Gamification – The process of designing our activities into games

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Abstract

The trend of adjusting our activities, making them more attractive and less like chores is apparent just by looking at the applications and systems we use for our everyday lives. In this study we investigate this phenomenon, in both training and dating applications, from a design perspective using the frameworks of gamification and Fogg’s behavior model. Using these tools in complement with qualitative interviews we answer questions regarding how one can design gamification to achieve behavior change. The chosen applications, namely Tinder, Badoo, RunKeeper and Nike+ were all identified as gamification applications and in regard to how they were designed, the training applications primarily showed interest in raising the motivation of users, while the dating applications rather focused on easing the simplicity of performing the behavior.

Keywords: Gamification, design, behavior, training, dating, Fogg’s Behavior Model, Tinder, Badoo, Nike+, RunKeeper

1. Introduction

Games are not something that is new; in fact most of us have probably been playing games our entire lives, from hide and seek to the newest games on our game station. Games are generally played since it is enjoyable. (Lazzaro 2004) this is something that can’t be said to apply in all areas of our lives. Some activities that we engage in, we do not because we find it fun, but rather since we in some way are obliged to. These activities can for example range from household tasks such as doing the dishes, cleaning etc. to work, training and learning situations. In recent years, one might have noticed that efforts to try and make these normally, not so fun activities more motivating have been made. One of the ways this is happening is by adding game elements to these activities, a way to try to take what makes games enjoyable and add these features to non-gaming contexts. This is called gamification. Gamification is in short, making a game of something that normally is not. (Leigert 2014) By adding game elements to everyday activities, one of the goals could be said to be changing users’ behavior. Due to the numerous application areas of gamification, we are interested in studying how it changes our behavior in different parts of our lives.

Gamification as a term and its effects have already been thoroughly studied, e.g. its influence on motivation. (Muntean 2011) Implementations can also be found in a large variety of sectors, ranging from education to task management (Deterding 2012) In this study, we are more interested in the design of certain applications which uses gamification, as well as the techniques that are implemented to affect the users. We decided to look into the behavior model from Fogg (2009) to see if we can use it to understand behavioral changes stemming from gamification. By analyzing different applications, we believe we can gain a more thorough understanding on how gamification helps affect behavior. Furthermore we hope to be able to use this knowledge to contribute to the gamification design area with design suggestions.

Designing for gamification is something that we find to be very much relevant in the HCI area. This is also strongly suggested by Huotari and Hamari (2016), where they mention it being widely studied and discussed in the domain of HCI. There have been a lot of different
studies done on gamification; maybe the most interesting could be on how one should define the term. Both Deterding et al (2011) and Huotari & Hamari (2012) have made different definitions. This could be hinting on the level of abstraction the term actually has. That gamification works, as in it makes the user experience better, raises motivation of the users and actually can change behavior is established quite well already. (Hamari, Koivisto & Sarsa 2014) Even if the term is not fully clear of criticism. (Bogost 2011 & 2015) What we ourselves are interested in is how one can and should design gamification to successfully achieve changes in behavior. Due to the length of the study we have chosen to focus on two different areas of life, namely dating and training. This decision was made due to how different applications in these areas are designed when compared to each other.

By looking at popular applications in different areas of life (training and dating) we hope to identify and extract successful gamification mechanics which in turn might be connected to changes in behavior. With the different behaviors these applications wishes to invoke, we are interested in studying how they use gamification to achieve this. Breaking down gamification into the game design elements that is its foundation, is something we believe will allow us to more closely look at the successful uses of it. Coupled with a qualitative sample of data, we are interested in using Fogg’s behavior model to further understand the aspects behind behavioral changes. Establishing a connection between the behavior changes and the applications is something we hope will give us an understanding on how the design of gamification can affect our behavior.

After identifying these “connections” between gamification aspects/elements and behavior change we believe we can give suggestions on HCI aspects of designing gamification for successful behavior change and how this can differ depending on the type of behavior that is meant to be influenced. To clarify, our research question is thus; how can one design gamification to achieve successful behavior change and how is this affected by the behavior one means to influence?

2. Theory

2.1 Gamification

In order to understand how gamification can affect behavior we need to first understand what gamification is. Deterding et al (2011, 2) defines gamification as “the use of game design elements in non-game contexts.” This definition explains gamification as something that takes elements of games and put them in contexts where they are not normally used. If we want to understand gamification through this definition, we also need to know what qualifies as game design elements and how to understand non-game contexts.

2.1.1 Game design elements

A key aspect in gamification, and how one can identify gamification, is in the use of game design elements and the interpretation of what non-game contexts are.

