

Play *With* Me?

Understanding and Measuring the Social Aspect of Casual Gaming

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Abstract

Social Gaming is a pervasive phenomenon, driven by the advent of social networks and the digitization of game distribution. This paper positions and defines Casual Social Games (CSGs) as a genre and platform agnostic subset of Social Games that incorporates browser, mobile, console and wearable digital games. The authors argue that – as CSGs impact the games industry, shape play patterns and audience characteristics, and proliferate to new platforms – understanding and measuring their social aspect becomes highly relevant. A randomized experiment on added social gameplay in a CSG on both mobile and *Facebook* serves to support this argument. Experimental results highlight that social gameplay is extremely important for engagement and monetization in casual games, even more so on mobile platforms. This does not only suggest that CSG developers will benefit from focusing on increased social interaction in their games, but that Game Analytics should strive to unify definitions and build a common body of knowledge around the social aspect of casual gaming.

I. Introduction

Within the past decade, the proliferation of social networks, notably *Facebook*, led to the emergence of a new type of game, Social Network Games (SNGs) (Lewis et al. 2012; Wohn et al. 2011). SNGs are played via online social networks (Heidemann et al. 2012), make use of the social features offered by the network and extend them with their own social functionalities and asynchronous multiplayer mechanics. In the case of *Facebook*, players can send notifications to friends that invite them to play along and offer them free virtual goods, they can post to friends' walls and they can share status updates from the game to the news feed. Additionally, some of the games allow for in-game social interactions like visiting a friend's garden in

Farmville or competing with friends in tournaments or battlefields. SNGs on *Facebook*, and Social Gaming with it, experienced massive viral growth pretty much simultaneously with the platform itself. By August 2012, *Facebook* had 235 million monthly active players, which amounts to roughly a fourth of its monthly active user base at that time (Lunden 2012).

To enable viral spread of the games on the social network, developers made these games very accessible. Key elements of this high accessibility are simple gameplay, well-designed tutorials smoothly onboarding players (Tyni et al. 2011; Holin and Sun 2011), and use of the Free-to-Play (F2P) model (Seufert 2014). This high accessibility and social mechanics made the games appeal to audiences that were not previously involved with gaming (Wohn et al. 2011).

In parallel with the rise of SNGs, the introduction of mobile platforms enabled games to spread from social networks onto this new platform. Many of the new mobile games inherited the social mechanics of SNGs, including the linking of players' *Facebook* accounts to the mobile game. While *Facebook* is just one of many online social networks (e.g. *Steam*, the *Playstation Network* and the *Xbox Live* service), it is by far the most dominant social network for mobile games. This is clearly evidenced by *Facebook* connect being offered in virtually all top-100 grossing mobile titles. While most mobile games have social features, their exact implementation differs substantially. Questions such as when and if to include *Facebook* connect or when deeper social gameplay will work well versus not, are pressing issues in the mobile game industry (Grubb 2014; Alsen and Runge 2016).

While most casual mobile games integrate *Facebook* to foster social gameplay, e.g. *Clash of Clans* and *Candy Crush Saga* (Grubb 2014), developers have started to build proprietary social networks within their games. These endeavors derive from the anticipated revenue and engage-

ment potential of increased social interaction and ownership of this interaction (Alsen and Runge 2016). Despite these developments, to date, there has been no work published that quantifies the effect of introducing additional social mechanics or networks in mobile games. We wish to contribute against this backdrop. Our study also speaks to existing literature focusing on the impact of social networks in businesses and industries more broadly (Heidemann et al. 2012; Berger et al. 2014; Trier and Richter 2015).

II. Contribution

This paper has three main contributions: 1) We present a condensed review of the impact that social networks had on gaming and the games industry, across SNGs and casual mobile games which we summarize in the term Casual Social Games (CSGs). Due to the paucity of academic work on CSGs, knowledge from the industry forms the majority of the current state-of-the-art. 2) The paper presents a description of the game-session patterns and basic audience characteristics of three SNGs as being representative of CSGs more broadly. 3) We present evidence from a controlled live experiment run in *Diamond Dash*. This allows us to investigate the impact of social gameplay in a CSG on both *Facebook* and mobile. Results suggest that social mechanics, as found in SNGs and beyond, are a promising source of increased revenue and engagement in CSGs, especially on mobile.

