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ABSTRACT

This article aims to identify key elements explaining success of social casual games in the Facebook context. We argue that game success originates from the relationship between psychological needs of users and the social situation provided by the virtual environment (Facebook). In particular, we will analyze Facebook's 'social casual games' using Murray's categories. This approach will help us to demonstrate that the success of social casual games in Facebook is due in part to the same element that acts as lever for general games, and in part to Facebook's social aspect, which acts as an amplifier. For this reason this paper will first define what a 'social casual game' is, then it will use Murray's categories to underline several characteristics of social casual games in Facebook, and finally it will use a pilot study carried out by the authors in order to understand what motivates people to play in the Facebook context.

Categories and Subject Descriptors

K.8.0 [**Computing Milieux**]: Personal Computing, General. Subjects: Games.

General Terms

Human Factors

Keywords

Social games, casual games, stimuli to play, Facebook.

1. INTRODUCTION

While there are many studies on motivational aspects of games from an educational perspective (see for example[21],[22],[8],[9]) on social aspects of gaming (e.g., [6],[7]) and on casual games in general (e.g., [16]), there are very few studies on 'social casual games'. The purpose of this article is to show that the basic motivation to play 'social casual games' originates in the relationship between the psychological needs of the user and the social gaming situations provided by the virtual environment. In other words, the desire to play is triggered by the interaction between personal and environmental factors. In this paper we will analyze as environment for play a particular social network: Facebook. In fact, although many social networks (such as MySpace and Bebo) have contributed to the growth of social casual games, Facebook is the social network where games applications had the hugest impact. For example, *Farmville* –a land management game- has 83,131,550 active monthly users, *Mafia Wars* –a kind of role-playing game- 25,225,819 active monthly users.

The specification of the environment (i.e., the totality of surrounding conditions where the game is played in) is important for research purposes because motivational aspects could represent different facets of player psychology depending not only on the kind of computer game (with different structures and content) but also on the context. For example, what motivates people to play serious games is not the same as what motivates them to play casual games. In addition, the motivation for playing casual games is not stringently the same as the motivation for playing 'social' casual games, and so on.

For this reason this paper will first define what a social casual game is and in which measure it differs from social games and general casual games. We will then discuss motivation for playing such games in the Facebook context. In particular we will use Murray's findings [19] in order to understand which elements work as incentives to play in the Facebook context and which elements work as reinforcers. The list of elements that are presented as incentives and reinforcers in this paper was obtained through the analysis of 208 Facebook applications listed as 'most popular causal games' and through a survey of Facebook users (see Section 3 of this paper).

The rest of this paper is structured as follows. Firstly, the concept of social casual game is defined in opposition to the social game and to the casual game concept. Next the paper will describe which elements work as stimuli and reinforcers based on the study of current social casual games in the Facebook context. A pilot study conducted in Facebook will be used to support several findings. Finally we will draw some conclusions about the motivation for playing in the Facebook context.

2. SOCIAL CASUAL GAMES

Most of games developed for Facebook draw on 'browser games' i.e., games developed for the browser that do not require additional installations. However, because of the environment they are developed in (Facebook) they voluntarily (or involuntarily) include the social aspect.

On December 4 2009, 208 applications were listed as the 'most popular games' on the Facebook site. Among these 208 applications, 100 (44%) can be defined as 'social' casual games (in the sense we will explain hereafter) while the other 116 can be classified simply as casual games. As examples of the latter we can cite *Hatchlings* (http://apps.facebook.com/egghunt/) and *Chain Rxn* (http://apps.facebook.com/chainrxn/). We have defined these applications as 'casual games' because of the practically non-existent social aspect (as in the Solitaire application) and in these applications the number of active monthly users rarely exceeds 600,000. Actually, there is still much confusion regarding the status of most Facebook applications. Marketed as games of some kind until recently, at the beginning of 2008 Facebook managers introduced the new category 'Just for Fun' to accommodate those applications that didn't fit into the 'Gaming' category. In fact, the ambiguity both categories present is often resolved by indexing the same applications in different categories at the same time. For this reason it is not surprising to find very different kinds of applications in the most popular games category[1]. While all the applications listed in Facebook as 'the most used' have been analyzed, in this paper the assumptions made in the introduction will only be demonstrated for what we have defined as 'social' casual games, i.e., games applications that show at least one social feature which is an integral part of the gameplay.

After this introduction it is important to define what we mean in this paper when talking about 'social' casual games.

