. Motivational results are short and intense, and only last as long as the reward is administered (Deci *et al.*, 1999). These extrinsic mechanisms are theorized to shift the individual's focus from the function itself to the mechanism and may impair self-determination. Some degrees of this effect are admitted, depending on the individual's perception of the level of control exercised by these

mechanisms and whether they infringe on competence, autonomy, and self-regulatory capacity (Ryan and Deci, 2000a). A sub-theory of the self-determination theory is the cognitive evaluation theory, which expands into three types of needs people try to satisfy when intrinsically motivated, promoting further self-determination: autonomy, the desire to control behaviors and the decision to act (Kim and Ahn, 2017); competence, the desire to perform the willed action; and relatedness, the desire to interact with others (Deci and Ryan, 1985).

The self-determination theory has supported research in the area of gamification. Ideally, gamification should combine mechanisms that enhance both types of user motivation. Hollebeek *et al.* (2021) considered as intrinsic GLP motivation elements, such as self-efficacy, altruism, challenge, cooperation and self-expression; and as extrinsic GLP motivation elements of rewards and unpredictability. Introducing extrinsic mechanisms may motivate the user, although the focus will shift to the mechanism and engagement will last only as long as the mechanism is active (Hammedi *et al.*, 2019). This triggers the risk of irreversibly decreasing the intrinsic motivation to repeat the action (Deci *et al.*, 1999). In fact, Wolf *et al.* (2020) admit that gamified services satisfy self-determination needs, but mainly inflict negative extrinsic stimuli such as pressure via competition. Other authors have more radical positions, stating that gamification and its elements are purely extrinsic, with no effect on intrinsic motivation (Mekler *et al.*, 2017), acting as external stimuli to the activity (Tobon *et al.*, 2020). Kim and Ahn (2017) also state that the goal of gamification is always extrinsic, since it serves the achievement of something other than the game itself. However, there is scarce research examining the type of motivation that each game element creates in users, as well as their behavioral effects (Feng *et al.*, 2020). The literature identifies different motivational effects for game elements (Mekler *et al.*, 2017), although the results are inconsistent for the same game elements (Suh and Wagner, 2017), depending on the users who experience them (Schöbel *et al.*, 2020), and the context where gamification is applied (Feng *et al.*, 2020). In this sense, there is a research opportunity to explore in depth the motivations to interact with certain specific elements of gamified mobile apps and in specific contexts. This study focuses on game elements of mobile loyalty programs using rewards, and considers their longitudinal effect after continued exposure.

Rewards are positive behavioral reinforcements that influence an individual's motivation to perform a certain behavior. The classification of rewards assumed in this research is the one proposed by Lewis *et al.* (2016) in a systematic review of rewards in gamification. The rewards with tangible, monetary or individual benefits include points/scores, physical medals, scorecards, props with utilitarian or hedonistic purposes, or economic rewards such as cash. Rewards that also offer social benefits in the form of recognition, distinction or influence, such as achievements, badges or medals, likes, feedback or even kudos – virtual gifts from one user to another as a form of congratulation.

When a reward is administered at a certain time interval following a behavior, the probability of that behavior being repeated increases considerably until the reward ceases (Deci *et al.*, 1999; Lewis *et al.*, 2016). The time interval between administering the reward is known as reinforcement, the management of the conversion of reward into effort, and for how long (Zichermann and Cunningham, 2011). There are two primary types of reward reinforcement, each eliciting a different behavioral effect. One type is the fixed interval reinforcement, delivered in a fixed timeframe and allowing predictability and fixed behavioral responses from the user. An example of this type of reinforcement is the monthly base pay, which is given to the employee at a fixed interval, upon performance of the same range of duties. The other type if the variable ratio reinforcement, which confers unpredictability regarding the type, size and reinforcement of the reward and may cause frustrated, mechanical and repeated user actions until the person is rewarded. This model is often seen in the case of slot machines and may induce addiction and dependency behaviors in the user.

Most gamification literature tends to generalize rewards as elements of extrinsic motivation (AlMarshedi *et al.*, 2015; Kim and Ahn, 2017; Mekler *et al.*, 2017), claiming that rewards remove the intrinsic impetus for challenge and fun, driving the individual to perform a task with rewarding contingency. Hollebeek *et al.* (2021) also consider rewards as elements of extrinsic motivation. However, the possibility that different types of rewards produce different types of motivation should not be disregarded (Lewis *et al.*, 2016). Many authors reflect on the rewards also as elements of intrinsic motivation. Sailer *et al.* (2017) state that badges contribute to intrinsic needs, as long as the user is aware of these elements. Game elements focused on achievements, such as points and virtual coins, can satisfy needs for relatedness and competence, but mainly for autonomy, as long as the user has the freedom to use them later as he/she wishes (Xi and Hamari, 2019). In addition, reward systems can have an emotional and social impact, and could be a motivating and fun way to encourage game progression (Domínguez *et al.*, 2013). While quantifiable rewards, such as badges or points, are more likely to stimulate extrinsic motivation (Feng *et al.*, 2020), less quantifiable rewards, such as likes or kudos, contribute to intrinsic motivation. In this sense, applying a variety of rewards to a gamified experience can make it more fun and interesting (Leclercq *et al.*, 2020), exploring both intrinsic and extrinsic motivations (Lewis *et al.*, 2016).

Despite the effectiveness of rewards in GLPs (Hwang and Choi, 2020), it is important to understand how consumers understand the role of rewards in this context, how they interact with this type of game element, and what the motivational effects are created from this interaction. This research gap had already been pointed as central to understanding rewards from the users' point of view (Koivisto and Hamari, 2019). There is also a need to understand the effects of rewards after a continued participation (AlMarshedi *et al.*, 2015; Feng *et al.*, 2020), and the evolution of user perceptions (Feng *et al.*, 2020; van Roy *et al.*, 2019). This understanding assists in building gamified systems that allow the user's motivation to be maintained over a period of time, thus preventing abandonment of the gamified platform. It also helps in gauging the motivational effects of gamified elements in continued participation. Research into the effects and utilities of certain game elements that have opted for a longitudinal research design has allowed us to capture evolution in users' perceptions of gamified experiences (Feng *et al.*, 2020; Rapp, 2015; van Roy *et al.*, 2019), but to date, there is no known research that has applied this strategy exclusively to reward evaluation.