III. Background: Casual Social Games

In this paper the term “social game” is used to describe any game that includes social gameplay features and thus either permits or requires social interaction. This covers a broad variety of digital and non-digital games. However, here the focus is specifically on CSGs, which form a subset of social games, and adhere to five design principles outlined below. The term “casual” here refers to the minor temporal investment needed overall and per session by the players to play these kinds of games. A casual game can be played infrequently and in short sessions, while also enabling more frequent and longer-session play. There are no standards defining the limits on the term “casual” or “hardcore”, and a broad definition fits the current investigation well as we are targeting the discussion from a top-down perspective.

The term “social game” can be used as an umbrella concept, which also includes SNGs. Sometimes the terms SNG and social game are used interchangeably (Research and Markets 2015). In fact, SNGs brought social games much of the widespread distribution this game form is currently experiencing. SNGs are hosted on a digital social network, and integrate the social features of the network. Wohn et

al. (2011, p.3) state that: “*what constitutes a SNG is determined more by the technical aspects of how it is accessed and distributed, not on the genre of the game*”. Additionally, SNGs can be viewed as a sub-category of social games, as are CSGs. However, CSGs can be SNGs as well as hosted on any other platform for game delivery, including mobile and console platforms. CSGs refer to a broad category of highly accessible online games with social gameplay, featuring social media integration and/or social browser games outside of social networks. There are a number of defining characteristics for CSGs:

- **High accessibility and engagement:** These games have a flat learning curve and a casual gameplay that is easily accessible (Tyni et al. 2011; Lewis et al. 2012) (“easy-in, easy-out” (Klimmt et al. 2009; Shin et al. 2011)). This allows non-gaming customers to get into the gameplay (Shin et al. 2011; Research and Markets 2015; Monthly 2016) and often stay engaged for a long time due to smart game design (Sung et al. 2010; Lewis et al. 2012).

- **Inclusion of viral/social features:** A distinguishing feature of CSGs are the included social features, e.g. gifting of virtual goods, sharing achievements, posting to friend’s walls, that reward viral sharing and hence facilitate sociability and viral growth of the games (Wohn et al. 2011; Hamari and Järvinen 2011; Lewis et al. 2012; Lundén 2012).

- **Free-to-play:** F2P is the term employed to describe games that use the freemium business model (Seufert 2014; Monthly 2016). Most CSGs follow this model, where the base version is offered to the customer freely and premium upgrades can be purchased for real money. Also, most CSGs offer a form of virtual currency that can be purchased for real money (Lehdonvirta 2009; Sifa et al. 2015; Levitt et al. 2016).

- **Strong sociability around the game:** Lewis et al. (2012, p.178) noted for SNGs that: “*social interactions around SNGs are clearly a central aspect of the pleasure of the experience for many players*”. This feature is also found in CSGs, and is enabled by the accessibility of these games and the resulting large communities around them. The social dimension of CSGs hence reaches beyond the social interaction inside the games (de Kort et al. 2007; Wohn 2011; Statista, 2016a).

- **Genre agnosticism:** CSGs cover a variety of genres or types of games and are not defined by a specific game genre (Wohn et al. 2011). However, the main game genres traditionally are resource management and simulation games (e.g. *Farmville*), Social Casino games (e.g. *Texas Hold'em Poker*) and Casual/Arcade games (e.g. *Diamond Dash*). This is of course subject to change over time. Genres that experienced growth more recently are Strategy, Hidden Object and Match-3.

IV. Industry Impact of Casual Social Gaming

Shortly after their introduction, some SNGs and other online games operating under the F2P business model generated substantial revenue from sales of virtual goods through in-app purchases (Lehdonvirta 2009; Sifa et al. 2015). This benefited both *Facebook* that usually retains a share of the revenue, and the companies developing and publishing the SNGs. Rather low entry barriers, free viral growth and immediate revenue opportunities attracted entrepreneurs. New companies in the gaming industry emerged. One of the more prominent examples of such a company is Zynga that went public in 2011 at a seven billion USD valuation. In 2012, five of the top ten developers were from Europe: King.com, Peak Games, Rovio, Socialpoint, and Wooga (Lunden 2012). SNGs also affected the gambling industry through the advent of Social Casino Games where players invest real money to gamble for virtual rewards. These games' proliferation was facilitated by the fact that they are not subject to the same tough regulation that real money gambling applications are. King.com (later renamed to King) ported SNGs to mobile and achieved tremendous success with the mobile version of its *Candy Crush Saga* that finally led to its multi-billion USD initial public offering in 2014. The largest part of companies that succeeded with SNGs either extended or shifted their focus on to mobile games. Among these companies are, besides King, Zynga that acquired Natural Motion, and Socialpoint and Wooga that ported their apps similar to King.