2.1 What a casual game is

Casual games are one of the most popular categories of games played over the Internet [12].

There are various definitions for the term casual game available from different organizations (e.g. IGDA, CGA, GDC) or spokespersons for the industry (i.e. [27],[28],[29]. For a more in depth discussion of the topic, see [16]).

According to the Casual Games Association 2007 Market Re port, 'Casual games are video games developed for the mass cons umer, even those who would not normally regard themselves as a 'gamer.' [13]. This definition is also true for Facebook users [23]. In fact, following Rao's analysis [23] Facebook users seem to share the same denial as casual games players, who do not see themselves as gamers.

In general, casual games involve less complicated game controls and less complexity in terms of gameplay than other online games, which make them very popular and accessible. They can be seen as games that are easy to play and their main focus is on entertainment and relaxation.

While there is the perception that casual game players do not play games frequently or only play in very short game sessions, there is a large group of users who do not fit this stereotype. Many of the casual online games sites are some of the stickiest web sites on the Internet. For example, on the AOL Games Channel the majority of its online classic card, board and free casino games average between 20-40 minutes per game session. Even Solitaire averages 40 minutes a game session, even though a round can be completed in two minutes [13]. While these times differ greatly from the MMORPG ones (on average, each character spends about 10 hours in WoW during 1-week period- see [7]) surely they are remarkable for a so-called 'casual' game. If we compare these data with the above-mentioned assertion that casual gamers do not see themselves as players, an interesting scenario emerges.

2.2 What a social game is

People are inherently social creatures and, for this reason, people are constantly searching for others to share their interests, to solve their problems, to date, to meet people, to have an informal conversation, to ask an expert for some help, as well as other interests.

In his paper 'Why game studies now?' Dmitri Williams [30] says that there are business and technical reasons for the postarcade era resurgence of social game play, but they do not fully explain the sudden boom in online networked gaming that ranges from casual card games to vibrant massively multiplayer online games. While it has become obvious that the content of games matters, the social side of what happens to the players, their friends, families, and communities' matters as well, and matters a great deal at this particular moment. Endorsing Robert Putnam's [31] ideas Williams claims that the backdrop for the rise of social gaming is the decline in civic and shared spaces and a decline in real-world places to meet and converse with real people. Whether or not we agree with this statement the emergence of a social online era is a matter of fact, also supported by the growing development of ubiquitous computing. In addition, we can note the increasing importance of a sense of community for online gamers. In fact, the social gaming audience is looking for an experience that is either built on connections, or

[1] While the analysis for this paper was done before the Facebook interface change in the first week of February, the new classification did not change the above-mentioned observations. In fact, while games are now divided into Action & Arcade Games, Board Games, Card Games, Role Playing Games, Virtual World Games, and Word Games most of the applications are simply classified as 'games'.

incorporates some interaction with others who like the same kinds of games. Players want to compete, collaborate, socialize, and connect through chat and other forms of online communication [10].
However, it's worth noting that games in Facebook (and in general in all social networks) are a particular kind of social game.

2.1.1 A particular characteristic of social casual games: Asynchronous play

Social media have enabled conversations to occur asynchronously and beyond geographic constraints, but they are still typically bounded by a reasonably well defined group of participants in some sort of shared social context [4]. The same asynchronicity can be found in games developed for Facebook.
The concept of asynchronous multiplay was first introduced by Bogost [1] to designate situations in which players play a game 'in sequence, rather than simultaneously', and breaks in the game are a way to 'accommodate real life necessities and game expectations'. In general, asynchronous play supports multiple players playing in sequence, not in tandem. In fact we can talk of 'representation' of multiplay rather than actual interaction between different players. Actually, the space for action in most of those games is personal and not shared. For example, in *Farmville* (http://apps.facebook.com/onthefarm/) - a farm management simulation game -the only farm the user can interact with is their own. Other players' farms are there only for 'visiting' purposes' and the player cannot modify them. The same thing happens in *Happy Aquarium* (http://apps.facebook.com/happy-aquarium/) , where the user grows and sells fish. Other peoples' interaction spaces (aquaria) are there only to create a sense of 'social presence' (i.e., that someone else is in the same environment at the same time). In the same way, when one user engages in competitive play, the opponent is notified of having being challenged by the first user and of the outcome of the challenge, but in reality the outcome of the challenge isn't affected by either of the players, and the challenged is allowed to respond to the challenge only by initiating a new game, not in the same contest.