Deterding et al (2011) presents five game design elements with various levels of abstraction, listed by how concrete they are. Put differently, the top level is the most concrete one and the bottom level the most abstract one.
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*Table 1. Game design elements (source: Deterding et al (2011))*

The first game design element as listed in table 1 is the most concrete one. This category contains implementations of prototypes, design solutions for known problems in contexts and successful interaction design components. Examples of these are badges, leaderboards and levels. In other words, game interface design patterns are the game design elements that address what is going to be shown on a user’s screen. One example of what this can be is the user interface itself. These elements are also what users would encounter in non-digital games, such as football, basketball, ice-hockey etc. In these sports the elements could for example be the goal, basketball and the rink among others. As shown in the table, badges, leaderboards and levels are examples of these interface design patterns. They are visual indicators that show certain accomplishments, e.g. a user’s score in comparison to others or completing certain challenges or goals. (Morford, Witts, Killingsworth & Alavosius, 2014)

The second listed element is regarding commonly reoccurring parts of a games design that concern gameplay. Examples for this game design element are, time constraints, limited resources and turns. On this second element, Morford et al (2014) explains it as game elements that users interact directly with. As written in the description, the game design patterns and mechanics are reoccurring parts of the design and this is something users experience. In their explanation of this level they also bring up other examples of game elements such as, storytelling, style of gameplay, competition, cooperation and character levels.

The third game design element is about evaluative guidelines to approach a design problem or analyze a given design solution. Examples in this case are enduring play, clear goals and a variety of game styles. It uses verbal behavior to solve game design problems. For example, in pool one has to shoot down the colored or half-colored (depending on which one gets) balls before shooting down the black ball. Doing otherwise results in a loss.
The fourth level is regarding conceptual models of the components of games or game experience. Examples for this level are challenge, fantasy, curiosity and game design atoms. In other words this level is about conceptual approaches for comprehending the players’ experience. Clarifying it further, it is about how one perceives the game or the game experience. To go even deeper it is concerned about the building blocks that together and separately, a game or a game experience consists of. The example “challenge” is something that, from a designer’s perspective could in many cases be designed with an intention of a game experience or feeling of play. From a user perspective a challenge, for example could very likely be perceived as something game-like.

The fifth and most abstract game design element is about game design-specific practices and processes, in other words game design strategies. Examples include playtesting, playcentric design, and value conscious game design.

2.1.2 Non-game contexts
The meaning behind non-game contexts is mainly to distinguish gamification from ordinary games. (Deterding et al 2011) Or in other words, it is a way to separate gamification and game design. Non-game contexts are thus practically any context that is not game design per say.

According to Morford et al (2014) gamification, from a behavioral perspective is a way of designing the physical world by using contingencies to bring about game-playing. Put differently, any taken context that is designed to allow for playful interactions is an example of gamification.

2.2 Fogg’s behavior model
According to Fogg’s behavior model (Fogg, 2009), the person or user must first achieve a certain level of motivation and ability for the behavior to occur. Once this has been reached a trigger is everything that’s needed for the wanted behavior to appear.

2.2.1 Motivation
As mentioned before both motivation and ability need to sustain a certain level (the behavior activation threshold) before an action will happen. Fogg is arguing for three core motivators:

- Pleasure/Pain
- Hope/Fear
- Social Acceptance/Rejection

The use of these could for example be motivated by hope in meeting a lover when downloading a dating application, or by fear when buying anti-virus software for the smartphone.

2.2.2 Ability
This factor is not about teaching people new things, but to make the behavior easier to execute. If a thing is easy to do, like online shopping with Paypal, it is more prone to happen. But each person has a different view or profile for simplicity. Fogg list the following elements as factors of simplicity:

- Time
- Money
- Physical Effort
- Brain Cycles
• Social Deviance
• Non-Routine

“Simplicity is a function of a person’s scarcest resource at the moment a behavior is triggered. Whatever the scarcest resource happens to be, once we account for the six factors of simplicity, we can reduce the barriers for performing a target behavior.” (Fogg 2009, 6)

2.2.3 Triggers
A trigger is something to activate the user to do the desired behavior right now. The three type of triggers are:
• Spark
• Facilitator
• Signal

A spark could be seen as a notification or prompt but embedded with a motivational property. It’s correctly used when the ability is high but the motivation low. Facilitator is a trigger designed to simplify the users’ behavior and therefore used when motivation is high but the ability low. The signal trigger doesn’t have the added values of a motivational or ability aspect and works just as a reminder to the user. It should be used when the motivation and ability is already high.

The overall reason why we applied Fogg’s behavioral model was because it gave a knowledgeable and structured way to think about behavioral change. It made it easier to identify and understand the underlying problems in the area of field that we have studied.

