Designing for Motivation

Using prototypes to increase motivation.

Fin Kingma

Interaction Design

Supervisor: Marinka Copier

Academic Year: 2011/2012

MASTER OF ARTS CREATIVE DESIGN FOR DIGITAL CULTURES

UTRECHT SCHOOL OF THE ARTS
THE NETHERLANDS

Contents

Summary

Motivation is energy. It is our most basic fuel to get anything done. But that also makes it an important factor in design. If the user has low motivation, he will not interact with a product at all.

Over a year ago, I got intrigued by this subject and decided to conduct a study on: *'How does the interaction in daily routine tasks that people perform during their free time, decrease their motivation and can we increase these low motivations?'*

Most people are familiar with the difference between Intrinsic Motivation, and Extrinsic Motivation. But Extrinsic Motivation can be divided into four different levels. The higher levels are more internalized, more focused on yourself, which gives you a stronger motivation.

5 Intrinsic Motivation.
4 Integrated (Extrinsic) Motivation.
3 Identified (Extrinsic) Motivation.
2 Introjected (Extrinsic) Motivation.
1 External (Extrinsic) Motivation.

To conduct a qualitative Diary Study, I used these levels of motivation to find out what kind of tasks are responsible for a decrease in motivation. Many tasks have potential to trigger higher levels of motivation, but are stuck in the lower levels. The Diary Study showed the most apparent reasons for lower levels of motivation during daily routine tasks that people perform in their free time:

1. Frustrations.
2. Negative Interruptions.
3. Algorithmic tasks.

The last phase of my study involved building and experimenting with several prototypes that were focused on tasks that were triggered by level 2, Introjected Motivation. These prototypes were built to increase motivation for these tasks.

One prototype, called Wilson, managed to increase the motivation of various participants from level 2, Introjected Motivation, to level 3, Identified Motivation, and sometimes even higher, showing influences of Intrinsic Motivation.

Figure 1. Wilson.

Wilson is a Social Actor, based on principles from Persuasive Technology.

Social Dynamics increase motivation

While conducting several experiments with Wilson, the looks of the Social Actor appeared not to be a key factor to motivate the user, but the Social Dynamics that were integrated in the design. During the experiment, Wilson only responded by moving on sound, but if more Social Dynamics were implemented, by making him answer, the motivational effect should be higher as well. The implemented Social Dynamics should be identical to the behaviour of the user.

Introduction

I am Fin Kingma

Just like most people, I have always struggled to find my own drive, my own passion. I knew a few people who were always driven to a cause. They wanted to accomplish something…

I have always been fascinated about these people. What triggers them? What keeps them going? And do they ever get exhausted? But this also demotivated me, knowing that I did not have that same drive.

Through my own interest in the Romantic period in the 18th century, I got introduced to the topic 'motivation'. Because most Romantics were, and still are intrigued by the reason behind a specific action, how to trigger people to perform . Unfortunately, back in the 18th century, Romantics were not really fond of research, so there is not much information about motivation back then. However, nowadays you can find several interesting psychology studies on this topic. The more books I read, the stronger my fascination grew and the more I learned about what motivation is, the more I discovered my own drive, my own motivation. I found out that this is what I want to learn. This is what I want to focus my life on. And now, I am finally driven to a cause!

Now I sit here before you, to tell you what I have learned during my graduation study.

I want to understand motivation

I am an Interaction Designer, which means I design products, focusing on the interaction between a device and its user. You can say that it is my job to make sure that the interaction between a device and its user is perfect.

It was two years ago when I started reading about motivation. And during those two years, I have read a lot more on this topic. I discovered that a lot of our motivation is lost through poor interactions in our daily life. The books I read even provided several methods that can be translated and used to design for motivation: design products with the intention of increasing our motivation. That was the moment when I discovered that this is the field I want to explore in my graduation study.

During this graduation study, I focused on answering the following research question: *'How does the interaction in daily routine tasks, that people perform during their free time, decrease their motivation and can we increase these low motivations?'.*

I made it my goal to discover the daily tasks that are responsible for a big decrease in motivation. For which I will then use motivational principles to come up with a solution that can increase motivation. This is called an experimental study.

I conducted an experimental study

I translated my research question in three sub questions and each chapter will cover one of these questions:

1. *How can tasks decrease our motivation?*
2. *Which interactions in daily routine tasks that people perform in their free time, decreases their motivation?*
3. *Can we increase the motivation of tasks that people perform in their free time through the use of Motivational Principles?*

During my graduating study, Research Diaries were used as my primary research method to capture and identify the factors that decrease our motivation throughout our daily life. focusing on finding patterns that can be used when designing for motivation.

Based on the insights from the diary studies, several prototypes were built that aim to increase the motivation of the participant, using several motivational methods. The final phase of my graduation study involved experimenting with these prototypes to discover what the effect was that the prototypes had on the participants.

Were the prototypes able to increase motivation?