Only in rare and particular circumstances do games in Facebook adopt a real collaborative approach. For example in *Mobster2* (http://apps.facebook.com/mobsters-two/) – another RPG like game – in order to complete one of the quests, several players have to be online at the same time.

In this sense, the presence of friends seems more a symbolic representation with the aim of giving a feeling of community and participation without actual co-presence or interaction. However, this 'fictional' sense of presence becomes more real because of the environment the game is in.

First of all, the 'fictional' people you are asked to play with are your friends, so people you know (more or less). In addition, most games share the same pattern. For example, when a user 'visits' someone else's farm or aquarium, the action can be 'public'. In fact, the player can publish on his Facebook wall that he/she has helped his friend, or that he needs some object to progress in the game. Even when the application is played only once, the results of the game can be permanently shown in the user's profile, as boxes or as micro-stories in the mini-feeds (minimal chronicles of every action related to the user or her Friends in Facebook), hence contributing through their persistence to the user's identity, as expressed by the profile. Note that the private aspect is also important. For example, if I like, I can decide not to show my friends the last trophy I won or the last object obtained in the game. In this case, by refusing to share some information the player carves out a space for the self in a social environment.

To summarize: the 'space of play' in Facebook can be seen as both private and public. The same goes for actions because each of them can be 'announced' or not to friends in the 'public' space of the wall. On the other hand, the time of play is always asynchronous.

3. MURRAY'S ELEMENTS AND SOCIAL CASUAL GAMES INCENTIVES

Having defined what a 'social casual game' is in the Facebook context, we will now draw on motivation for playing such games. In his works Murray [18],[19] describes several categories of Psychogenic Needs (basic needs in personality). It is our opinion that social casual games in the Facebook context are successful because they appeal to the categories listed by Murray. In our assertion we are supported by Bogost's [1] findings on general computer games. However several elements are not directly provided by the game (as happened in the games analyzed by Bogost). On the contrary the appeal to psychological needs is created by the mix of game elements (we will talk about these elements analyzing Table 1), contextual elements (the Facebook environment) and sometimes external elements (as in the case of Information Needs).

Hereafter is a partial list of needs identified by Murray and his colleagues.

Materialistic Needs

- **Acquisition:** Obtaining things.
- **Construction:** Creating things.
- **Order:** Making things neat and organized.
- **Retention:** Keeping things.

Power Needs

- **Abasement:** Confessing and apologizing.
- **Autonomy:** Independence and resistance.
- **Aggression:** Attacking or ridiculing others.
- **Blame Avoidance:** Following the rules and avoiding blame.

- **Deference:** Obeying and cooperating with others.
- **Dominance:** Controlling others.

Affection Needs

- **Affiliation:** Spending time with other people.
- **Nurturance:** Taking care of another person.
- **Play:** Having fun with others.
- **Rejection:** Rejecting other people.
- **Succorance:** Being helped or protected by others.

Ambition Needs

- **Achievement:** Success, accomplishment, and overcoming obstacles.
- **Exhibition:** Shocking or thrilling other people.
- **Recognition:** Displaying achievements and gaining social status.

Information Needs

- **Cognizance:** Seeking knowledge and asking questions.
- **Exposition:** Education others.

In following sections we will intersect Murray's classification with the list of elements we found analyzing the above-mentioned Facebook applications. This intersection will help us in order to understand why they act as incentives for the use of the social casual game. In addition we will use findings from a survey distributed to Facebook gamers to support our assertions with empirical data.

3.1 Mixing Personal And Contextual Factors

As already said On December 4 2009 208 applications were listed in the 'most popular games' section of the Facebook website. In order to highlight similarities and differences between such games they were all analyzed and the different features used by them were listed. A synthesis list can be found in Table 1. Actually, not all the games used the list of features in the same way. In particular games with a huge number of monthly active users show an intensive use of features listed in Table 1. In addition several of them seems to be essential to the success of the application while others seems to be collateral. In order to validate the importance of these features we proposed a survey to Facebook gamers. The results of the survey mixed with the list of features listed in Table 1 allowed us to detect several similarities between the elements and Murray's needs.

3.2 The Facebook Survey

Some details of the survey follows.

Subjects

The initial participants of the experiments were general Facebook users from all over the world who were asked to fill in a survey in the Facebook context. Because the basic assumption for considering the completed survey was the regular use of at least one social casual game, only a low number of surveys could be taken into account. For this reason we also distributed printed versions of the survey in the real life context. As a result we had 96 surveys that could be used to extract data, and the survey became more European then planned.