3. Introduction to selected software applications
To reach our goals and answer our questions regarding gamification design we needed to choose applications that we believed to be interesting to analyze. Since a part of the study is to observe the use of gamification in two different areas of life, training and dating, we had to decide on applications used for these purposes. We ended up with four different applications, two for each field and the general function and use of each will be presented below.

3.1 Dating
3.1.1 Tinder
One of the dating applications we selected for our study is Tinder. “The people we meet change our lives. A friend, a date, a romance, or even a chance encounter can change someone’s life forever. Tinder empowers users around the world to create new connections that otherwise might never have been possible. We build products that bring people together.” (Tinder 2016)

Tinder claims to be an application that connects people, ranging from friends to potential life partners. The application is developed for mobile use, supporting both IOS and Android and can thereby be said to be available for the majority of smartphone owners. For using Tinder, one needs to have an account. The account is connected to one’s Facebook and thus the user need to also be a member of said social media. The account is used to create a profile in which one uses to interact with other users. Each profile is made up by photos, text and things that one has liked on Facebook such as TV-shows, movies, celebrities etc. The photos
and text added to the profile is optional but the things a user has liked will be shown to other users who’ve liked the same thing. Profile pictures needs to come from Facebook, Instagram or the phone.

![Profile picture](image1)

*Picture 1. The “swipe” feature of Tinder.*

The figure above is an example of Tinder´s matching service. The user gets confronted with a picture and a small bit of information of another person and is then tasked to either “like” or not like him or her. It is possible for the user to look for further information and pictures by entering said persons profile. It is not possible however, to browse other users before making the choice of liking or not liking the user.

![Menu page](image2)

*Picture 2. The menu page of Tinder.*
Users of Tinder can set up their profile to control the type of individuals that can discover them and who they can discover. This is done by choosing age limits, distances and genders. Tinder sends notifications to its users when they get a match (the event that occurs when two persons like each other) or when they receive a message. The users can change aspects of how these notifications present themselves and even remove them altogether.

The use or gameplay in Tinder can be modified if a user decides to pay for the premium service. This allows the user a higher amount of “super likes”, likes and the ability to regret and undo a swipe if said user would like to.

![Picture 3. It’s a match.](image)

When two Tinder users like one another they get “matched”. When this event happens it means that they can start interacting with each other.

### 3.1.2 Badoo

Badoo markets themselves as the world’s largest community for meeting new people. (Badoo 2016) It is an application that allows it users to chat and match with others. This works by making other users, and their rough location known to one self. A user can list their interests and other people in the area can then see that person and his or her interests as well as where that person is located. Badoo also uses a similar version of Tinder’s match service which lets it connect users together.
Similar to the swiping in Tinder, Badoo offers a service called encounters. This service uses the same style of design and core functionalities.

Above a profile from an anonymous Badoo user is illustrated. As shown, Badoo reward their users depending on certain aspects and this particular user has a total of four awards. Badoo also display a user’s rating. This rating is determined by how many of the profiles visitors liked it. This particular profile has gotten a rating of 6.46 which means that for every ten visitors, 6.46 like it.
Similarly to Tinder’s premium service, Badoo also offers a way for users to change their gameplay. By paying for certain privileges, a user can change the visibility of their profiles and even messages. As Badoo offers a large amount of services to its user base, we are not going to go through all of their specifics and how they can be accustomed to paying users in this study.

### 3.2 Training

#### 3.2.1 RunKeeper

RunKeeper is a fitness application with a focus on running, walking, hiking and biking. It makes use of the smartphones GPS to calculate statistics from the workouts e.g. distances run, which the user can take part of. A user can find and connect with his or her friends through the application and even share progress with each other. RunKeeper mean they support long time motivation by the use of challenges. (RunKeeper 2016)
The figure above showcases the leaderboard function of RunKeeper. This function allows for comparison between friends and adds a competitive aspect to the application.

**Figure 8. Goals**

RunKeeper allows for personal goal settings. Put differently, every user can create goals, what they are made up of and how they are going to be completed. This includes when they are supposed to start and when they are due. Furthermore a user can then choose to post this goal on their Facebook page.

**Figure 9. Challenges**
Every user is given the option to compete in so called challenges. As the picture above illustrates, challenges are shown with start dates and due dates and users are able to enter challenges like these at any time.

### 3.2.2 Nike+

Nike+ is in many ways similar to RunKeeper. They are both fitness applications with a focus on running activities. Nike+ also works by recording statistics of the users’ workouts. This allows for a simple overview over the collected data as well comparing the progress with friends.

Nike+ advertises their application as something that will help the user to improve as well as motivate him or her. (Nike 2016) The application is also connected to their website, where the statistics are also shown.