Understanding motivation

Introduction

This first chapter focuses on the first sub question '*How can tasks decrease our motivation?*'. The answer was found during my, still ongoing, literature study which started around two years ago. This chapter focuses on the difference between Extrinsic Motivation, and Intrinsic Motivation. Discovering how a task can actually decrease a person's motivation.

Energy

Look at motivation as a form of energy (Deci and Ryan, 1985). It is our most basic fuel to get anything done. Without motivation you won't even be able to get yourself out of a chair, no matter how strong you are. But with the proper motivation you can take on and successfully complete any challenge.

So what is this holy grail to keep ourselves motivated? Because if motivation is energy, it means we can lose, replenish it and even train it.

Self Determination Theory

Two men named Richard Ryan and Edward Deci, came up with the Self Determination Theory (Deci and Ryan, 1985). This theory states that the key is called *Intrinsic Motivation* and is about internalizing our actions.

Internalization

Internalizing an action means performing the action for yourself and not for an outside force. By internalizing our actions, we draw our motivation closer to ourselves (Deci and Ryan, 1985), making it stronger. This is the first piece of the puzzle: by internalizing our actions we increase our motivation. By externalizing our actions we decrease our motivation.

Intrinsic Motivation

This is where Self Determination Theory draws a line between two very distinct motivations: *Intrinsic Motivation* and *Extrinsic Motivation*. *Intrinsic Motivation* means everything you do for yourself. These are the most internalized actions and give the highest personal satisfaction. In all cases the experience of performing the task is rewarding enough on its own. People who are intrinsically motivated do not need a reward. If you give them a reward, you will only focus them more on the reward and less on the task, making them extrinsically motivated. Examples of Intrinsic Motivation include hobbies and personal interests.

Self Determination Theory provided three psychological needs that influence our Intrinsic Motivation (Edward Deci, 2002, p. 391): *Autonomy*, *Competence* and *Relatedness*. Two years ago, Daniel H. Pink published his book 'Drive' (Pink, 2009) where he presented three new needs for Intrinsic Motivation. Although these needs barely differ from the needs from Self Determination Theory, I personally find the needs that Pink presented more usable when designing a product:

- *Autonomy*. The freedom to direct our own lives.
- *Mastery*. The urge to get better at something meaningful.
- *Purpose*. Our drive to add meaning to our life.

Extrinsic Motivation

Extrinsic Motivation, on the other hand, means everything you do for an outside force. These are the least internalized actions and give us less personal satisfaction, sometimes even decrease it. Extrinsic Motivation therefore decreases our internalization. Which can be understood as a decrease in motivation.

The Carrot and Stick principle is a good example of Extrinsic Motivation. It means giving someone an external reward for correct behaviour and punishing that person for what is considered incorrect behaviour. This is a basic form of conditioning and is in many cases still the way that businesses operate (Pink, 2009). The danger is, that children and workers, in time will learn that what they have to do is worthless on itself and that its only justification is the

grade or pay check they get in the end (Csikszentmihalyi, 1975). So on short notice, external rewards work really well, but in the end they will only decrease a person's motivation.

The six levels of motivation

Extrinsic Motivation is not just about external rewards. Within Self Determination Theory a sub theory was created, called Organismic Integration Theory (OIT). This theory divided Extrinsic Motivation into various levels of internalization (Deci and Ryan, 1985) in which external rewards are the lowest level. There is an important distinction to make between Extrinsic Motivation, and External Motivation: Extrinsic Motivation is every outside force that influences you, and External Motivation is the use of rewards and punishments to force you into what is perceived as correct behaviour.

This means that external rewards are the worst type of Extrinsic Motivation. Figure 3 shows the six different levels of motivation. From having no motivation at all to the high internalised Intrinsic Motivation. All tasks can be categorized in this table.

Level 5 - Intrinsic Motivation

The most internalized action, being Intrinsically Motivated, is an autonomous motive, which means that the action is voluntarily. Imagine playing a musical instrument or playing a game. The key to recognizing Intrinsic Motivation is that the experience of performing the task is satisfying enough on its own. The three needs autonomy, mastery and purpose are essential to experience Intrinsic Motivation (Pink, 2009).

If the need of mastery is properly attuned to the user, it is possible to enter a state of flow (Csikszentmihalyi, 1975). Csikszentmihalyi explains flow as the most optimal experience. Attuning the task means that the challenge level of the task is synchronised to the skill level of the user itself. If the challenge level of the task is too high the user will experience anxiety and if the challenge level is too low, the user will experience boredom.