3. Methodology
3.1 The case study
This paper analyzes, from the consumers' point of view, both the motivations for interacting in a GLP and the psychological and behavioral effects felt during those interactions. The research follows a constructivist approach that combines the conceptual knowledge of the researcher with the operational experience of interviewees and allows the adaptation of open-ended questions to the reality that emerged in data collection (Gray, 2014).

This paper explores the case study of the GLP *Yorn Shake It*, from Vodafone, with the purpose of understanding the role of rewards in user self-determination, and how the user perceives those rewards after continued exposure. *Yorn Shake It* is a GLP embedded in the app MyVodafone, belonging to the Vodafone Group corporation. This app is a good example of a GLP based on the rewards system, which uses points and virtual cards to award tangible and economic rewards. The design of *Yorn Shake It* clearly presents the gamified elements sustained in the literature (Hofacker *et al.*, 2016). Annex I shows in detail how the app works and how the user interacts with the gamified elements.

The collection, processing and analysis of images and content available on the app, within the scope of this research, was carried out with the express authorization of the company Vodafone Group. The authors conducted an exploratory joint interview with two employees of the company, working in the marketing department. The exploratory interview obtained information on the principles of gamification or video games used in the programing of the GLP, its strategic objectives, the segmentation criterion and the profile of the target consumer. This information contextualized the gamified app in the marketing context, allowing the definition of profile selection for data collection.

The results of the exploratory interview allowed to understand that according to the Vodafone Group, the targeting segment is between 18 and 25 years old. The company considers the app *Yorn Shake It* a loyalty program for the Yorn tariff. The app seeks to activate consumer motivation and engagement through the gamified elements, causing the desired behavioral effect of continuous interaction with the app and the brand's ecosystem and consequently contributing to consumer loyalty. From the brand's perspective, these elements create consumer motivation and engagement through the possibility of awarding prizes – mobile phones, gaming, communications, accessories, gifts and extra goodies –, and by motivating people to collect a booklet, either individually or through exchanges with other consumers.

The design of the selected app revolves around obtaining rewards. Users can play a mini-game that gives them access to collectible digital rewards via tokens, which are occasionally offered by the app. These rewards contribute to the accumulation of points in the game's progression system through levels; there are badges in a collecting context, collaboration systems, and, when collected in a predefined number, the app gives access to tangible and economic prizes. The marketing managers interviewed did not explore the psychological effects desired, but documents provided by the company explored the promises of fun, entertainment and engagement. To monitor the psychological and behavioral changes occurring from these interactions during continued participation, the research assesses the effects on users' motivation to revisit the system.

To collect data from users of a gamified experience, the process followed the practice of a non-probabilistic approach by judgment. Applying the cumulative criteria to select the interviewees – age between 18 and 25 years old, considering the demographic profile of the target segment of *Yorn Shake It* shared by the company in the exploratory study; being a consumer of Vodafone telecom service; being a subscriber of a Yorn tariff; and being a frequent user of the *Yorn Shake It* app, at least once a week –, the target set for the research was five participants, residing in the Northern Portugal. This number is also connected to the availability to participate in a longitudinal analysis with four rounds and deep interviews about the user experience of the app in the time frame of one month. In fact, the interview process with the app users involved 20 deep interviews in total. Table I shows the profile of the interviewees.

To follow the psychological and behavioral changes of the interviewees in a continued participation, open-ended interviews were applied longitudinally in four rounds of interviews within the available time frame of one month. This is the first qualitative longitudinal research applied to GLP motivation, considering that the only longitudinal research conducted in this field used quantitative methods (Kunkel *et al.*, 2021), and qualitative studies about the motivations to interact with GLPs have not considered continued exposure (Nobre and Ferreira, 2017; Kunkel *et al.*, 2021).

The first round of interviews explored the participants' routines and their historical interaction with the app, the motivations that led to their initial adoption, and their current motivations and emotions when using the app in a holistically. The second round sought to monitor the motivations, and psychological and behavioral effects, while the third round served to deepen the role of the app rewards in the motivation of the participants, and the

	Age	District	Frequency of use of the app Yorn Shake It	Education	Occupation
Interviewee 1	25	Braga	Daily	High school	Waiter in a restaurant and a university Student
Interviewee 2	19	Braga	Once or twice a week	Basic school	High school student
Interviewee 3	18	Porto	Once or twice a week	Basic school	Worker in a hotel and high school student
Interviewee 4	22	Braga	Once a week	Higher education	Financial technician and master's student
Interviewee 5	24	Braga	Daily	Basic school	Waiter in a restaurant

Table I.
Profile of the interviewees

psychological and behavioral effects those rewards had on them. In order to better understand the motivation to revisit the app, the researchers asked about the participants' revisit patterns, and the circumstances and the effects of the revisit, and changes in participants' perspectives compared to the previous week. The fourth and final round of interviews focused on participants' motivational, psychological and behavioral changes and asked questions about the brand, to understand how the gamified system created engagement with the brand. Finally, it was made an overall assessment of the experience for the participants and their prospects for participating in the app in the future.

The interviews were recorded with the consent of the participants for later open coding using NVivo software. The authors conducted a thematic analysis that allowed an analytic narrative to explore and explain the evidence and behavioral patterns detected in the interviews. The analysis considers the different primary data collected in the longitudinal rounds, as well as between participants in the same round and in consecutive rounds, which allows determining motivational developments. The aim of this study was to analyze constructs that increase, emerge, decrease, disappear or stagnate. More importantly, the purpose was to discover why these changes occur, to understand their causes, and to discover prevailing patterns in the collected data (Hermanowicz, 2013).

4. Results

4.1 First round – motivation to adopt the GLP

Similar to traditional loyalty programs, the main motivations to adopt the GLP are identified with regard to reward contingencies. Interviewees 1, 2 and 5 stated that their interactions were motivated to obtain a prize, and demonstrated a lack of interest in gamified mechanics. Interviewee 1 mentioned that the lack of narrative and purpose led her not to consider the experience as a game, but only as a way to obtain a prize. However, interviewees 3 and 4 also described also intrinsic motivations for interacting with the app, such as fun and collecting. These interviewees reported challenges and entertainment with mini-games, satisfaction and joy in the awarding of new rewards. The sense of urgency and timing for maximizing points sparked a sense of excitement: "Besides the prizes, the game provides a certain amount of fun to be quick in choosing which game the card corresponds to" (#3);"Sometimes I feel nervous to know if something interesting is going to come out, but sometimes it's just repeated cards; but it's exciting when something interesting comes out, because then I feel a positive anxiety." (#4). Both participants reported not only feeling eager to discover new cards and content updates, but also having fun with the gamified

mechanics. Consequently, they exhibited behaviors of propensity to revisit the app frequently.