![Figure 10. Achievement](image)

Above picture illustrates one of many different digital rewards Nike+ offers to its users. Completing tasks such as challenges, goals or just setting new records will net a user a reward. Gained rewards ranges from achievements to badges.
Challenges in Nike+ works by users creating the settings they want, such as distances, durations and name of the challenge. After this, they can select people from their list of friends in the application to challenge these individuals.

By choosing preset goals, Nike+ offers clear and set goals that users can strive towards. As shown above, a user can at any time choose a goal and start working towards completing it.
4. Method

To gather the data necessary for answering our questions we decided to first of all analyze the chosen applications. The analysis was primarily concerned with identifying the different game design elements used by these applications. Put differently, we wanted to extract the gamification aspects of all of these applications. Our analysis was furthermore complemented by interviews with users of these applications.

4.1 Choice of literature

The literature used in the study was chosen after we thoroughly searched the material that has been available for us. We conducted our searches, primarily by using the resources we have from Umeå University this was then complemented by the use of Google Scholar. When choosing our theoretical framework we did so mostly due to our findings of previously done research, both academic and industrial. Gamification is, in academic standards, a slightly bad defined term. The actual meaning of it is clear but as one gains a deeper understanding of the term one also starts to see problems with it. This is also reinforced by Deterding et al (2011) who argues that gamification comes with a high level of subjectivity and contextuality. The definition of gamification that we chose for our study is as far as we know the most widely spread one and is the one we personally believe to have the most accurate description. Our choice of using Fogg´s behavior model to further aid our analysis was encouraged due to its previous use in gamification contexts. With this said, the model has primarily been used together with gamification outside of academics. The model itself is something that contains the tools necessary to understand behavior and how behaviors occur. When searching for our framework we noticed that the current research is lacking when gamification and behavior is in focus together. More precisely how one can and should design gamification to achieve behavior change. Due to this fact we felt it to be an interesting aspect to study, especially from a design perspective. With this we hope to contribute to the gamification design area.

4.2 Method for data gathering

4.2.1 Interviews

Since we decided on analyzing applications use of gamification we also decided to use applications which are used widely enough for us to gather further information from interviewing users. This was something we felt necessary since according to Deterding et al (2011), it is not possible to determine if something is gamified or just a game without considering the designers intentions or the experience from the users and their actual usage. Thus we decided to do interviews in order to collect data regarding our informants’ experiences using these applications. This is supported by Kuniavsky (2003) who believes one has to ask a user to know of their actual experience. The interviews we decided to do were semi-structured and followed the guidelines explained by Newton (2010). We interviewed eight informants for this study, aged between 23-31 two females and six males. We used a convenience sample since it is not something we believe would make any difference for this study. The interviews ranged between twenty to forty minutes each. These informants had used or were using one or more of the chosen applications. The informant who used an application for the shortest time was
for four months and the longest was three years. Their use of the applications was at the very least once a week, but could be up towards several times per day. Inspired by Braun and Clarke (2006) we used a thematic approach to process the gathered data.

We generated our questions based on four different factors. These are the informants experience in using the applications, what their motivation for using them comes from, their ability to do so, and lastly how they perceive the applications to trigger them to do something (if they even do).

4.2.2 Analysis of applications
As mentioned previously, we decided to look into different applications using gamification which are designed for training or dating. When searching for and choosing the applications we had a few criteria that had to be fulfilled. They all had to be in regard to their designated areas, training and dating. All of the chosen applications needed to be gamified, e.g. using gamification to affect the interaction and or the tasks. The applications was then analyzed by using the five game design elements presented by Deterding et al (2011). The fifth level, game design methods, was however not used for the analysis. This is due to it being concerned with the design strategies used when creating the application and is thus not something we can observe or identify.

The process of analyzing the applications came after we had been using them until we felt accustomed to, both their design and also the actual usage or “gameplay” they provide. By walking through the applications step by step and using the gamification framework, we were able to extract specifics from the applications and connect them to certain game design elements. To further our analysis we decided to ask questions in our interviews related to our informants’ experience using these applications. This was to help us identify certain design elements that an analysis by itself is not capable of.

4.2.3 Using Fogg’s behavior model
By using Fogg’s behavior model to try and link the three factors (motivation, ability and trigger) to the applications we hope to gain an understanding on how the design of gamification can affect our behavior.

The effects our informants experiences from these gamification aspects in terms of motivation, ability and trigger. After identifying these “connections” between gamification aspects/elements and behavior change we believe we can give suggestions to how one can design gamification for successful behavior change.