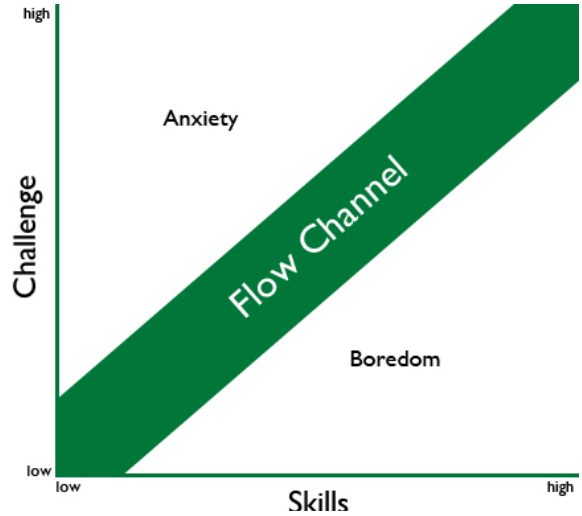


Figure 2. Flow

But once you focus on the reason or the goal behind the task, your motivation becomes extrinsic and enters the next level, Integrated Motivation.

Level 4 - Integrated Motivation

Integrated Motivation is the highest level of Extrinsic Motivation. These are the tasks that have personal value to you and are performed for a specific outcome. For instance, studying. In most cases, the experience isn't satisfying enough on its own, so that is why you focus on a specific outcome. If you are playing a game and someone asks for your help, if you respond that you want to find out how the game ends, your motivation becomes Integrated. You add a specific outcome to the task that you are interested in. Even though the task previously triggered Intrinsic Motivation, it now decreased a level in motivation.

Pink claims that Extrinsic Motivation makes you less capable in solving creative puzzles (Pink, 2009), because you focus on a specific outcome, while the path towards that outcome is not linear. However, Pink does not make the distinction between Extrinsic Motivation and External Motivation. So it is still unclear if Pink included Integrated Motivation in his statement.

When focusing on tasks that do not require any creativity, Integrated Motivation is still a very strong motivation, because it focuses people on an end goal.

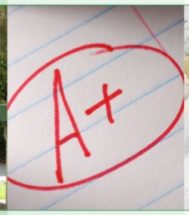
Energy level	5	4	3	2	1	0
Title	Intrinsic Motivation	Integrated Motivation	Identified Motivation	Introjected Motivation	External Motivation	No Motivation
Example						
Example description	Hobbies, Interests.	Things you really want to achieve. Study.	Feeding your baby, smoking with a friend.	Cleaning your room.	Working for money. Getting blackmailed.	Being lazy.
Motives	**Autonome**, Just for the experience. Personal satisfaction.	**Autonome**, Aiming towards a specific outcome.	**Autonome**, The task has value through something you can relate to.	**Forced**, You force yourself to get something done.	**Forced**, Someone else is forcing you. Carrow and stick principle.	Not doing anything.

Figure 3. The six levels of motivation.

Level 3 - Identified Motivation

Identified Motivation is everything you want to do for something or someone else. The experience itself is not rewarding, but because the task has a certain value to you, you perform it. You still don't feel much satisfaction from the task because you don't do it for yourself. Imagine a friend asking you to help him out by carrying something heavy. This is the level of motivation that advertisement often use to influence customers in buying their products (Zimbardo, 1991).

Level 2 - Introjected Motivation

Introjected Motivation is the first motivation with a forced motive. This means somebody is controlling you. Either consciously or unconsciously. These are the tasks that you do not want to perform for yourself.

In this level, Introjected Motivation, you are forcing yourself to perform a task. You are aware that if you do not perform the task, nobody else will. Doing the dishes is a good example of this level of motivation. If you do not force yourself to do the dishes, nobody else will and very soon you will find your kitchen being a mess. You indirectly punish or reward yourself to take action.

Level 1 - External Motivation

As already mentioned, keep in mind the distinction between External Motivation and Extrinsic Motivation. This level, the bottom of all Extrinsic Motivation, is called External Motivation. This level is about being controlled by somebody else by the use of rewards and punishments. If you can remember a time you really needed money, you can probably remember tasks you performed just to make money. Remember the Carrot and Stick principle?

Multiple motivations

Keep in mind that getting paid does not necessarily put you in this low level of motivation. It is still possible to perform the action for a friend while getting paid. You often will be faced with different levels of motivation to perform a single action. Only one of them, often the highest, motivates you to perform the action (Deci and Ryan, 1985).

How can tasks damage our motivation?

I have collected all the information needed to answer the first sub question: '*How can tasks decrease our motivation?*'. There are two ways to increase motivation. The most logical way is to increase the intensity of the motivation. By making the reward or punishment more intense, you can increase motivation. There is a second option, which I personally find more interesting and will focus on more closely during my study. This second option is about internalizing your actions.

The more internalized the action is to perform a task, the higher your motivation is. If you perform a task that has the potential to intrinsically motivate you, your motivation will decrease if a person adds any motivation that is less internalized, like Identified Motivation.

Imagine watching television at home and all of a sudden you like to help a friend who is staying over. But before you start, he asks you if you can help him with something. You still are motivated to perform the task, but your motivation just dropped two levels on the table, from Intrinsic Motivation to Identified Motivation.