Despite the reported feelings of challenge by the two participants mentioned above, all reported an absence of challenge in the experience due to the lack of difficulty scaling and the inefficiency of the level progression system. Due to the scarcity of tangible and economic prizes, all participants showed low expectations of winning a prize, and reported low emotional value toward the experience. However, all participants demonstrated behaviors of intent to revisit the app.

4.2 Second round – behavioral and psychological effects of the participants
After one week, there was a behavioral pattern of increased motivation to interact with the app in anticipation of entertainment experiences. Interviewees 2, 4 and 5 reported feeling more motivated to interact with the app because of more frequent visits and the challenging mini-game interactions. They explained that the higher exposure to the gamified mechanics induced psychological effects of challenge and fun, resulting in behaviors of exploration, participation and revisiting of the app, as well as suggestions for improving the gamified system. This is particularly interesting, considering that interviewees 2 and 5 had demonstrated only extrinsic motivations in the first round of interviews, mentioning in this second week also fun when experiencing the app: "In the memory game, I feel more commitment (…) I put effort into it, without detecting any specific motive other than fun" (#5).

Those who admit intrinsic motivations since the beginning (interviewees 3 and 4) consider that the fun and entertainment value are created at the moment of interaction with the gamified mechanics, up to the moment of reward attribution. Interviewee 3, reported that to date, he had "no interest or knowledge of the rewards attributable" and sees digital rewards as "feedback from interaction with the gamified mechanics". However, this same participant showed in this second round of interviews some frustration by the lack of proportionality between the rewards awarded this week: "after playing about three or four times this week and getting less than one card, it's like … I don't know why I'm going to use it if I'm not going to get anything good, but I'm going to play anyway" (#3). This result demonstrates some behavioral and psychological changes from extreme positions on intrinsic or extrinsic motivations, with the exception of participant 1, showing the importance of a balanced system that explores both intrinsic and extrinsic motivations.

4.3 Third round – motivation to revisit the GLP
The third round focused on the motivation to revisit the app after continued exposure. The role of the individual in the gamified experience stands out in this round, showing motivational changes depending on the perceptions and expectations of the gamified mechanism. In this third week, there are still different motivations for the continued use of *Yorn Shake It* – the reward achievement, but also the fun and entertainment provided by the app. However, some participants changed their motivations to use the app at this stage. If the participant perceives the lack of fun and entertainment and the expectations of getting a gratification are low, the use of the GLP becomes an autopilot behavior, with feelings of indifference at this stage. This is the case of Interviewee 1, who interacts with the app on a daily or even twice-daily basis seeking only the awarding of prizes. In the third week, this participant regretted the time spent because of the low expectation of receiving a reward, without expressing any emotional value in the experience. The interviewee reported the perception that the rewards were not satisfying the expectations, leading to a decreased motivation to continue using the app due to disappointment. This result shows the

importance of the reward gaming elements for the participants who only have an extrinsic motivation to interact with the app.

In fact, the perception of rewards depends on the goal of the participants, their motivations to interact, the dynamics of rewards in the design of the gamified system, and the consumer's interaction with the system after continued participation. Contrasting with the example of interviewee 1, the importance of entertainment and fun in using the app was also observed, as after continued participation the gratification of rewards can decrease. This is the case of interviewee 5, who initially viewed rewards in a similar way to interviewee 1, as an extrinsic goal. However, this participant's motivational change led her to view the rewards as an integral part of obtaining the enjoyment she now claims to feel. Interviewee 5 commented that she now plays primarily for fun and entertainment while interacting with the mechanics, contradicting the motivations of the first round. Also, interviewee 2, whose motivations were predominantly based on reward contingencies, now finds some entertainment and fun in using the app. We can conclude that a good solution can be become a reward as an interactive part of the system that provides satisfaction of getting good results. This is also the perspective of interviewee 4, who has been using the app since the beginning for its entertainment and fun value, and who views the rewards both as signs of progress in the game and as feedback for the actions performed.

However, we have to underline that the balance between entertainment and rewards and how the latter contributes to the former requires an adaptation to the user expectations. The lack of adequate rewards reported by interviewee 1 was also reported by interviewee 3 This is particularly interesting, considering that the main interest of interviewee 3 at the initial stage was the fun value of the app, showing frustration in the second round with the low significance of prizes. Interviewee 3 said he has lost all his motivation the third week, because he felt dissatisfied with the rewards over the course of the week. He now considers the app to be repetitive: "Without the associated reward, I end up losing interest in the game."; "(…) the game remains always the same, and I lost the interest, because it's a simple game and the playability of the game ends up decreasing the more you play" (#3). In sum, regardless of initial motivations, rewards were essential for engagement with the app at this stage, providing the complementary condition of fun and entertainment, and representing a holistic element of the experience.

4.4 Fourth round – motivational change and brand engagement

After one month of interaction, participants express that they maintained participation, but their motivations changed because of the lack of interesting rewards or frustration of not winning significant prizes, or even because of the decrease in innovative entertainment and additional emotional value in the GLP.

Those who use the app with the purpose of getting a prize reported that they have continue to participate because of the rewards, but they do not plan to intensify the participation because the possibility of winning a big reward is low and the emotional value of the app tends to decrease:

> it's unlikely to win a big prize, like a cell phone or a speaker or something like that, but it's very likely to win some mobile data for a few days, some little, extra thing. That's why I think it's still worthwhile to playing, just for the possibility of occasionally winning some mobile data, for example. (#2)

Interviewees admitted to decreasing (interviewee 1) or abandoning (interviewee 3) attendance in the future because of the unsatisfactory results that intensified frustration reported in the previous rounds. This result is interesting, particularly regarding

interviewee 3, who has shown a demotivation since round 3 with the lack of emotional value of the app and the low attraction of rewards, since in rounds 1 and 2, this interviewee had shown intrinsic motivations to use the app because of the sense of fun and entertainment. This means that, after continued exposure, the satisfaction with rewards is crucial for maintaining the motivation to use GLP mobile apps.