4.2.4 Ethical considerations
All informants were told about the study and were also aware that all personal information would be kept anonymous. We let them know that they could, whenever they felt like it, cancel the interview and tell us at any time if they did not want us to use the information we had gotten from them. We explicitly told them that no personal information would be collected and all the information we gathered was for research purposes.
5. Results

The results that we’ve gathered are based on our analysis and interviews we have done. This is also the order in which we will present our findings below.

5.1 Analysis of applications

Below we will present our findings whether we managed to observe use the game design elements that make up a part of the term gamification. Our findings are explained and we will try to isolate said elements to further show on the use of gamification. Since we have chosen four applications in two areas of life, the results will in some cases be very similar. In these cases we have instead chosen to focus on aspects that we identified to be different.

5.1.1 Tinder

For the application Tinder, we have identified the use of four game design elements in the Tinder application. Regarding game interface design patterns, Tinder does not use badges and leaderboards neither do they utilize levels or experience points. What they do use is visually representations of accomplishments such as when a user “matches” with another or when getting a “super-like” from someone.

The manner in which Tinder is designed endorses a turn based interaction approach. We say this due to how the application is designed to match people together. One has to like a person and said person needs to like him or her back before any further interaction can occur. This is to us, an example of how one needs to follow a preset design in order to go beyond the shallowest of uses the application offers. Put differently, the process of using Tinder can be seen as a three-step interaction. Firstly the liking stage, secondly the matching and lastly the actual interaction with another user. This perspective does not only confirm the turn based interaction, but also shows how one can perceive the use of Tinder as something sequential. Based on these observations we found the use of both the second and third level of game design elements.

Regarding game models, we cannot say for certain how the designers have thought when they made certain design choices. But Tinder’s CEO has personally confirmed the use of an algorithm that ranks users based on an ELO score. (Carr 2016) The ELO algorithm is a system commonly used to rank the skill of chess players among others. This suggests that their conceptual model when designing had connections to games. This is something that is further implied by Tinder’s VP of product who, according to Carr (2016) compares it to the video game Warcraft. Out of the eight interviews we performed, seven of them confirmed that they perceive the usage of the application as a playful experience.

5.1.2 Badoo

Badoo shares many features with Tinder which is as expected since they are both designed for the same application area. This has also meant that we’ve found similar examples of game design elements. Badoo is an even more frequent user of visual representations of accomplishments. This can be seen in the use of badges, leaderboards and rating. As Badoo does not require two individuals to approve of each other before being able to interact, it does not confirm to a turn based process. But as the interaction with the application is designed to
lead to reoccurring events, e.g. using the “encounters” feature and browsing other users, it is still part of the second design element.

Different from Tinder, Badoo does not “force” its user into following a single sequential type of gameplay but rather gives them different options of how they can use the service. This approach is also connected to the third game design element, more specifically an example of a “variety of game styles”, and thus we argue that we have identified it being used in Badoo.

In regard to game models in Badoo’s case, we could argue that from our perspective some design choices were inspired by games, for example badges and rating being central to a profile as seen on picture 5. The use of badges and ratings are aspects commonly found in games and in our opinion, most likely, derives from an active design choice. Our informants described their experience on Badoo as playful which further points to a perceived gamified experience.

5.1.3 RunKeeper

Looking at RunKeeper from a gamification perspective, or maybe more accurately from the perspective of game design elements, we have observed in four out of the four elements we considered, aspects of gamification. For the first level, concerned about game interface design patterns there are clear uses of gamification. We would argue that picture 7 through 9 all showcases this. Picture seven show the leaderboard function, this is one example that was explicitly used as an example in the theory section for a game interface design pattern. The same is also true for picture eight and nine, which illustrates goals and challenges. When picture one is showing a concrete example of this type of game design element (as in the actual leaderboard), the other two are arguably not showing a direct use of the design element but rather that using these functions lead to the element being used itself. To clarify with an example, the option of challenges and goals can be argued not being a part of said game design element, but the visual and audible representation of accomplishing them are, in fact part of it.

We did observe some gamification aspects in the second level as well. When analyzing RunKeeper from this design element we took particular note of the time constraints that exist, but only exist in certain features such as challenges and goals. We decided to label this element as part of the gamification, particularly due to those features own involvement in the gamification aspect that are found at other levels.

As for the third level, it is a little tricky since the goal of the application and the goal of using it could be seen as something subjective. So to make it clear, we decided to approach this level by making the assumption that the goal of using RunKeeper is for self-improvement, becoming more fit etc. The use of RunKeeper does not require the user to “play” in a certain order. Certain features does, though require that one completed something. E.g. to get an achievement, one has to get the completion of the achievement giving task logged.