The gender distribution of final participants to the survey was 40 (42%) males and 56 (58%) females. 50% of participants were between 20 and 30 years old, 40% between 30 and 40, 4% were under 20 and finally 6% of participants were over 40 years old. No question about their profession was asked.

Procedure and Materials

As said, participants were asked to answer the same survey (in an online or offline version). The survey was composed of 18 questions. Only 2 questions focused on personal data and all the other questions were designed to understand the impact of elements listed in Table 1 on their use of casual games in the Facebook context.

3.3 General Consideration on Table 1

After the general remarks made in the preceding section, we can now analyze the elements listed in Table 1 in more detail.

As you can see features enclosed in the analyzed games can be divided into three macro-categories: *Communication Features*, *Collaboration Features*, and *Competition Features*. Obviously collaboration and competition features appear in different measure according to the kind of game.

Table 1: Fashion RPG-like games

Application Name	N° of monthly active users	N° of Social Actions
Fashion Wars	654.046	2
Sorority Life	7.846.990	8
OhMyDollz!	102.987	2

Table 2: Mafia RPG-Like games

Application Name	N° of monthly active users	N° of Social Actions
Mafia Wars	27.006.790	14
Mobster2	4.769.882	8
Yakuza Lords	405.841	7

Table 3: Competition games

Application Name	N° of monthly	N° of Social

	active users	Actions
Bowling buddies	1.769.007	7
Brain buddies	3.245.833	8
Geo challenge	1.307.418	7

Table 4: Land management games

Application Name	N° of monthly active users	N° of Social Actions
Farmville	83.131.550	14
Farmtown	11.086.032	7
Happy Farm	3.490.618	7

Tables. 2, 3, 4 and 5 show some example of similar social casual games and the number of features listed in Table 1 appearing in them. As we can see, basically a greater number of features results in a greater amount of MAU (Montly Active Users .- data source on MAU is http://www.appdata.com/). Note that we have not said that all the elements influence the use of the application in the same way, nor that they are the only elements that influence the social casual game use (for example a game like Yakuza Lords have 7 features but only 405.841 MAU). On the other hand, as it will become clear in next sections, several of them appeal to particular psychological factors that have a major impact on social casual game use.

4. PSYCHOLOGICAL NEEDS AS A SOURCE OF MOTIVATION

In this section we will use Murray's findings [19] in order to understand which elements work as incentives to play in the Facebook context and which elements works as reinforcers. In general, incentives are external stimuli that motivate or induce behavior [2],[17]. A positive incentive motivates behavior and a negative incentive motivates avoidance behavior. Reinforcers are stimuli that select appropriate behaviors and teach us what to do (on the other hand punishers are stimuli that select against appropriate behaviors and teach us what not to do see for example [24],[25],[26]). Briefly, reinforcers are the actual consequences of behavior, whereas positive and negative incentives are the anticipated consequences [3]. The elements in the list that are presented in Table 1 act as incentives and reinforcers in the case of Facebook social casual games. In addition, the above reported list of features shows a mix between public and private actions. Obviously, the listed features are the ones presented in the analyzed applications, thus it's possible that other kind of features could be added in new applications. As a matter of fact, what is important is not the feature itself but the reason why it works as incentive or reinforce.

Before going into detail regarding this last statement some general remarks need to be made. Actual objects or activities that have a positive value attract the individual and are sought and wanted. In a social environment - as Facebook is - the positive valence is not only due to the playfulness (i.e., if I like pets I will more willingly play a game with pets than a game on the mafia topic) or to the gameplay (in computer games the valence of incentives is usually reflected in the rewards the player receives) but also to the social aspect. As said before a casual game is something that does not require a lot of 'time of play'. On the other hand the motivation that pushes the users to show their achievements – e.g., publishing on the Facebook wall – are linked to the social acknowledgement and approval of their achievement. This means that in social casual games we have a mix of short-term goals - more immediately achievable rewards, such as getting a bonus - and long-term goals – such as 'beat all my friends'- provided more by personal and psychological aspects than by the overall reward structure of the game.

To summarize we can say that social casual games in the Facebook context:

1. Have a set of communal elements,
2. Show a mix of private and public aspects,
3. Show a mix of short term and long terms goals.

As a general consideration we can say that points 2 and 3 work as reinforcers while 1 works as incentive. In other words, the set of communal elements act as lever on some psychological aspects that push the user to play (we will see which aspects in next sections), while the achievement of short terms goals mixed with public aspects works as reinforcers for long term achievements, this last mixed with public aspects work as reinforcers, and so on.