New Gamers: With the introduction of SNGs, the reach and depth of engagement in games increased. Using historical data and forecasting, Borrell Associates (2016) predicted that the average daily time spent playing video games per capita will go from 18 minutes in 2008 to 28 minutes in 2018.

The design of early CSGs made it easy for *Facebook* users to get hooked to the games (Lewis et al. 2012). The built-in viral features require players to engage their online social networks to remove blockers in the games or obtain rewards. This allowed SNGs to spread to audiences that previously were agnostic or skeptical of gaming. Wohn et al. (2011) provide insights into the process of viral spread between users of a social network). The social mechanics used by SNGs generated a completely new audience for online games (Monthly 2016), marked by different demographics and play patterns, the casual gamers. Notably, casual gamers are more likely to be female than other gamers. This is emphasized by survey results published by the Entertainment Software Association (Statista 2016b; ESA 2016); the gender split of video gamers in the United States went from 38% female and 62% male in 2006 to almost

59-41% in 2015, with average ages reported as 44 years for female and 35 for male players.

New business models: Social Gaming has notably seen the introduction and widespread adoption of the F2P business model, and the use of social features for viral growth as new business tactics. The freemium business model is not only used in SNGs, but adopted for non-social mobile games and making its way into the traditional gaming space: "*We've seen this model creep into console games with downloadable map packs for Modern Warfare and Halo, and additional content for games like Guitar Hero that have been highly profitable*" (Silverman 2011). It can be argued that F2P – itself a result of the digitization of many goods and the close to zero marginal cost of production and distribution of these goods (Seufert 2014) – would have found its way into traditional gaming anyways. Social Gaming however undoubtedly accelerated this development by its relentless adoption of F2P. Its effect also shows in modifications to console hardware (the "share button") and the inclusion of social networks in the console and PC gaming experience (Research and Markets 2015).

Revenue impact: The business activity added through CSGs, particularly on browser and mobile platforms, impacted industry revenue substantially. A new revenue stream from digital gaming, now continuing to grow through mobile gaming, emerged. There are cannibalizing effects on traditional gaming companies and consolidation creeps among developers of CSGs. But overall the revenue impact is positive and gaming is expected to keep growing (Silverman 2011). The growth of Social Gaming at a compound annual growth rate of 15% until 2019 (Research and Markets 2015) outpaces the growth of the gaming market overall at 5.5% over the same time period (Takahashi 2015). Traditional gaming companies are realizing the significance and future opportunities, e.g. games using augmented reality, of mobile gaming. They are hence investing in the social and mobile gaming space, exemplified by Activision Blizzard's recent acquisition of King for six billion USD. CSGs hence shaped and shape the revenue of the video games industry, the strategies of gaming companies and the present and future mobile gaming experience.

Mobile CSGs: Investigating the top-100 grossing games in the United States App Store, as of April 2016, one can observe that over 90% of casual games on mobile platforms offer *Facebook* connect to their players, while 100% of all CSGs do. Additionally, a number of developers have started their own online social networks inside their player base, also allowing players to find new friends through the game versus offering players to invite/play with connections from their existing social network. These observations underline the importance to understand how the so-

cial dynamics introduced by adding social mechanics in casual mobile games influence elements like gameplay, engagement, retention and revenue.

A number of studies have looked into the social dynamics of CSGs (e.g. Stenros et al. 2009; Sung et al. 2010; Hamari et al. 2014; Sifa et al. 2015). These generally indicate the relevance of social interaction as a driver of engagement in games, and social games more broadly. However, none of these studies explore the crucial link between social features, engagement, monetization and revenue generation. It is therefore presently difficult to directly evaluate how important social mechanics and gameplay are for revenue and engagement in mobile casual games. Such empirical work would however assist with addressing several questions, notably: How much can social gameplay features foster engagement of players in mobile games? How is this effect different for different audiences? Are the returns to social gameplay higher or lower than the returns to single-player gameplay?