Regarding our observation of the game models in RunKeeper, we can only make assumptions regarding the designers’ intentions. But as challenges are used to both challenge oneself as well as used in the leaderboard function, we believe that the designer/s of the application was intending to design for a game-like experience. From the perspective of the users we got a bit different opinions from our informants. Three out of four described the experience as playful.
5.1.4 Nike+
We identified the same game design elements in Nike+ as we did in RunKeeper. The design is so similar that we have been able to observe the same elements being used in the same ways for these applications. The differences in game design elements are mainly about differences in how they use certain features, (such as challenges where you send them to friends in Nike+ while you do not in RunKeeper) and how much they use them (Nike+ have a higher usage of accomplishment based features such as badges, achievements, leaderboards, etc.). Put differently, we have identified the use of all four game design elements we have been looking for in both RunKeeper and Nike+. The biggest difference between the two applications approach, is from our perspective, their use of these elements and how much they use them.

5.2 Interviews
We performed eight interviews which focused on the four previously mentioned themes, namely the users experience, motivation, ability and triggers perceived. We have divided our findings from the interviews into the two different life areas, training and dating. What the informants had in common between the two areas was that the majority described in different ways a perceived game-like experience. All eight informants had used or were using Tinder, while only three were users of Badoo as well. Regarding the training applications, four of the informants had used or were using RunKeeper and only one was using Nike+.

5.2.1 Dating
When asked about the user experience of Tinder and Badoo, all but one of the interviewed informants described it as game-like. Their description varied from straight out comparing it with a game or just commenting on the playful feeling of the applications.

For Tinder it was more like a game for me. It was like the swiping thing I guess, yeah it felt like a game.

All but three informants, answered when asked that these applications had brought changes to their dating life. These changes were all connected to meeting new people and going on more dates.

Umm, yeah I have found much more dates which is very awkward since before you would meet someone at a pub. Now there are more dates during the day, so to say.

Regarding if they felt the dating applications to be motivating, we noticed a quite even split in opinions. Five of the informants felt that the application was motivating due to it actually being worthwhile.

Stuff actually happen. If you write somebody they write you back. You actually get something out of it and it is motivating.

The other informants who did not share this perspective derive it to them not feeling it to be especially serious. One informant also described a function of Badoo to be demotivating.
You got these badges depending on how many people that have liked you and stuff. I did not like it, I would actually say it made me less motivated. (Badoo)

I did not find Tinder motivating since I saw no sense in it. It’s used for one night stands or dates and that was not for me.

Tinder does not really motivate me. I do not find it serious.

All informants that felt motivated by the applications could derive it to two and in some cases all three of Fogg’s motivational elements. Regarding the first motivator one informant described it as experience dependent.

The more matches I get the more motivated I get to use the application. But if I do not get any matches for some time I lose my motivation.

All of the motivated informants had the same reasoning to how their motivation was connected to hope.

Just the hope of meeting somebody special.

Two of these informants described their motivation to also be linked to social aspects. Not having to be fearful of social rejection was an important aspect.

Just the fact that I can use the application (Tinder) without fear of being judged by others is motivating.

All but one informant also thought the dating applications was a positive influence to their ability to date. We observed very similar answers why this was, but it was mostly due to the low requirement of effort.

It’s just so easy. You don’t need to shower or buy beer from systembolaget like you would if you would go out on bars to find someone. You can, like sit home in your underwear and hit on people.

The informants could link this influence on ability (simplicity) to five out of Fogg’s six elements, in other words, to all but the money aspect.

Tinder goes faster and is a reason to why it is so simple to use. It requires nothing, it is no sacrifice to use Tinder. (In regard to time).

I can sit at home; don’t even need to go outside of the door to get a date. It is crazy. (Regarding physical effort).

In regard to brain cycles I think you don’t need to think as much on Tinder as you would in a similar situation in real life.
I think it was very easy to get a routine on Tinder. I can do it without much effort. Uhm like when I am working haha.

When asked about perceived notifications in the applications the informants were, overall aware of the notifications that are present both inside the application as well as outside. Inside notification being those present when actively being inside and using the application and the outside ones are those received otherwise. Two informants did not distinguish between the inside ones and the outside ones.

Outside would be when your phone reacts since like you get a message or a match. Inside the application you get like shown that you have gotten a message, oh and a new match!

Asked if these notifications have gotten them to perform any action or behavior all informants answered yes. There was a noticeable different between the two applications due to some informants felt Badoo´s notifications being similar to spam.

Yes, I usually check the message or the match (Tinder). I used to do this on Badoo as well but I quickly recognized that it is mostly spam so I stopped.

5.2.2 Training
Out of the five informants using the training applications, three of them described the experience in terms of being game-like. The two other informants, users of RunKeeper, felt that it was more of a serious application meant for self-improvement.

Asked about differences in their training since they started using the applications all informants described a change.