The unsatisfaction with the game also affects those whose main goal is intrinsic motivation, as interviewee 4 also reported some decreases in the feeling of challenge and sense of competitiveness over time, manifesting the maintenance of motivation with the extrinsic expectation of winning prizes, which allowed for continued feeling of fun and entertainment.

The main motivation to use the app affects the effect on CBE and loyalty goals. While the interviewees who were more motivated to use the GLP with the purpose of winning rewards were less engaged with the brand, those who considered the emotional value of the gaming experience showed a connection with the brand attributes and brand involvement. This is evident with the demonstration of a spurious loyalty of interviewees 1–3, who consider themselves willing to switch operators if there were a more advantageous offer. We have to note that this lack of brand attachment and spurious loyalty also occurs with interviewee 3 at the end of the process, who initially showed motivation with the entertainment and fun attributed by the app. Although interviewee 2 admitted that the gamification contributes to a good perception of the brand, this participant stated that the loyalty to the brand depends on the economic advantage.

Conversely, those who felt more intrinsically motivated to use the app in the last round (interviewees 4 and 5), felt that the app promoted brand awareness and brand involvement, creating exit barriers when faced with similar offers from competitors because of the emotional attachment with the brand attributes and the interaction with other participants who also used the same app. However, while interviewee 5 mentioned that the GLP app created a higher feeling of involvement with the brand ecosystem, interviewee 4 characterized this intrinsic motivation and positive attitude toward the brand with the higher investment in topping up her phone credit for the specific purpose of getting more credits. This result is also interesting, because the brand attachment reported by interviewee 5 occurred during the interaction with the app, after continued exposure, since the initial motivation was purely extrinsic; and interviewee 4 assumes a brand engagement attracted by the possibility of winning prizes, although have shown since the beginning the existence of intrinsic motivation to interact with the app for fun.

We can conclude that there is a connection between intrinsic motivations of entertainment and feeling of competitiveness with the GLP app and the extrinsic motivation to win significant rewards. The psychological and behavioral effects from the balance between these two dimensions vary, depending on the participants, their initial motivations and expectancies, but we can conclude that GLP mobile apps need to balance the emotional value with the attribution of significant rewards to maintain participants' motivation after continued experience.

4.5 Overview of the longitudinal study

The results of the longitudinal study show that, in the beginning, the extrinsic motivations regarding rewards are important for the participants, although some users (interviewees 3 and 4) have mentioned the higher importance of intrinsic motivations as entertainment and fun or a phenomenon where rewards are part of the intrinsic motivation due to the excitement this element provides. Along the time, the entertainment of the system also started to motivate some of those who had rewards as the initial main motivation (interviewees 2 and 5). However, if there is not an increasing challenge over the long

term, as a progressing system of the challenge, the motivation for fun decreases again (interviewee 2). At the same time, the lack of conversion of the experience into interesting rewards after continued exposure also demotivates users, both those with stronger intrinsic motivations to use the app in the beginning (interviewee 3) and those who play with the purpose of winning prizes (interviewees 1 and 2).

In brief, independent of the initial motivations of participants, the rewards have to adapt to consumer needs and expectations after continued exposure, becoming a real and fair challenge that can be achieved. Otherwise, the participants tend to demotivated after continued exposure. In parallel, the entertainment of the system is also important to keep users in the GLP, although the challenge has to increase fun and provide different levels after continued exposure to prevent demotivation.

These results are important to the continued participation in the GLP after time exposure and have implications for brand engagement and loyalty. In fact, the brand engagement and loyalty described by the participants consider not only the maintenance of investing time and money to obtain rewards, but also the entertainment and emotional attachment to the brand due to the fun, challenging and competitiveness experiences the app creates. This means that the emotional value of the GLP, with increasing challenges and entertainment environment, has to be balanced with the attribution of realistic and valued rewards over time and this balance is determinant to generate brand engagement and loyalty. Otherwise, the participants demotivated by the lack of new entertainment after continued exposure and the perception that their continued time and money invested in the app was not rewarded.

5. Discussion of the results
The research shows that users create a purpose for interacting with the gamified system, thus shaping their motivation. This motivation may be described according to several factors, such as need, personality and benefits presented by the system (Koivisto and Hamari, 2019). After a month of follow-up, the study evidenced that the motivations regulated by rewards remained connected to the system, which is consistent with previous literature that sustains the prominence of extrinsic motivations in GLPs (AlMarshedi *et al.*, 2015; Kim and Ahn, 2017; Mekler *et al.*, 2017; Tobon *et al.*, 2020; Wolf *et al.*, 2020). However, the weight of contingency in the consumer's motivation varies (Ryan and Deci, 2000a), depending on the effect of intrinsic motivations and the satisfaction with the gaming mechanism over time. It was possible to detect several instances of motivational changes, for contextual, individual and system design reasons. Motivation decreases after continued exposure when the rewards do not fit the user expectations over time, as it happened to interviewees 1–3. This had already been anticipated by Hammedi *et al.*, 2019, although not from a longitudinal perspective, because of the knowledge that different kinds of rewards produce different kinds of motivation (Lewis *et al.*, 2016). For example, the type of reward reinforcement – fixed or unpredicted – (Zichermann and Cunningham, 2011) or the restriction of using rewards under restricted conditions may lead to a lack of autonomy, which is an important element of intrinsic motivation (Kim and Ahn, 2017), according to the cognitive evaluation theory. After continued exposure, this fact may generate frustration with the system. The interviewees mostly became calculated and indifferent toward the app when they felt that the rewards were not attractive enough. The engagement of these users was compromised, and some exhibited behaviors of apathy and disinterest, not only toward the app but also toward the brand (Zichermann and Cunningham, 2011).

In parallel, unlike traditional loyalty programs, this study corroborates the phenomenon of a hedonic layer generated by gamification (Huotari and Hamari, 2017), adding entertainment value to the dynamics of obtaining rewards and contributing to brand engagement (Hammedi *et al.*, 2019; Hsu and Chen, 2018). Although interviewee 1

has not reported any hedonic value with the app in the whole process, other interviewees assumed being motivated to interact with the app, due to feelings of fun and entertainment with gamification. In some cases, it occurred at the initial stage – the cases of interviewees 3 and 4; in other cases, it happened due to a motivational change after the intensification of use – the cases of interviewees 2 and 5 In fact, users conditioned by rewards may self-regulate the weight of the contingency in situations where they experience fun and entertainment, serving the purposes of realizing self-determination (Lewis *et al.*, 2016; van Roy *et al.*, 2019; Xi and Hamari, 2019). This phenomenon contributes to feelings of autonomy and competence, which are important elements of intrinsic motivation, according to the cognitive evaluation theory (Deci and Ryan, 1985; Kim and Ahn, 2017). Thus, in line with the idea that rewards contribute to the perception of having fun (Eisingerich *et al.*, 2019; Hwang and Choi, 2020), the results express the existence of users who, independent of the initial and main motivation to interact with the GLP, after some time of interaction seek the system both for extrinsic reasons and for its hedonistic value. This agrees with the assumptions of Hollebeek *et al.* (2021) regarding the application of the self-determination theory to the context of GLPs, extending such comprehension to the longitudinal dimension.