Conclusion

This chapter focused on answering the question *'How can tasks decrease our motivation?'*. Self Determination Theory made a clear distinction between Extrinsic Motivation and Intrinsic Motivation. The more internalized an action is, the more it is focused on yourself and the higher your motivation is. Intrinsic Motivation is the most internalized action.

Organismic Integration Theory divides Extrinsic Motivation in four levels of motivation. Five levels of motivation can be recognized and sorted on internalization:

5 Intrinsic Motivation.
4 Integrated Motivation.
3 Identified Motivation.
2 Introjected Motivation.
1 External Motivation.

By using a lower level of motivation on a task that currently runs on a higher level, you decrease motivation.

Diary Study

Introduction

This chapter focuses on the second sub question: *'Which interactions in daily routine tasks that people perform in their free time, decreases their motivation?'*. The table from the previous chapter was used to perform a qualitative diary study among ten participants. This chapter will explain what has been discovered during this qualitative diary study and conclude with the tasks and interactions that are decreasing our motivation.

What are Research Diaries?

J. Lazar explains in his book that "A diary is a document created by an individual who maintains regular recordings about events in their life, at the time that those events occur" (J Lazar, 2010, p. 126). This diary study looks for shifts in motivation throughout a person's life and the exact moments that these shifts occur are unpredictable. This is why Research Diaries are the most obvious choice for this diary study.

Method

The diary study is an experimental study. There are many uncertainties about what will work and what not. This is why I will use Research Diaries for a qualitative study. This way I can dig deeper into the data and find more interesting insights to work with.

In most cases Research Diaries are documented using a notebook. When a specific event occurs, for instance switching to another task, the participant writes down the time and what happens. This diary study handles these things differently.

Participants were asked to document on a 24-hour basis during a free day. This to focus the study on what people do in their free time.

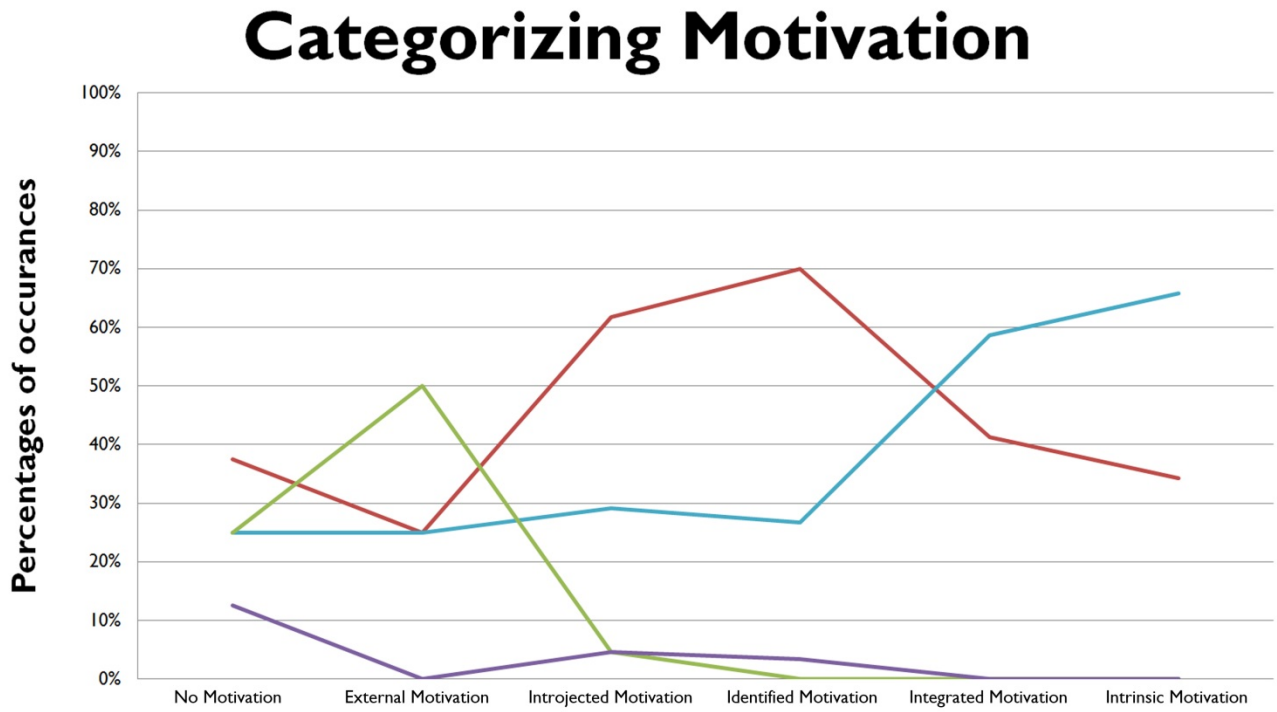
Instead of a notebook, they were asked to use a smartphone or other photo capturing device. Ten adult respondents were asked to make snapshots of the moments they changed what they were working on. They were also asked to put their hand in the picture, raising the amount of fingers equal to the level of motivation.