I changed so I went more often for a run. It reminded me to go for a run. You could set reminders so you know when it is time for a run. (RunKeeper)

It made me run more often. I think it was since my friends were always challenging me to distances. (Nike+)

Regarding the applications effect on motivation the interviewees´ felt it motivated them. One of the informants mentioned that it helps with motivating, but it has never made him actually train.

It, like, helps with the motivation when I want to work out. It has never actually gotten me to work out.

Similarly to the dating applications, the informants could derive the motivational aspects to two and in one case three of Fogg´s motivational elements.

Every five minutes you get updates on your time, distance and speed. It is a good feeling knowing you perform. (Pleasure)
Well, you are always hopeful that you will get good results and people notice. (Hope)

Rejection was only a motivator when I showed and compared results with other people. (Rejection)

When asked, all informants mentioned it to have a good effect on their ability to train. This was mostly related to the applications providing statistics.

If you want to run it helps you with the statistics so you can compare. Not much more I think, but that function is really good.

All of the informants were able to derive this influence to three of Fogg’s six elements of simplicity. These were time, brain cycles and non-routine. The applications ability to handle stuff around the work outs was appreciated, they felt they needed to commit less time and planning. It was helpful in creating a routine in the beginning, but after a while that aspect was perceived as more of an annoyance.

The application makes you use your time more effective. It’s because you get like, notifications that you should go for a run or a workout, yeah and also if you haven’t thought about it before you will go for a run. (Time)

Yeah, instead of sitting down and log all your stats, you get it automatically. (Brain cycles)

RunKeeper makes it easier in the beginning, only in the beginning after that it gets annoying. (Non-routine)

When asked about perceived notifications all of the informants were aware of notification both outside and inside the application.

Outside the application when you get reminders to go for a run. Inside you get like rewards for running if I remember correctly. Like what was your best time, average speed after you done your workout. If you do your workout it says every five minutes your current time, average speed and distance. (RunKeeper)

I know you get notifications when you get challenged by others, this should be outside of the application. Inside you get like badges when you like, make new scores and like, similar stuff. (Nike+)

The informants believed that the notifications invoked actions or behaviors on their part, but not always. The reminders in RunKeeper, for example only worked in the beginning for some. The challenges of Nike+ were thought to be effective by the informant using the application.

In the beginning the reminders made me go for runs. I got a little bit faster after getting the five minute updates. Notifications about the rewards made me proud about myself, keep the feeling that I should be better next time again. (RunKeeper)
As I said before, when I get challenged by my friends I try to complete it and win against them. So yeah, I guess they made me run. At least like most of the time. (Nike+)

6. Discussion

As the results pointed out, all of the applications in this study are gamified and in many respects the use of gamification was similar. This was also even more obvious with the applications developed for the same area of life. Even so, certain game elements were perhaps more visibly used in for example Badoo than they were in Tinder. The interviews pointed out that the effects of the training applications were leaning more towards motivational boosts than anything else. Put differently, the training applications did more in raising the users’ motivation than they did to raise their ability. Their use in triggers followed this observation as the users´ in most cases perceived them as “sparks” namely motivational triggers, even though their effect was not always positive.

The two dating applications were, according to our informants, not very adept in motivating them but did rather make it easier to interact with new people. In some cases, aspects such as badges, visible rating etc. even had negative impact on the users’ motivation. This shows that these applications foremost affect the ability of the users´. The purposes of the triggers they use are not as clear as they are in the training applications since it is, arguably much more dependent on how the informants experience them. They can be a “spark” since getting a notification that someone wrote you can be a motivation to date and/or use the application. The same trigger can be seen as a “facilitator” since it might help keep a conversations flowing and thus easing the behavior. It might also be perceived as a signal as it might just work as a reminder. It all depends on how the user experiences it and in what contexts the trigger appears in.

To conclude, we have noticed differences in how gamification applications attempt to change the behavior of their users. In the two areas of life we have studied, we have identified that successful training applications seem more interested in using motivation as a way to change behavior. This is also reinforced due to the more frequent use of “sparks” as triggers. The dating applications seem more interested in influencing the ability of their users´, even though some attempts on motivation have been observed. The uses of triggers in these applications seem more subjective as they are more depending on context and the user´s goal, e.g. finding a partner, looking for intimacy or something else. When designing for gamification, knowing the context of use, the circle of users (including potential) and maybe most importantly, the behavior one wants to invoke or change is key. For example in this study we noticed that the selected training applications used different techniques to affect the users´ behavior. This was noticeable in a more apparent use of game interface design patterns such as badges, leaderboards etc. that gave some users a motivational boost. The dating applications appeared to be more concerned with their use of the second and third game design element, this for example due to how the swiping mechanics worked in Tinder and the encounter function of Badoo. With these results we believe that we have been able to answer our research question. The way gamification is designed and used successfully differs depending on the behavior, users and context that are targeted. We have been able to identify differences in how
different applications use game design elements to achieve certain behavior changes. This study shows both cases where these attempts have been successful and when it has not. We have found, what we believe to be, key differences in how dating applications and training applications use gamification design successfully and furthermore how these differences targets distinct aspects necessary for invoking a behavior. Even if the results from this study do not give a clear answer on how one should design gamification for any wanted behavior or specific life area, it provides insights in how it can be designed for training and dating applications.