Participants reporting intrinsic motivations presented more intense psychological effects, as reported in previous literature (Nobre and Ferreira, 2017). They manifested subjective descriptions of their experiences with the gamed system, and difficulties in describing them, which suggests immersion and reduced self-awareness, as predicted by the flow theory (Csikszentmihalyi, 1991). The behaviors displayed increased participation, exploration and interaction with the brand ecosystem, as well as motivation to revisit. Interviewees 4 and 5 exemplify this effect in longitudinal research with the intensification of brand engagement created by the continued gamification interaction. This was predicted in previous literature (Hammedi *et al.*, 2019; Hollebeek *et al.*, 2021).

However, the lack of meaningful progression and difficulty in the main mechanic of the shake were reported as leading to less fun and less motivation to play over time. This occurred with interviewee 2 during the last stages of the process. This means that the lack of challenge in a gamified system may lead to dissatisfaction after continued exposure, sustaining the previous assumption that rewards may suppress intrinsic motivations (Deci *et al.*, 1999). Even for those who interacted with a gamified loyalty platform for intrinsic reasons in the beginning (Interviewees 3 and 4), and who were more likely to respond to the challenge presented and interpret the rewards as progressive milestones, may not discard the perceived added value of the reward. Depending on inherent motives and the design of the gamified system, if the perceived entertainment and fun value of the system is low, users shift their focus to the reward contingency after some time. In order to motivate users to play the game, the design of an adequate challenge able to explore intrinsic needs, mainly activating competency, is required. Demotivation occurs especially if the user does not perceive the reward as fair or proportionate to the challenge (Hammedi *et al.*, 2019), as in the case of interviewee 3, inhibiting the hedonic effect of rewards (Eisingerich *et al.*, 2019; Hwang and Choi, 2020). In short, the consumer remained connected to the system as long as it was able to obtain fun experiences, or as long as the rewards were understood as fair and proportional to the challenge. This indicates the importance of designing GLPs that can explore both intrinsic and extrinsic motivations (Hollebeek *et al.*, 2021) after continued exposure.

6. Contributions and implications
The results of the longitudinal research extend previous knowledge about the main motivations to engage with GLPs after continued exposure: rewards, competition, sense

of achievement and gaining knowledge (Kunkel *et al.*, 2021). Confronting the literature that attributes higher value to rewards as users' extrinsic motivations to participate in GLPs (Wolf *et al.*, 2020; Mekler *et al.*, 2017; Tobon *et al.*, 2020), this paper found that the hedonic value is also perceived by the users, as defended by some authors (Hammedi *et al.*, 2019, 2021; Hsu and Chen, 2018; Nobre and Ferreira, 2017). After continued exposure, a motivational change may occur derived from the context. This motivational change may reflect the valuation of the hedonic value, due to the effect of immersion assumed in the flow theory, or the focus on achieving rewards. The motivational change may also occur, on the contrary, due to a failure of these effects in the participants' motivation in a certain moment of the process, contra balancing with the opposed psychological and behavioral effect. This study underlines the idea that GLPs may promote intrinsic and extrinsic motivations in continued exposure, as noted previously (Kunkel *et al.*, 2021). The study contributes to the clarification of the application of self-determination theory in GLPs. Furthermore, this paper extends the understanding that, in a longitudinal process, GLPs may fluctuate as slot machines and entertainment toys, depending on the balanced or unbalanced attraction of the challenges provided by the system and the perceived rewards. This balance should be achieved using progressive milestones, scaling up different levels of rewards and challenges, and maintaining a continuous sense of entertainment over time.

The paper also reinforces the effect of GLPs in brand engagement (Hollebeek *et al.*, 2021), although it is noted a spurious loyalty toward the brand, when there is an alternative with higher economic value. The paper also extends knowledge with the evidence that the brand engagement occurs only when both the hedonic value of GLP and the value of rewards are perceived, extending previous assumptions in the literature (Gorlier and Michel, 2020; Nobre and Ferreira, 2017), to the importance of the combination of intrinsic and extrinsic motivations after continued exposure.

The results present managerial implications for marketing managers of GLPs and to technical designers of gamified mobile apps. These professionals need to explore their segments and gaming mechanisms and understand the user expectations regarding the challenges provided by the app after continued exposure – e.g. the saturation points of entertainment perceived in each level of challenge, the rhythm of novelty expected to replace the challenges over time, or the type of challenges generating higher brand engagement. In addition, managers need to identify users' perceptions of realism and fairness regarding the attribution of rewards, being aware of the possibility of change after continued exposure, due to satisfaction or frustration with previous experiences.

7. Conclusions
This paper shows that, for a continued participation in GLPs mobile apps, a balance between intrinsic and extrinsic motivations should be obtained, independent of the main primary motivation of each individual. This occurs because of the dynamic manifestation of intrinsic and extrinsic motivations after continued exposure. Independent of the first motivation to interact with the GLP, the user can perceive the effect of rewards in a higher hedonic experience and the effect of entertainment and fun in a higher competitiveness to achieve rewards. On the contrary, the lack of challenge in the system mechanism may transfer the intrinsic satisfaction to an extrinsic motivation to obtain awards and the unsatisfaction with the rewards may demotivate the user to continue the interaction if there is not hedonic value in the app. In brief, the sense of realism and fairness in the acquisition of rewards, the challenge of the mechanism and the sense of entertainment and fun renovated over time with new levels of challenges and competition may maintain both the extrinsic and intrinsic motivations for continued use of the GLP.

The effect of GLP in brand engagement depends on both the perception of hedonic value and the realism and fairness of rewards. The prominence of extrinsic motivation based on rewards leads to a spurious loyalty toward the app after a period of time.