Figure 4. Photos of my diary study.

For the participants to understand the levels, a sheet with the most vital knowledge about recognizing the motivation levels was send to them. In most cases they were also asked for a short meeting in which they could ask any remaining questions about motivation.

The technique that was used proved to be very useful because of two aspects:

1. If participants send in the photos the timestamps were already present, so respondents did not have to worry about much information they had to send, they only had to make a snapshot with the right amount of fingers.
2. Visual representatives are easier to remember for participants. When a snapshot was send back to one of the participants asking for more detailed information about that specific task, they could easily remember what they were doing at that exact moment.



	No Motivation	External Motivation	Introjected Motivation	Identified Motivation	Integrated Motivation	Intrinsic Motivation
Algorithmic	38%	25%	62%	70%	41%	34%
Heuristic	25%	25%	29%	27%	59%	66%
Frustrations	25%	50%	5%	0%	0%	0%
Interruptions	13%	0%	5%	3%	0%	0%

Figure 5. Heuristic, Algorithmic, Frustrations and Interruption occurrences during the diary study.

Analysing

203 tasks were recorded for this diary study. To work with the data, a clear distinction was made between four different categories for the recorded tasks:

- *Algorithmic tasks*. Tasks that have a clear path and a clear end goal, you only have to perform it (Dictionary).
- *Heuristic tasks.* Tasks that do not have a clear path or end goal. You need to think creatively to perform these tasks (Dictionary).
- *Frustrations.* This turned out to be a major factor in decreasing motivation and cannot be put under either algorithmic or heuristic.
- *Interruptions.* A different reason why you are currently not performing a task.

These categories were used because of two reasons. First, the difference between algorithmic tasks and heuristic tasks proves to be an important difference within motivation (Pink, 2009) and during this study I wanted to learn more about this difference. Daniel Pink describes that heuristic tasks require creative thinking, which Intrinsic Motivation supports. Algorithmic tasks require a more focused mind, which Extrinsic Motivation supports. This could also answer my question if Daniel Pink included Integrated Motivation in his previous statements.

The second reason is that when the 203 recorded tasks were categorized, Interruptions and Frustrations proved to be useful additional categories.

You can find all the important graphs in the attachments pages.

Insights

We want to learn and do new things

Figure 5 shows that within Intrinsic Motivation (level 5) and Integrated Motivation (level 4), more tasks are labelled as heuristic than algorithmic. The more internalized the motivation becomes, the more participants focus on heuristic tasks. Heuristic tasks are about doing and learning new things. So that means that the more internalized your motivation is,

the more you will focus on learning and doing new things. This basically is what Pink explained.

If we cannot learn or do new things, we will need an Extrinsic Motivation

What figure 5 also shows is that the centre levels are focused on algorithmic tasks. Within Identified Motivation 70% of all tasks are labelled as algorithmic. In Introjected Motivation this percentage is even higher, 77%. Algorithmic tasks are tasks that have a clear pattern and destination, so you will not be able to learn anything from performing the task. So if people are not able to learn or do new things, they will need another extrinsic motivation.

Integrated Motivation overlaps Intrinsic Motivation

Figure 5 shows that Integrated Motivation and Intrinsic Motivation are not that different. Intrinsic Motivation has a higher tendency towards heuristic tasks, focused more on creativity. This is exactly what Pink mentioned, but Integrated Motivation still has 59% of heuristic tasks.

If Intrinsic Motivation is focused on heuristic and Extrinsic motivation is focused on algorithmic, it means that Integrated Motivation relates more to Intrinsic Motivation than to Extrinsic Motivation.

The only thing that makes Integrated Motivation, Extrinsic is that it focuses on a goal, a specific outcome. If Integrated Motivation enables you to perform creative tasks, Integrated Motivation would be much more usable when performing tasks than Intrinsic Motivation because it still focuses people on a specific outcome. Pink described in his book that Intrinsic Motivation is how businesses should operate nowadays (Pink, 2009), but this insight shows that Integrated Motivation would be a much better option for businesses, because it is the focused version of Intrinsic Motivation. However, only if people are still capable of performing creative tasks when experiencing Integrated Motivation. But I will not focus on this during my study.

Identified tasks add relatedness

There are eight tasks recorded in total that are labelled as being heuristic within Identified Motivation. Out of these eight tasks, five are performed for another person: 'Start Motivation Research'; 'Cycle to a friend'; 'Read progress project group'; 'Socializing with friend'; 'Call girlfriend'.

This factor is called relatedness and is connected to Intrinsic Motivation in Self Determination Theory (Edward Deci, 2002, p. 391). Relatedness seems to be an important factor in Identified Motivation.