4.1 Analyzing Murray's Psychogenic Needs as a Source of Motivation

This section of the paper will show that elements listed in Table 1 have reference with Murray's categories. In addition it will shows that these categories work well in describing psychological motivations which acts as an incentive to use social casual games in the Facebook context. While for reasons of space we cannot go into detail on each aspect we will give an overview of all of them.

Materialistic Needs

As seen, when Murray talks about materialistic needs he thinks about a mix between *Acquisition, Construction, Order* and *Retention* needs. In Facebook social casual games materialistic needs are satisfied in particular in the form of *Acquisition*. Apart from gameplay elements (which determine what kind of objects the single user can acquire during the game) the elements of Table 1 that impact on the *Materialistic Needs* aspect are:

1. Gift your friends
2. Exchange objects (i.e., for collections)
3. Share requests (objects I'm looking for)
4. Share your wealth (when winning a trophy, etc.)
5. Actual Collective actions/quests

Now, while for points 2 and 3 the way in which they influence the satisfaction of materialistic needs is evident (I acquire the

elements I exchange) for points 1 and 4 a little explanation is required. In fact, it is not at all evident how gifting someone else allows me to satisfy an *Acquisition* need. In this case it is the social aspect that contributes to using an element as an incentive.

Farmville is a real-time simulation game available as an application on Facebook and MySpace. The game allows players to manage a virtual farm by planting, growing and harvesting virtual crops, trees, and livestock. This is the most popular gaming application available on Facebook and, as said, is reported to have more than 83 million active users playing the game all over the world. The game 'plays' with the ties you already have in the social network: you can 'visit' your friends (i.e., the friends from your network who are already using the application), help them, and give them a virtual gift.

This last kind of behavior is not unusual in social network games. In reviewing 98 game applications with over 100,000 daily active users (DAU), Inside Social Games found that only about 20% of them did not have a gifts component at the start of the game [14]. While gifts have often been considered social spam, in Facebook games the feature has become a very powerful way to get users to interact around a game.

However, the interesting part of the *Farmville* example is how the application developers used the power of ties in order to increase the number of 'hits' to the application (and the number of users) over Christmas 2009. *Farmville* developers did this by adding some particular, 'surprise' Christmas gift to the classical gift-giving feature (another common type of behavior in social network games).

These gifts cannot be bought. The player has to receive them as gifts from his/her neighbors/ friends (so if he/she does not have enough friends, he/she will have to add some more) and place them under the 'Christmas Tree'. The more presents the user gets, the bigger the Christmas tree grows, and so on. To limit the gift giving, the players are only allowed to send a gift to their friends every 6 hours.

It's easy to foresee the resulting behavior generated by these premises knowing that one of the most common types of behavior in social software is to collect things [20]. First of all, people put the 'sticker collection' behavior into effect (i.e., 'I want them all!'), so they go back to use the application every 6 hours. Now, let's remember that in this game the player can only send the gifts to others. What draws the user back every 6 hours is the expected reciprocation behavior (i.e., their friend will send a gift in return).

Table 5: the list of features characterizing social casual games in Facebook

	Stimulus	***Feature***
General Communications	**Synchronous and Asyncronous**	IM or Chat (ingame)
		Mailbox (ingame)
	Communications (private and public)	Online/offline state of your friends (in the game)
		History of last friends' actions
	Invitation	Ask your friends to use the app
	(private)	List of friends already using the app
	Showing Off (Display of results)	Show off your avatar
	(public)	Notifications
		Add application results to profile
Competition	**Competition**	Challenge your friends (ingame)
	(private and public)	Send challenge (out of game)
		Highscores (world)
		Highscores (friends)
	Showing Off (Display of results) (public)	Public announcement of trophy/level up
Collaboration	**Social Collaborative Actions**	Visiting Friends/help friends
		Gift friends
	(private and public)	Recruit friends as helpers
		Fictive Collective quest
		Actual Collective actions/quests
		Exchange objects (i.e., for collections)
		Share requests/objects/ I'm looking for

		Vote for friends (best of...)
		Share your wealth (when winning a trophy, etc.)

Gift requests were also made on public walls. In this case the gift exchange allowed the users to feel like they were a part of a whole, a 'tribe' linked to a common practice: the gift exchange. In this way they created a kind of social identity. Moreover, the 'time' variable should not be underestimated. As Bromberger [5] said, time can be seen as 'collective time' under some circumstances. For example the time used for cooking pasta with friends is a collective time (with a bigger or smaller energy investment) that acts as a link with friends.