Besides the contribution to the comprehension of the application of self-determination theory in GLPs from a longitudinal perspective, the conclusions of this paper may help managers to build GLPs in mobile apps that provide valuable experiences and prevent user abandonment of the system, designing gaming mechanisms with progressive challenges adapted to continued use, and continuously rewarding the loyal and engaged users with tangible and economic rewards.

8. Limitations and future research

The one-month longitudinal observation may be a limited timeframe to reflect changes in psychological, behavioral and motivational effects on users after their continued exposure to gamified mechanics. For future gamification studies in similar contexts, it is suggested the application of a minimum timeframe of six months, based on monthly interviews, in order to capture deeper transformations in individuals. Future studies should use more participants in order to infer similarities in behavior according to several variables, such as age, gender, lifestyle, among others. In fact, the participants' routines regarding the app, such as the frequency of use and their historical interaction with the app before the research may have biased the results of the longitudinal study. Future research may analyze the gamified context from the perspective of the programing entity.

ORCID iDs
José Varela Lopes https://orcid.org/0009-0002-9726-5605
Beatriz Casais https://orcid.org/0000-0002-7626-0509

References

AlMarshedi, A., Wanick, V., Wills, G.B. and Ranchhod, A. (2015), "SGI: a framework for increasing the sustainability of gamification impact", *International Journal for Infonomics*, Vol. 8 No. 2, pp. 1044-1051. doi: 10.20533/iji.1742.4712.2015.0123.

Alsawaier, R.S. (2019), "Research trends in the study of gamification", *International Journal of Information and Learning Technology*, Vol. 36 No. 5, pp. 373-380. doi: 10.1108/IJILT-12-2017-0119.

Al-Zyoud, M.F. (2020), "The impact of gamification on consumer loyalty, electronic word-of mouth sharing and purchase behavior", *Journal of Public Affairs*, Vol. 20 No. 3, pp. 1-9. doi: 10.1002/pa.2263.

Bittner, J.V. and Shipper, J. (2014), "Motivational effects and age differences of gamification in product advertising", *Journal of Consumer Marketing*, Vol. 31 No. 5, pp. 391-400. doi: 10.1108/JCM-04-2014-0945.

Bovermann, K. and Bastiaens, T.J. (2020), "Towards a motivational design? Connecting gamification user types and online learning activities", *Research and Practice in Technology Enhanced Learning*, Vol. 15 No. 1, pp. 1-18. doi: 10.1186/s41039-019-0121-4.

Brodie, R.J., Hollebeek, L.D., Jurić, B. and Ilić, A. (2011), "Customer engagement: conceptual domain, fundamental propositions, and implications for research", *Journal of Service Research*, Vol. 14 No. 3, pp. 252-271. doi: 10.1177/1094670511411703.

Csikszentmihalyi, M. (1991), *Flow: the Psychology of Optimal Experience: Steps toward Enhancing the Quality of Life*, 1st ed., Harper Collins Publishers, New York.

Deci, E.L. (1971), "Effects of externally mediated rewards on intrinsic motivation", *Journal of Personality and Social Psychology*, Vol. 18 No. 1, pp. 105-115. doi: 10.1037/h0030644.

Deci, E.L. and Ryan, R.M. (1985), *Intrinsic Motivation and Self-Determination in Human Behavior*, 1st ed., Springer, New York. https://doi.org/978-1-4899-2271-7

Deci, E.L., Ryan, R.M. and Koestner, R. (1999), "A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation", *Psychological Bulletin*, Vol. 125 No. 6, pp. 627-668. doi: 10.1037/0033-2909.125.6.627.

Deterding, S. (2015), "The lens of intrinsic skill atoms: a method for gameful design", *Human-Computer Interaction*, Vol. 30 No. 3-4, pp. 294-335. doi: 10.1080/07370024.2014.993471.

Domínguez, A., Saenz-De-Navarrete, J., De-Marcos, L., Fernández-Sanz, L., Pagés, C. and Martínez-Herráiz, J.J. (2013), "Gamifying learning experiences: practical implications and outcomes", *Computers and Education*, Vol. 63, pp. 380-392. doi: 10.1016/j.compedu.2012.12.020.

Eisingerich, A.B., Marchand, A., Fritze, M.P. and Dong, L. (2019), "Hook vs. hope: how to enhance customer engagement through gamification", *International Journal of Research in Marketing*, Vol. 36 No. 2, pp. 200-215. doi: 10.1016/j.ijresmar.2019.02.003.

Feng, W., Tu, R. and Hsieh, P. (2020), "Can gamification increases consumers' engagement in fitness apps? The moderating role of commensurability of the game elements", *Journal of Retailing and Consumer Services*, Vol. 57, August, p. 102229. doi: 10.1016/j.jretconser.2020.102229.

Gibson, J.J. (1977), "The Theory of Affordances", in Shaw J, Bransford R (Eds), *Perceiving, Acting, and Knowing. Toward an Ecological Psychology*, Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 67-82.

Gorlier, T. and Michel, G. (2020), "How special rewards in loyalty programs enrich consumer-brand relationships: the role of self-expansion", *Psychology & Marketing*, Vol. 37 No. 4, pp. 588-603. doi: 10.1002/mar.21328.

Granic, I., Lobel, A. and Engels, R.C.M.E. (2014), "The benefits of playing video games", *American Psychologist*, Vol. 69 No. 1, pp. 66-78. doi: 10.1037/a0034857.

Gray, D.E. (2014), *Doing Research in the Real World*, 3rd ed., Sage Publications, London, Thousand Oaks.

Groening, C. and Binnewies, C. (2019), ""Achievement unlocked!" - The impact of digital achievements as a gamification element on motivation and performance", *Computers in Human Behavior*, Vol. 97, November, pp. 151-166. doi: 10.1016/j.chb.2019.02.026.

Hammedi, W., Leclercq, T. and Poncin, I. (2019), "Customer engagement: the role of gamification", in Hollebeek, L., Sprott, D., Hammedi, W., Leclercq, T. and Poncin, I. (Eds),*Handbook of Research on Customer Engagement*, Edward Elgar Publishing, Cheltenham, UK, pp. 164-185.

Harwood, T. and Garry, T. (2015), "An investigation into gamification as a customer engagement experience environment", *Journal of Services Marketing*, Vol. 29 Nos. 6-7, pp. 533-546. doi: 10.1108/JSM-01-2015-0045.