Social game-play element	<i>Diamond Dash</i>	<i>Pearl's Peril</i>	<i>Monster World</i>
Requests (ask/gift virtual goods)	Yes	Yes	Yes
Share updates from the game	Yes	Yes	Yes
Post to friend's wall	Yes	Yes	Yes
Visit a friend's garden/island	No	Yes	Yes
Friends' bar	Yes	Yes	Yes
Multiplayer	Asynchronous*	Asynchronous*	No

Table 1. Social gameplay elements in the CSGs used in this study. *Built into the game over time. Walls, garden/islands and bars are social features in the three games that permit players to visit, view the progress of/help other players.

Shi et al. (2015) investigate how much social dynamics and players' past gameplay drive purchase propensity in F2P games. In the empirical part of this study, the authors find that purchase propensity is influenced both by formal and informal social dynamics, echoing the conclusions of Sifa et al. (2015) who report social interaction as the third-most powerful predictor of purchase decisions in F2P mobile games. Shi et al. (2015) also report a moderating effect of informal social dynamics on the effect of players' play history on purchase decisions. While these findings are insightful, there is still the question of the causality of these relationships, as well as quantitative statements on the strength of the associations between individual gameplay, social gameplay, engagement and monetization. A natural extension of the work of Shi et al. (2015) would be

to perform controlled experiments with social features using A/B testing (Levitt et al. 2016).

V. Social Design of Three CSGs

Here, three CSGs are investigated: *Diamond Dash* and *Pearl's Peril* occur on both mobile and *Facebook*, while *Monster World* is a *Facebook*-only title. All three CSGs adhere to the five design principles for CSGs outlined above:

- *Diamond Dash*, a casual/arcade game, is a highly casual puzzle game where players play timed levels and can compete with their friends for a high score.
- *Pearl's Peril* is a hidden object game where players search for items in high-quality graphic scenes and have an island that they can and need to decorate to proceed in the game.
- *Monster World*, a resource management/simulation game, is similar to Zynga's much famed *Farmville* (Lewis et al. 2012), but a little less conventional in that players can grow Diamond Bushes and Lemonade Trees. Overall, it has the same mechanics where players plant and harvest crops that they sell to customers to get in-game currency that they can use to expand and decorate their garden. There are additional mechanics that were added after launch, e.g. in-game crafting of items using in-game currency and an additional underwater world.

The games were developed and published by the Berlin-based games company Wooga, who provided the data used here. The three games include various social mechanics usually found in CSGs; see table 1 for an overview. *Monster World* has a more deeply engaging gameplay than *Diamond Dash*, indicated by the more frequent play sessions (fig. 1), due to more complex gameplay: In the game, players have a large garden that they need to harvest, plant, water, and decorate. Trades can be performed, items can be crafted, and new worlds can be unlocked at higher levels. There is essentially a wider variety of gameplay, investment and customization options. As table 1 shows, all three games contain social features via *Facebook*. *Pearl's Peril* and *Monster World* also allow players to visit each other's island/garden. *Diamond Dash* and *Pearl's Peril* were extended post-launch with asynchronous multiplayer mechanics. The experimental evidence that we present in section VI originates from the introduction of these mechanics in *Diamond Dash*.

Player Base: The player base of the titles used here, across the platforms they are available on (mobile, *Facebook*) match the pattern of CSGs in general. Two thirds of the audience of *Monster World* and *Pearl's Peril's* are female. Half of the players of *Monster World* are female aged 25 plus; for *Pearl's Peril* this figure is at 35 plus, it hence has

a slightly older player base. A fourth of *Pearl's Peril* players are female aged 55 and older. In *Diamond Dash*, the majority of players are also female, but less extreme than in the other two games. In terms of age, its audience is similar in composition to *Monster World*. The average player of the games under study is in line with findings of a survey of social gamers (Ingram 2016). According to Ingram (2016) the average social gamer is a 43-year old female playing on *Facebook*. This contrasts the, formerly common, image of online gamers being young males. While a majority of social gamers entertains casual play patterns, with three or less sessions per week, some players play several sessions a week. *Monster World* appears to be the most deeply engaging game with the thickest tail in fig. 1, followed by *Pearl's Peril*. *Diamond Dash* is characterized by the most casual play pattern which is to be expected for an Arcade-style game with shortly timed game rounds. Fig. 1 underlines the casual nature of SNGs with more than half of the players playing only once per week. A session usually lasts for only a few minutes.