The place (a social network) and the particular moment (Christmas) determined a particular situation and thus a particular type of behavior. This combination allowed the onset of a particular social identity ('the gift sender/receiver').

We can then say that the real reason for giving is the expected reciprocation of the gift. The same thing happens in the case of sharing the 'wealth' (for example when the goes a level up).

The *Construction* aspect has appeared only recently in Facebook (point 5 of our list of elements). *Farmville* developers were the first to introduce this element when they invented a sort of 'social event' called Barn Raising. As a matter of fact, *Farmville* developers allowed players to increase the storage space in their 'barns' (impacting in this way also on the *Retention* aspect). The interesting part is that this storage space cannot be bought. In fact, to expand a building players post the Barn Raising event to their Facebook wall. Only if 10 friends click the link within 3 days the storage space is increased. On the other hand, friends earn coins for helping out (a reciprocation element again). It is worth noting that when directly asked what they think about gift-giving practice in Facebook games, participants in the survey answered: 37% gift-giving is a stupid practice, 42% gift-giving is a cute thing, 15% I do it because I like to receive them back.
This may indicate an atypical sample of participants or the fact that perception of use of features in the application and psychological motivations are not always the same.

Power Needs

Power means being visible to others, exerting influence over other people, and having high status. In Murray's idea *Power Needs* are satisfied through *Autonomy, Aggression, Blame Avoidance, Deference, Dominance needs.*

The elements of Table 1 that impact on the *Power Needs* aspect are:

1. History of last friends' actions
2. Challenge your friends (ingame)
3. Send challenge (out of game)
4. Highscores (world)
5. Highscores (friends)
6. Recruit friends as helpers

In general, *Aggression* is the primary power need satisfied by most games. For example in Facebook RPGs (Role Playing Games) it is not unusual to attack and defeat an enemy in order to go up a level. However, the interesting aspect in social games is the 'social' one and general competition in social casual games pushes the competition aspect *between* friends. For example, purpose of games such as the above-mentioned Bowling Buddies (http://apps.facebook.com/bowlingbuddies/), Brain Buddies (http://apps.facebook.com/brainbuddies/) and Geo challenge (http://apps.facebook.com/geochallenge/) is to score more than your friends. Obviously the importance of the obtained result is amplified by the public announcement of your achievement (see *Ambition Needs*). Not only will the beaten friend know that you are better than him at Geography, (as in Geo Challenge) but all your friends will find out too if you post your results in the Facebook wall.

A particular observation has to be made about point 6, which appeals to the *Dominance* element. As an example we will describe the first application that allowed the user to 'employ' friends as helpers: *Restaurant City* (http://apps.facebook.com/restaurantcity/). *Restaurant City* (14,939,827 MAU) simulates the management of a restaurant. In the game the user can employ his/her friends to work for him/her as waiters and chefs. Apart from gameplay elements that appeal to *Materialistic Needs* (collecting ingredients in order to cook meals) the interesting part is that there is only one owner (the player) and friends can only be employees (so for example players can employ someone in order to manage restaurant garbage). Such behavior appeals to *Dominance Needs* (the player is the 'owner' of his friends).

Affection Needs

Affiliation is the need to be in the company of others, cooperating, exchanging views, and being friendly.

In Murray's idea, *Affection needs* appeal to *Affiliation, Nurturance, Play, Rejection, Succorance needs.*

The elements of Table 1 that impact on the *Affection Needs* aspect are:

1. Ask your friends to use the app
2. List of friends already using the app
3. Visiting Friends/help friends
4. Gift friends
5. Fictive Collective quest
6. Actual Collective actions/quests
7. Exchange objects (i.e., for collections)
8. Share requests/objects/ I'm looking for
9. Vote for friends (best of...)
10. Share your wealth (when winning a trophy, etc.)

As we can see all elements of the table could appeal to different psychological needs.

Without describing each point in detail we can simply say that most of them belong to the *Affiliation* need. What is interesting here is that players are also social characters who feel the need for relaxation and fun. In a simplified way, the fact that my friends use the same application as me creates a boundary between insiders and outsiders (we players and the others – for more information on this topic see *A1-missing citation for blind review*). For example in Facebook there are many groups grouping people *not* playing Farmville. The most popular of them, *Not Playing Farmville* has 2,128,189 fans while the official *Farmville* Group has 19,677,974 fans. Another interesting example that underlines the *we* versus *the others* dichotomy is the spreading of a video called 'Farmville Ad'[2]. In reality this is a fake advert that is a parody teasing *Farmville* addicts. The video has 1,119,088 visualizations on YouTube only (data on this sharing on Facebook are not available).