From the perspective of this study, the tunnel vision in using gamification to achieve higher motivation and thereby invoke or change a behavior is often overdone. We believe that future successful gamification applications will use game design elements to affect ability more (if possible), but most of all we look forward seeing triggers being used to more success. It is, from our present point of view, perhaps the tool that has the most untapped potential.

6.1 Limitations

Our data collection was based on our personal analysis of the four chosen applications Tinder, Badoo, RunKeeper and Nike+. We analyzed them using Deterding et al. (2011) definition of gamification, which as previously mentioned mean that gamification is the use of game design elements in non-game contexts. The analysis was therefore dependent on our personal understanding of gamification and, more importantly the five game design elements included in the used definition. We have earlier in the paper mentioned that the definition of gamification may not be as concrete as one would have liked which is something that will undoubtedly have had some impact on the results we’ve gathered. Put differently, gamification and the design elements it is composed of have in some cases a certain level of subjectivity in how one can interpret them. And we believe our interpretation may not be exactly the same as everyone else’s. That said, we do not believe this to have affected the results in any big way but is something that we had to have in consideration. The fifth element, game design methods was, as previously mentioned also not used by us and is something that could have been very interesting to have included in this study. Important to note is also that one of the reasons that the applications we used in this study was that we identified them as using gamification before the study even started. This was based on what we knew of the phenomenon previously that is, making a game out of something that normally is not. This means that we came in to the study with a bias that might have led to us having had an easier time identifying these applications as using gamification.

We combined our analysis with semi-qualitative interviews of individuals that are using and had been using the chosen applications. We asked questions about their user experience, motivation, ability and potential triggers they might have encountered. We feel that doing interviews was a good choice for the data collection as we got more information on a deeper level than what we expected to get.
6.2 Further research
The aim of this study was to understand and explain how gamification applications affect behavior, and how one can use this knowledge in future designs. This study differentiated between training applications and dating applications, as the behavior they want to influence is essentially different. It was shown that even though they were interested in different types of behavior, they used the same means to affect it, which was with gamification design. Future studies concerning other areas of life would help give a broader viewpoint and be of interest in the HCI field. The possibility to complement this type of study with sensory equipment in some way could also be an interesting approach.

6.3 Conclusion
The purpose for this study was to analyze and gain an understanding on how to design gamification to achieve behavior change, in other words, successful gamification. This was an interesting topic for us due to the trend of gamifying our activities to make them more attractive. While we believe we have successfully analyzed gamification and its following behavior change from a design perspective, we also want to stress that there are much more that needs to be done. The size of the topic as well as its sheer complexity mean that there are many variables that needs to be taking into consideration, both when doing research but also when doing the actual designing. What we have been able to contribute with are suggestions on how one can approach the topic. In this study we have been able to point out clear examples of how this has been done successfully before, in two different types of applications and areas of life. Throughout this study we have furthermore been able to shed some light regarding how these applications go about changing behavior as well as how one can use these frameworks to further analyze it.
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Appendix 1 – Interview guidelines

Do you use or have used Tinder, Badoo, RunKeeper or Nike+?

How long have you been using the application(s) and how regular?

How would you describe your experience of using the application(s)?

Have you noticed any differences in your routine? If so, in what way?

How have your training changed since you started using the application?

How have your dating changed since you started using the application?

Does the application motivate you in any way? If so, what is it that motivates you? If no, why?

If yes, can you derive the motivational aspects to one or more of the following?

Pleasure/Pain, Hope/Fear, Social acceptance/Social rejection

Is it something in the application that makes training easier for you? If so, what is it that makes it easier? If no, why?

Is it something in the application that makes dating easier for you? If so, what is it that makes it easier? If no, why?

If yes, can you derive it to one or more of the following aspects?

Time, Money, Physical Effort, Brain Cycles, Social Deviance, Non-Routine

Have you experienced anything in the application that have made you perform an action or a change of behavior?

Have you experienced notifications inside of the application or/and outside of it? If so, how did these look like? How have you experienced them?

Have they ever made you perform an action or perform a behavior? If yes, what kind?