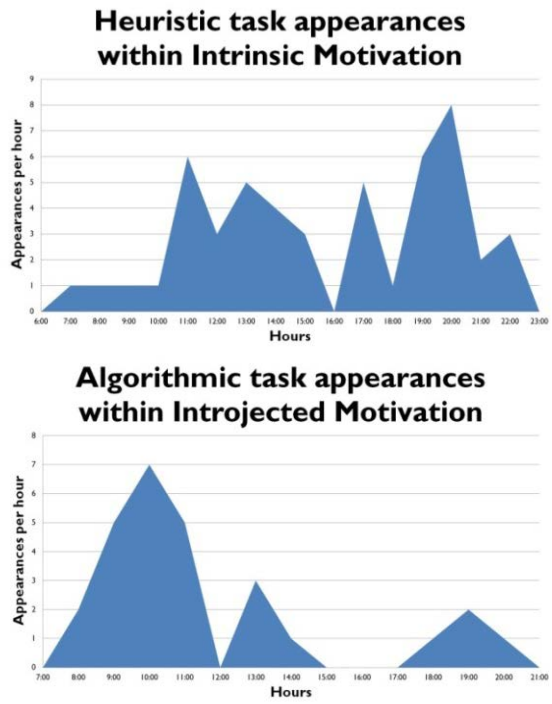


Figure 6a + Figure 6b.

We have less motivation in the morning

As Figures 6a and 6b show, 92% of all heuristic Intrinsic Motivation occur after 11 o'clock, and 58% of all algorithmic Introjected Motivation occur before 11 o'clock. This means that we barely experience high motivation before 11 o'clock. We have to get our own mind working in the morning, before we can become Intrinsically Motivated.

Which interactions in daily routine tasks decrease our motivation?

We have learned in the previous chapter to decrease our motivation, we have to add a lower level of motivation than your current level of motivation to a task.

To answer the second sub question, we need to take a look at the insights and the graph to see what types of interactions in tasks occur more often in lower levels than in the higher levels of motivation. We can assume that these tasks are responsible for these lower levels of motivation.

1. *Frustrations* mainly occur in the first two levels of motivation. Interactions that cause frustrations are dangerous to our motivation.
2. *Interruptions* only occur in the lowest two levels of motivation. But one could argue that if an Interruption would be positive (a good friend calls you), people would not label this as an interruption. So I rephrase that into: *negative interruptions* decrease our motivation.
3. *Algorithmic tasks* can be understood as decreasing our own motivation, especially because they mainly occur in Introjected Motivation. Still, algorithmic tasks are by definition easier and more efficient to perform than heuristic tasks, because we already know how to perform them. I will state that the interaction with algorithmic tasks <u>can</u> decrease our motivation, so they should be implemented with caution.

Conclusions

Heuristic tasks are tasks that require creative thinking in order to perform the task. Such tasks occur more often during a higher level of motivation.

Algorithmic tasks are tasks with a clear path and end goal. These tasks occur more often during a lower level of motivation.

Daniel H. Pink wrote in his book that businesses should focus more in Intrinsic Motivation to motivate their employees. Integrated Motivation carries heuristic influences from Intrinsic Motivation, but still focuses on an end goal. This would make it an interesting level of motivation for businesses, perhaps even more interesting than Intrinsic Motivation.

The answer to the second sub question 'Which interactions in daily routine tasks are the most dangerous to our motivation?' resulted in the following three answers:

1. Frustrations.
2. Negative Interruptions.
3. Algorithmic tasks.

But since algorithmic tasks are more efficient than heuristic tasks, they could still be used. We should use them with caution.

Experimenting with Motivation

Introduction

This final chapter focuses on the last sub question: '*Can we increase the motivation of tasks that people perform in their free time through the use of Motivational Principle?'*. Several prototypes were built to find the answer to this. These prototypes are based on theories within psychology and other domains that have already been focusing on motivation in the past decades, like Self Determination Theory or Persuasive Design.

This chapter is written in a more more linear style, to show you how an experimental study can have an impact on someone. Because experimental studies do not always work out for the best.

Prototypes

This chapter will often refer to the word *'prototype'*. This term has been used in various ways in different businesses. To prevent any miscommunication, I will give a definition of what I mean when referring to a *'prototype'*: an unfinished product build to understand a specific experience, before realizing the product.

It is a test model, focusing on a specific experience, which in this case is increasing motivation. If a prototype cannot trigger this experience, a real product will not trigger it either. A more vital reason to use prototypes is time. It can take months or even years to build finalized products, but prototypes can be built within a few days.

All the following prototypes are built to increase motivation for a specific tasks, for a specific participant. Most of these products will not appeal to everyone, they were focused to motivate a specific participant of my study, who I will keep anonymous. The methods, concepts and conclusions from experiments will be briefly discussed in this chapter.