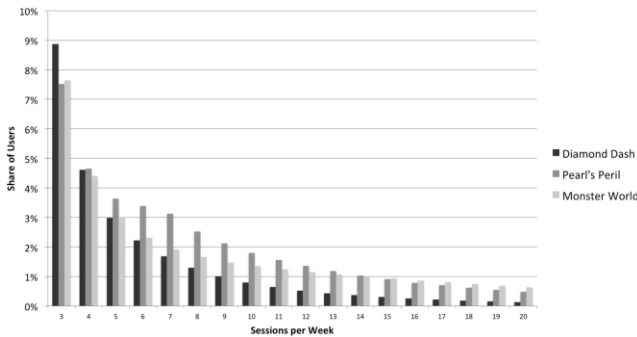


Fig. 1. A histogram of the number of sessions per player per week, for players with three or more sessions per week. Players with two or less sessions per week were removed to make the tail of the distribution visible. These players make up 72% in *Diamond Dash* and 57% in *Monster World* and *Pearl's Peril*. Platform: *Facebook*; source: *Wooga*, reprinted with permission.

VI. Experiment: Impact of Social Features

As noted above, *Diamond Dash* and *Pearl's Peril* exist as both *Facebook* games (SNGs) as well as mobile titles with *Facebook* integration. If players connect their mobile game to *Facebook*, they can synchronize their game state with the SNG version and use the offered social features (see table 1), e.g. comparison of scores with friends. As only a subset of mobile players (roughly 60%) connect their game to *Facebook*, one may question the relevance of social features in the mobile version of the games. To shed light on this, we now describe the treatment effects of a social feature that was added to both the *Facebook* SNG and the mobile *Apple iOS* version of *Diamond Dash*. Such live experiments are extremely rarely reported in academic

literature due to their inherently confidential nature (Runge et al., 2014; Sifa et al. 2015; Levitt et al. 2016). *Diamond Dash* is F2P and monetizes by offering various in-game purchases. The specific mechanics are not the target here, but rather the overall impact across all monetization mechanics, based on adding social mechanics. The experiment introduced a new social feature called “*Team Battles*” to a random subsample of the player base (roughly 50%). In total, several millions of players were involved in the experiment. “*Team Battles*” allows players to form teams and battle other teams of players. The feature enhances cooperative gameplay inside the teams and competition between teams. It hence introduces two new social dynamics to the game, without adding any other elements. No other changes were made during the experiment and the added social gameplay hence was the only treatment.

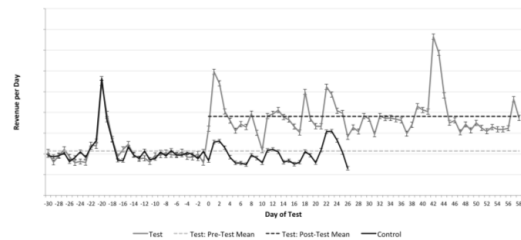


Fig. 2. *Team Battles* A/B Test in *Diamond Dash iOS* (mobile platform): Revenue per Day comparison, the test was running from day 0 to 26; source: *Wooga*, printed with permission.

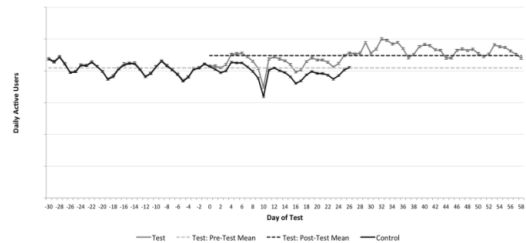


Fig. 3. *Team Battles* A/B Test in *Diamond Dash iOS* (mobile platform): Daily active user comparison, the test was running from day 0-26; source: *Wooga*, printed with permission.

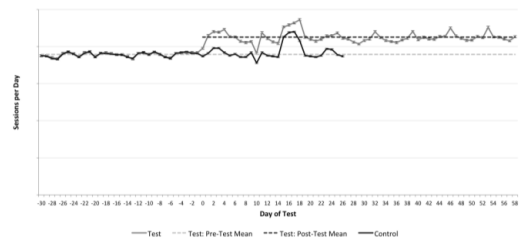


Fig. 4. *Team Battles* A/B Test in *Diamond Dash iOS* (mobile platform): Sessions per player per day comparison, the test was running from day 0-26; source: *Wooga*, printed with permission.