My friends and I can therefore be part of the same 'Sorority' such as in *Sorority Life* (http://apps.facebook.com/sororitylife/), or of the same Mafia such in *Mafia Wars* (http://apps.facebook.com/inthemafia/). Obviously the kind of affiliation changes, but the mechanisms that reinforce affiliation (gifts exchange, collective quests and the like) are still the same.

The *Visiting/help friends* aspect needs to be looked at more closely. In fact, in particular cases this element can appeal to the *Nurturance* and *Succorrance* needs. For example in games such as *Petville* (http://apps.facebook.com/petvillegame/) and *Pet Society* (http://apps.facebook.com/petsociety/) - two pet raising games - the player can visit neighbors (friends) daily to help them clean and feed pets. In exchange, they are rewarded with experience points and coins. It is evident that the pet presence in those kinds of games appeals to the psychological aspects of *Nurturance* and *Succorrance* of real life pets.

Answering to the survey 56% of participants gave preference to collaboration games (i.e., games that appeal to *Affection Needs*), while 36% gave preference to competition games (i.e., games that appeal to *Power Needs*). It is worth noting that a different experiment, (see *A2-missing citation for blind review*) targeting students with an average age of 22 years, had very different results. In fact 90% of participants gave preference to competition games.

Two particular questions in the survey directly asked about the impact of friends' presence in Facebook games. 33% of respondents to the survey said that the presence of friends is a stimulus because they play to beat them, 46% consider the presence of friends as a stimulus because they like to play with people who share the same interests and 10% said that they don't like to play with others (note that all the surveys taken into account were surveys of players). As we can see, the results of the survey are coherent with the analysis made in the last two parts of this paper: for both competition and collaboration the presence of others is a necessary stimulus to play.

[2] http://www.youtube.com/watch?v=odBDAcOEKuI&annotation_id=annotation_321740&feature=iv

Ambitions Needs

According to [11], an intended action may be perceived as achievement if it results in a concrete outcome that is measurable in terms of standards of quality or quantity (by the user) and if the task is neither too easy nor too difficult. We can then say that *Ambition Needs* are linked to the personal satisfaction achieving a goal.

In Murray's idea, *Ambition needs* appeal to *Achievement, Exhibition, and Recognition needs.*

The elements of Table 1 that impact on the *Ambitions Needs* aspect are:

1. Show off your avatar
2. Add application results to profile
3. High Scores
4. Public announcement of trophy/level up
5. Share your wealth (when winning a trophy, etc.)

Again we can see that an element of the table can pertain to different needs.

While the gameplay of most of social casual games in Facebook requires some kind of personal level up, achievements are strictly related to *social* elements. In fact, when the player goes a level up he/she can show to the others that he/she is progressing through the Facebook wall and to the high scores within the game. In this way a mix between personal satisfaction (the achievement) and social recognition is created. Points 2, 3, 4 and 5 are an evident representation of *Exhibition* and *Recognition* needs.

Point 1, on the other hand, illustrates some interesting implications.

The already mentioned *Sorority Life* (5,691,431 MAU) was the first application in Facebook to add an interesting aspect: a personalizable avatar. Note that we are not saying that other RPG like games in Facebook had not used an avatar before. Only, they did not allow for a deep personalization of the player's character.

What is interesting in *Sorority Life* is that not only can players dress up their avatar with the various outfits and accessories they collect during gameplay, but other players can see the avatar. They can even vote for the avatar with the best style in a multiplayer game feature called The Catwalk. Dressing up one's avatar and showing it off to the community is almost a mini-game in itself. While in other social RPGs, winning or buying items was only done to meet mission requirements or to improve one's chances in fights. *Sorority Life* introduced a reason for players to want to expand their inventory of virtual items (exhibit to the world that they have that really difficult to have item). This kind of exhibition appeals to ambition needs also in the form of identity expression. The importance of this kind of feature is well

exemplified by the fact that, following the *Sorority Life* example, most social casual games then allowed for an in depth personalization of an avatar and it's show off on the profile.

On the other hand, because of the social environment achievements are exhibited in, they become an element for the building of players' reputations. In the survey, to a question related to seeing when friends win a trophy or a level in a game 38% of participants answered that they find it useful only if they win something too (*Materialistic Need*), 40% answered that they find it interesting, because it gives them an incentive to beat their score (*Power Need*). As we can see, not only can the elements of the table pertain to different needs, but the different needs are also interrelated.