Prototype #1 - The SleepRecorder

Method

In a book about the study 'persuasive technology' (Fogg, 2003), persuasive design was used for computers. I got interested to try this out. In this book Fogg gives three different approaches how to persuade a user using computers as: Persuasive Tools; Persuasive Media (Simulation); and Persuasive Social Actors. This concept uses computers as Persuasive Tools. Next to that, the concept also focuses on the need for autonomy to raise Intrinsic Motivation.

Concept

This concept was focused on the task of sleeping, because the last chapter showed that people have a low motivation in the morning.

The concept is called *'The SleepRecorder'* and it is an application that records all sounds in your bedroom, from the moment you start the application until the

Figure 7a. The SleepRecorder.

moment you need to wake up. It then filters out all the noise and plays all the recorded material as an alarm clock, waking you up. The idea behind this is to record the motivation that prevented you from sleeping and returns that motivation to you, when you have to wake up.

Conclusion

The participant that was selected for this prototype, enjoyed the application itself, and he used it quite often. But that was because he got intrigued by the idea itself and wanted to work on it as well. When I gave him the program, he build his own application. The participant even created a ritual of five minutes while listening to the application itself. Unfortunately he did not experience the increase of motivation that the *The SleepRecorder* should trigger.

Prototype #2 - The Random Cabinet

Method

The second prototype used Gamification to make a task more interesting. Gamification is about taking an ordinary task and turning it into a game, making it more interesting. But often, also making it more time-consuming to perform. Next to Gamification, the need for autonomy was used to raise Intrinsic Motivation, in an attempt to get the participant to play with the prototype.

Concept

This concept focuses on the task of getting dressed. This time I selected two participants instead of one. Both were male and experienced Introjected Motivation for this task. Dressing up is not supposed to be an algorithmic task and therefore should not exist in this level of motivation. These participants grabbed the piece of clothing they saw and turned dressing up into an algorithmic task.

Figure 7b. The Random Cabinet.

The concept is called the *'Random Cabinet'* and it combines dressing up with a fruit machine. The prototype exists of a cabinet with five drawers and a large lever next to it. Every time you pull the lever a different drawer opens. So instead of always getting the top piece of clothing, you now will get a random piece of clothing every time you pull the lever.

The participants first has to put several clothing pieces into the *Random Cabinet.*

Conclusion

My expectations were quite high through the use of Gamification, but also this concept failed poorly. The extra effort of putting the clothes into the cabinet decreased the persons motivation. I did however find out that the interaction itself became more interesting, but the task itself remained Introjected.

Prototype #3 – The Iron Man

Method

The third attempt focused on persuasive design once again, but this time using Computers as Persuasive Media (Simulations). Games are very capable in simulating an environment convincingly enough for the user so that he will associate aspects of the game with the real thing (Fogg, 2003, p. 67). The need for both autonomy and mastery were used in this concept.

Figure 7c. The Iron Man Game

Concept

This concept focused on a single participant once again. The participant had a really low motivation for ironing and he sent a list of reasons why he did not like performing the task. He was never satisfied and always saw more creases that still had to be removed.

The concept is a flash game called 'The Iron Man' that had identical interaction to Ironing (your left hand was your hand, your right was the iron itself). A simple scoring system was used that should persuade the user to not perform any of the reasons he gave, like always removing every crease. Multipliers were added if the user would wait before ironing all the creases he saw.

Conclusion

And yet again, this game did not interest the participant at all. It was too much effort to play the game several times or at least enough times for the persuasive techniques to take effect.

The missing link…

So all three prototypes did not have the effect I was hoping for. Different methods were used for each prototype and each prototype I tried to apply some of the factors of Intrinsic Motivation. How could everything go wrong?

But this was not just a little issue with the project. For the past few years I have focused on the topic motivation. I had learned a lot about it and have made it my goal for my graduation study to understand this piece of knowledge so I could use my knowledge after graduating. I wanted to tell people about a new path in design: how we can apply motivation to products.

But now, there was nothing to tell.

I lost my own motivation.

…

…Interest

I have been focusing on motivation for a long time now. But I am still human, I can also lose my motivation. The only difference is, is that I know the basics of how it works and how I can get myself back on the right track. I can fight it.

looking back to my prototypes again and reflecting upon them, I realized that the problem was that I was fixating on Intrinsic Motivation. The task themselves focused on Introjected Motivation. It is too difficult to trigger Intrinsic Motivation for tasks that have sunk so low.

The table from the first chapter, which shows the different levels of motivation, visualizes perfectly where the prototypes got stuck. Most of the prototypes were focused on Introjected Motivational tasks. But the prototypes never managed to raise motivation unto the next level, Identified motivation. The prototypes never managed to make the action voluntarily, to interest the user.

Identified Motivation focuses on the meaning of the task and as concluded in the previous chapter on relatedness. If you can relate the user to the task making it interesting, the participant will willingly perform the task without getting any reward. That is the theory. Every prototype focusing on raising Intrinsic Motivation without catching the interest of the user. The prototypes tried to force the users to do something fun.