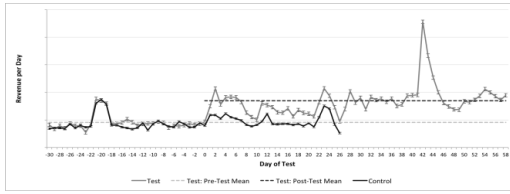


Fig. 5. Team Battles A/B Test in Diamond Dash, Facebook: Revenue per Day comparison, the test was running from day 0 to 26; source: Wooga, printed with permission.

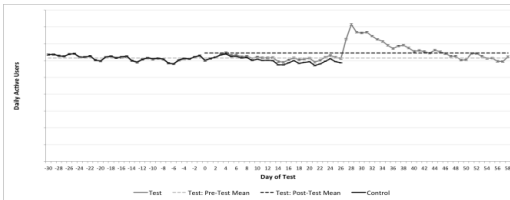


Fig. 6. Team Battles A/B Test in Diamond Dash, Facebook: Daily active user comparison, the test was running from day 0 to 26; source: Wooga, printed with permission.

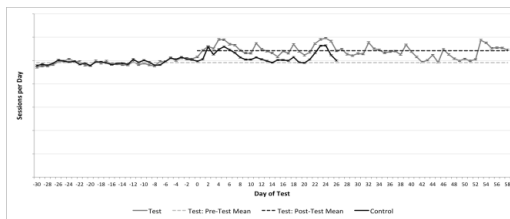


Fig. 7. Team Battles A/B Test in Diamond Dash, Facebook: Sessions per player per day comparison, the test was running from day 0 to 26; source: Wooga, printed with permission.

This is arguably only one example of a social feature, but serves as a representative case study of the impact of social mechanics in CSGs. Figs. 2-4 show the causal effect of the new feature on revenue (fig. 2), daily active users (fig. 3) and sessions per player (fig. 4) for the mobile version. These effects are at +85.9%, +5% and +10.4% respectively. Figs. 5-7 depict the effects in the *Facebook* version which are at +77.7%, +9.5% and +12.7% respectively. Please note that the y-axes of figs. 2-7 are not numbered for confidentiality reasons. All effects are statistically significant at $p < 0.01$. Importantly, the results also indicate that the effect of added social gameplay is persistent, showing not only a short-term uplift but a structural change in monetization and usage. Further, the impact on revenue outpaces the impact on daily active users and sessions per day: while we observe an average treatment effect on revenue of around 80 to 90% during the test period, the same number is at 5 to 10% for daily active users and at roughly 10% for sessions per player per day. At the time, a lot of content had already been added to the game, yet the relative uplift observed here is greater compared to any other feature. This suggests that the returns

to added social gameplay may be higher than the returns to added single player gameplay. In any case, the returns to added social features are highly positive, both on mobile and *Facebook*. Finally, as revenue impact on mobile is even higher than on browser (+85.9% versus +77.7%), it appears that social gameplay is at least as important for mobile CSGs as it was for browser CSGs. This implies that adding social dynamics to their games is a highly lucrative endeavor for CSG developers, particularly on mobile.

VII. Discussion and Conclusions

In this paper the impact of online social networks on the games industry has been outlined, showing the emergence of CSGs as a new class of games that are genre and distribution agnostic (Wohn et al. 2011; Lewis et al. 2012; Runge et al. 2014; Monthly 2016). Along with this type of game, a new type of gamer came to life: the casual social gamer (Monthly 2016). The opportunities created by the growth of this segment has led to the creation of new companies (Lunden 2012). CSGs are less characterized by their gameplay, genre (Wohn et al. 2011) or platform, but by digital distribution, the inclusion of viral social features, the F2P model, accessible gameplay, and the resulting sociability around the games. They are increasingly proliferating to new platforms, namely mobile. This paper presents experimental evidence from live games showing how adding social features increases monetization, engagement and usage in CSGs across both *Facebook* and mobile platforms. While only one game was used here, results suggest that the returns to additional (well designed) social gameplay may be higher than the returns to added single-player gameplay, but confirming this will require additional empirical investigation. If the effect found here is indicative of the advantages of social features across different kinds of mobile games, it follows that Game Analytics, which provides business intelligence across the mobile sector (Seufert 2014; Sifa et al. 2015), should aim to contribute to a better understanding and measurement of the social aspect of casual games. Open questions abound (Alsen and Runge 2016): What are the effects of adding social features to casual games? What does it actually do to players and gameplay? How should we measure engagement with social features? How do these in turn shape organic and viral spread of a game? These questions deserve attention to build unified performance indicators and definitions and finally a body of knowledge around the social aspect of casual gaming.

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