Helmefalk, M. (2019), "An interdisciplinary perspective on gamification: mechanics, psychological mediators and outcomes: mechanics, mental mediators and outcomes", *International Journal of Serious Games*, Vol. 6 No. 1, pp. 3-26.

Hermanowicz, J.C. (2013), "The longitudinal qualitative interview", *Qualitative Sociology*, Vol. 36 No. 2, pp. 189-208. doi: 10.1007/s11133-013-9247-7.

Hofacker, C.F., De Ruyter, K., Lurie, N.H., Manchanda, P. and Donaldson, J. (2016), "Gamification and mobile marketing effectiveness", *Journal of Interactive Marketing*, Vol. 34 No. 1, pp. 25-36. doi: 10.1016/j.intmar.2016.03.001.

Hollebeek, L.D., Das, K. and Shukla, Y. (2021), "Game on! How gamified loyalty programs boost customer engagement value", *International Journal of Information Management*, Vol. 61, p. 102308. doi: 10.1016/j.ijinfomgt.2021.102308.

Hsu, C.L. and Chen, M.C. (2018), "How gamification marketing activities motivate desirable consumer behaviors: focusing on the role of brand love", *Computers in Human Behavior*, Vol. 88, May, pp. 121-133. doi: 10.1016/j.chb.2018.06.037.

Huotari, K. and Hamari, J. (2017), "A definition for gamification: anchoring gamification in the service marketing literature", *Electronic Markets*, Vol. 27 No. 1, pp. 21-31. doi: 10.1007/s12525-015-0212-z.

Hwang, J. and Choi, L. (2020), "Having fun while receiving rewards?: exploration of gamification in loyalty programs for consumer loyalty", *Journal of Business Research*, Vol. 106 No. 1, pp. 365-376. doi: 10.1016/j.jbusres.2019.01.031.

Johnson, D., Deterding, S., Kuhn, K.A., Staneva, A., Stoyanov, S. and Hides, L. (2016), "Gamification for health and wellbeing: a systematic review of the literature", *Internet Interventions*, Vol. 6, pp. 89-106. doi: 10.1016/j.invent.2016.10.002.

Kim, K. and Ahn, S.J.G. (2017), "Rewards that undermine customer loyalty? A motivational approach to loyalty programs", *Psychology & Marketing*, Vol. 34 No. 9, pp. 842-852. doi: 10.1002/mar.21026.

Klock, A.C.T., Gasparini, I., Pimenta, M.S. and Hamari, J. (2020), "Tailored gamification: a review of literature", *International Journal of Human Computer Studies*, Vol. 144, June, p. 102495. doi: 10.1016/j.ijhcs.2020.102495.

Koivisto, J. and Hamari, J. (2019), "The rise of motivational information systems: a review of gamification research", *International Journal of Information Management*, Vol. 45, pp. 191-210. doi: 10.1016/j.ijinfomgt.2018.10.013.

Kunkel, T., Lock, D. and Doyle, J.P. (2021), "Gamification via mobile applications: a longitudinal examination of its impact on attitudinal loyalty and behavior toward a core service", *Psychology & Marketing*, Vol. 38 No. 6, pp. 948-964.

Kyewski, E. and Krämer, N.C. (2018), "To gamify or not to gamify? An experimental field study of the influence of badges on motivation, activity, and performance in an online learning course", *Computers and Education*, Vol. 118, April, pp. 25-37. doi: 10.1016/j.compedu.2017.11.006.

la Cuadra, M.T., De, Vila-Lopez, N. and Hernandez-Fernández, A. (2019), "Could gamification improve visitors' engagement?", *International Journal of Tourism Cities*, Vol. 6 No. 2, pp. 317-334. doi: 10.1108/IJTC-07-2019-0100.

Leclercq, T., Poncin, I., Hammedi, W., Kullak, A. and Hollebeek, L.D. (2020), "When gamification backfires: the impact of perceived justice on online community contributions", *Journal of Marketing Management*, Vol. 36 No. 5-6, pp. 550-577. doi: 10.1080/0267257X.2020.1736604.

Lewis, Z.H., Swartz, M.C. and Lyons, E.J. (2016), "What's the point?: a review of reward systems implemented in Gamification Interventions", *Games for Health Journal*, Vol. 5 Nos. 2, pp. 93-99. doi: 10.1089/g4h.2015.0078.

Mekler, E.D., Brühlmann, F., Tuch, A.N. and Opwis, K. (2017), "Towards understanding the effects of individual gamification elements on intrinsic motivation and performance", *Computers in Human Behavior*, Vol. 71, pp. 525-534. doi: 10.1016/j.chb.2015.08.048.

Nacke, L.E. and Deterding, S. (2017), "The maturing of gamification research", *Computers in Human Behavior*, Vol. 71, pp. 450-454. doi: 10.1016/j.chb.2016.11.062.

Nakamura, J. (2002), "The concept of flow", in Snyder, CR and Shane, JL (Eds), *Handbook of Positive Psychology*, 2nd ed., Oxford University Press, New York, pp. 89-105.

Nobre, H. and Ferreira, A. (2017), "Gamification as a platform for brand co-creation experiences", *Journal of Brand Management*, Vol. 24 No. 4, pp. 349-361. doi: 10.1057/s41262-017-0055-3.

Noorbehbahani, F., Salehi, F. and Jafar Zadeh, R. (2019), "A systematic mapping study on gamification applied to e-marketing", *Journal of Research in Interactive Marketing*, Vol. 13 No. 3, pp. 392-410. doi: 10.1108/JRIM-08-2018-0103.

Pansari, A. and Kumar, V. (2017), "Customer engagement: the construct, antecedents, and consequences", *Journal of the Academy of Marketing Science*, Vol. 45 No. 3, pp. 294-311. doi: 10.1007/s11747-016-0485-6.

Peng, W., Lin, J.H., Pfeiffer, K.A. and Winn, B. (2012), "Need satisfaction supportive game features as motivational determinants: an experimental study of a self-determination theory guided exergame", *Media Psychology*, Vol. 15 No. 2, pp. 175-196. doi: 10.1080/15213269.2012.673850.

Rapp, A. (2015), "A qualitative investigation of gamification: motivational factors in online gamified services and applications", *International Journal of Technology and Human Interaction*, Vol. 11 No. 1, pp. 67-82. doi: 10.4018/ijthi.2015010105.