Information Needs

The most interesting need (from the point of view of research) in the Facebook context is the *Information Need*. In Murray's idea information needs appeal to *Cognizance, and Exposition* needs**.**

The elements of Table 1 that impact on the *Information Needs* aspect are:

1. IM or Chat (ingame)
2. Mailbox (ingame)
3. List of friends already using the app
4. Online/offline state of your friends (in the game)
5. History of last friends actions
6. Notifications
7. Highscores

The list of elements here reported is clearly a set of features for information/knowledge exchange. Interestingly enough, in the survey 5 questions addressed the different features for information sharing evaluating their perceived usefulness. 'Notifications'(45,7% of participants), 'online status' and 'history of last friends actions'(44,1%) were considered not useful, while message exchange was considered useful (50% of participants considered Instant Messaging useful and 29,4% rated the chat in the same way).

However, the more interesting aspect in information exchange is not an ingame or Facebook feature but can be found outside the environment. In fact, players started blogs for their favorite social games in the web. Those sites provide both a community for supposedly "casual" gamers and share news on in-game changes and strategies. Generally speaking, the games most successful in creating followers are those about games that are highly competitive, like *Mobsters* (http://apps.facebook.com/mobsters-two/), or that involve difficult to obtain in-game virtual goods, like *FarmVille*. Some of these sites are actually quite large and in some way they are beginning to resemble the much larger dedicated sites that MMORPGs like World of Warcraft have inspired [15]. This growth of gaming blogs into multi-faceted communities, with different activities for a range of players may be the direct result of the growing complexity of games like *FarmVille*. Nevertheless, it also appeals to issues that can never be discussed within the Facebook environment (such as cheating).

This emergence of communities is very interesting especially when considering that these are games already designed for socializing. As seen when we talked about the affiliation need there is no need to start a blog in order to find like-minded social game players. If the trend shows the emergence of such sites it's evident that players feel the necessity to have an additional mean for sharing information outside the game.

5. CONCLUSIONS

As said in the introduction to this paper, the analysis of the most used social casual games in the Facebook context underlined the communal presence of a set of similar features in applications with the higher number of Monthly Active Users (MAU). The extrapolated list of features highlighted some consonance with Murray's Psychogenic Needs. For this reason we analyzed the listed features in order to understand if they really make reference to Murray's needs. The analysis underlined an actual link between them. Also the little survey conducted with the Facebook users seems to demonstrate the importance of such elements as incentives. Obviously each kind of game has different preponderant elements (that satisfy different needs). For example, players of certain RPGs and strategy games are more concerned with materialistic needs such as object acquisition, resource management, construction, and organization, whereas others are built on affiliation.

In addition the analysis underlined that motivations to use social casual games in the Facebook context are influenced by both personal and situational factors. Personal factors are a person's needs, motives and goals, and situational factors are opportunities and possible incentives provided by the environment. In this case the situational factors are linked to the social environment the games are played in. In particular the structure of Facebook is important because it publishes most of the actions the player takes. This means that I not only play with my friends but I can also show off most of the achievements I obtain in the game. Therefore the public environment acts as a reinforcer for the use of the application if it contributes to personal satisfaction and to the achievement of personal long terms goals.

As a matter of fact, the above described elements seem to be the necessary elements in order to build successful social casual games in the Facebook context. They can then be converted into guidelines for building such kinds of games. For this reason we can foresee several possible developments.

Firstly, it would be very interesting to investigate in more depth the relevance of different needs for the success of social casual games. For example our survey shows that collaboration elements are more appreciated by Facebook users than competition elements. This could be an effect of the age range of participants or it could indicate a real hierarchy of needs for social casual games in the Facebook context. In the same way satisfying information needs seems to be part of environmental factors more than a game element (i.e., users take it as granted). Secondly, the fact that these elements work well in the Facebook

environment (with a high level of visibility of actions) does not mean that they work as well in other social networks. It would be very interesting to compare the same applications in other environments such as MySpace and Bebo which lack the social features that Facebook offers. This will help to understand in which measure and in which way the different environments influence the importance of such kind of incentives. Finally, in this paper we demonstrated the importance of such elements for the success of social casual games in the Facebook environment. It would be very interesting to take into account an unsuccessful game and analyzing in which measure its failure has reference with the lack of satisfaction of Murray's needs.

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