Ryan, R.M. and Deci, E.L. (2000a), "Intrinsic and extrinsic motivations: classic definitions and new directions", *Contemporary Educational Psychology*, Vol. 25 No. 1, pp. 54-67. doi: 10.1006/ceps.1999.1020.

Ryan, R.M. and Deci, E.L. (2000b), "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being", *American Psychologist*, Vol. 55 No. 1, pp. 68-78. doi: 10.1037/0003-066X.55.1.68.

Sailer, M., Mayr, S., Mandl, H. and Hense, J. (2017), "How gamification motivates: an experimental study of the effects of specific game design elements on psychological need satisfaction", *Computers in Human Behavior*, Vol. 69, pp. 371-380. doi: 10.1016/j.chb.2016.12.033.

Schöbel, S.M., Janson, A. and Söllner, M. (2020), "Capturing the complexity of gamification elements: a holistic approach for analysing existing and deriving novel gamification designs", *European Journal of Information Systems*, Vol. 29 No. 6, pp. 641-668.

Seaborn, K. and Fels, D.I. (2015), "Gamification in theory and action: a survey", *International Journal of Human Computer Studies*, Vol. 74, pp. 14-31. doi: 10.1016/j.ijhcs.2014.09.006.

Suh, A. and Wagner, C. (2017), "How gamification of an enterprise collaboration system increases knowledge contribution: an affordance approach", *Journal of Knowledge Management*, Vol. 21 No. 2, pp. 416-431. doi: 10.1108/JKM-10-2016-0429.

Tobon, S., Ruiz-Alba, J.L. and García-Madariaga, J. (2020), "Gamification and online consumer decisions: is the game over?", *Decision Support Systems*, Vol. 128, September, p. 113167. doi: 10.1016/j.dss.2019.113167.

van Doorn, J., Lemon, K.N., Mittal, V., Nass, S., Pick, D., Pirner, P. and Verhoef, P.C. (2010), "Customer engagement behavior: theoretical foundations and research directions", *Journal of Service Research*, Vol. 13 No. 3, pp. 253-266. doi: 10.1177/1094670510375599.

van Roy, R., Deterding, S. and Zaman, B. (2019), "Collecting Pokémon or receiving rewards? How people functionalise badges in gamified online learning environments in the wild", *International Journal of Human Computer Studies*, Vol. 127, August, pp. 62-80. doi: 10.1016/j.ijhcs.2018.09.003.

Wolf, T., Weiger, W.H. and Hammerschmidt, M. (2020), "Experiences that matter? The motivational experiences and business outcomes of gamified services", *Journal of Business Research*, Vol. 106, February, pp. 353-364. doi: 10.1016/j.jbusres.2018.12.058.

Xi, N. and Hamari, J. (2019), "Does gamification satisfy needs? A study on the relationship between gamification features and intrinsic need satisfaction", *International Journal of Information Management*, Vol. 46, pp. 210-221. doi: 10.1016/j.ijinfomgt.2018.12.002.

Xi, N. and Hamari, J. (2020), "Does gamification affect brand engagement and equity? A study in online brand communities", *Journal of Business Research*, Vol. 109, January, pp. 449-460. doi: 10.1016/j.jbusres.2019.11.058.

Yang, Y., Asaad, Y. and Dwivedi, Y. (2017), "Examining the impact of gamification on intention of engagement and brand attitude in the marketing context", *Computers in Human Behavior*, Vol. 73, pp. 459-469. doi: 10.1016/j.chb.2017.03.066.

Zichermann, G. and Cunningham, C. (2011), *Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps*, 1st ed., O'Reilly Media, Sebastopol, CA.

Annex I. Design of *Yorn Shake It*

The main page of the application shows the user's profile where game and progression metrics are available, such as shakes made, cards and prizes obtained, as well as points, levels and badges/trophies won. On this page, it is also possible to consult the history of prizes, actions, points and trophies obtained, described in detail.

Shakes are moves or game actions that the user can perform. A shake consists of the physical action of shaking the smartphone, activating the internal accelerometer. This action provides feedback in the form of a virtual card. Shakes are awarded on tariff billing occasions (top-ups or automatic debits), through a referential invitation to individuals to participate in the app, and can also be obtained by exchanging repeated cards, or extraordinary campaigns. These cards obtained through shakes are the main mechanics of the app. There are three types of cards that can be obtained through this action: collection cards, gold cards; and joker cards, which give immediate access to a prize. Collection and gold cards fulfill several functions in the system. First, they contribute to points in the user's progression, which level up whenever they reach a certain score, which is available to view in their profile. Second, they serve the main objective of the game: the collection of a defined range of 10 unique cards and 1 gold card completes one category of the total collection (a total of six categories, totaling 60 cards and 6x gold cards), giving the user tangible and economic rewards. Third, these cards serve as badges. When a player obtains a new card, it is inserted into the passbook and the collection section, giving a sense of completion as the collection progresses. Collections are seasonal and limited, and after the expiry date of a given collection, a new collection is created. Fourth, it facilitates collaboration systems, making it possible to exchange repeated cards. This functionality depends on the friend's section, where users can enter up to 10 users and see their game metrics and passbooks. Repeated cards can also be exchanged for additional shakes, points or a wildcard, which is converted into any card (except gold ones) that the user does not have. The reinforcement provided by these cards can be characterized as a variable ratio. Although the shake always gives access to a card, the illustration represented, and the goal of completing the booklet are unknown. There are also additional mechanics such as Mystery Boxes, Minigames, intermediate games and a question before a new card. Mystery Boxes are daily events that consist of a draw between a shake, or a shake fragment, convertible into a shake when five fragments are received. The Minigame is a weekly event that consists of a memory game, in which the user can win up to 10 points, depending on the mistakes they make during the game. Intermediate games are drawn so that the user can access them when passing the level. The user chooses one of the eight cards, all of which contain different prizes. Finally, when the user performs a shake and is awarded a new card, the user has to answer a question about the card's illustration, earning more points as the answer is faster.

There is also a progression system that uses the points obtained from the various mechanics mentioned above to take the user to the next level. There are six levels that can be reached when the user gathers 100 points, 250 points, 425 points, 650 points, 900 points and 1,200 points. The higher the level, the higher the value of the prize awarded. In short, the gamified system revolves around the acquisition of rewards through different mechanics, with the goal of obtaining prizes.

Corresponding author
Beatriz Casais can be contacted at: bcasais@eeg.uminho.pt