The fourth, and final prototype would focus on raising the motivation of a single task from Introjected Motivation towards Identified Motivation. And to make the final prototype even more interesting, it did not focus on a single participant, but on a whole target audience: adults.

Prototype #4 - Wilson

Inspired by the movie Cast Away (Zemeckis, 2000) and some other products like AIBO (Interaction Design Blog, 2008) I started working on my fourth prototype.

In Cast Away, Tom Hanks transforms a volleyball into his own pet after getting stuck on an island. He even starts talking to the volleyball. Hanks has gone crazy in the movie, but this technique is a good example of how to add relatedness to a task. I experienced this myself when a street cat suddenly walked into my house when I was doing the dishes. The cat raised my motivation.

Instead of buying my own AIBO or another pet-like product, I decided to build my own 'Wilson'. This way it would be easier to focus on the simple mechanics that can trigger an increase in motivation. If AIBO would be used to experiment with participants, too many different variables would be present in the experiment. This would make it more difficult to understand which variables can increase motivation.

Figure 8. Wilson

Social Actor

Persuasive Technology has a third method: using computers as a Social Actor. This method is perfect to get the most out of relatedness. This method is summarized in a graphic that still decorates my workroom. The graphic is shown on figure 9.

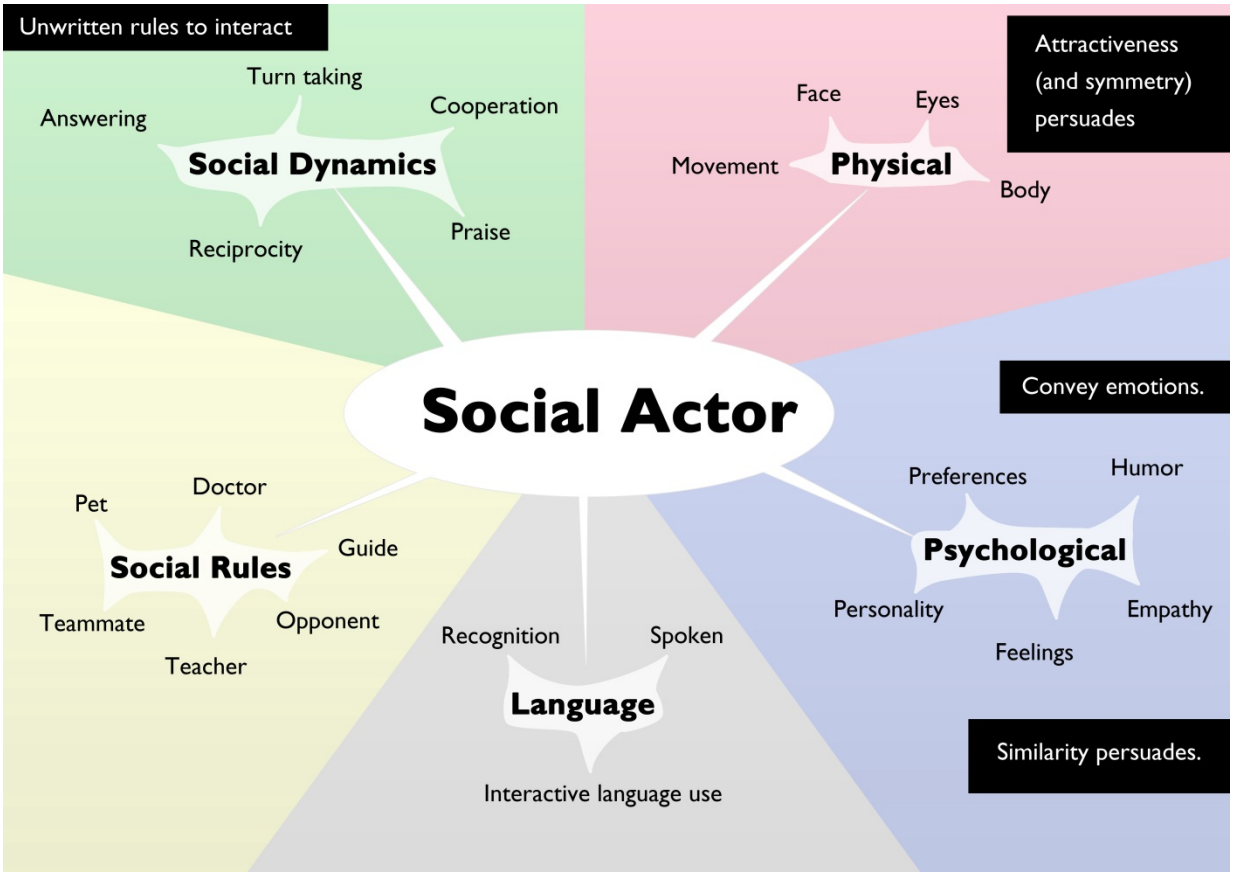


Figure 9. Using Computers as Social Actors.

Results need to be acquired fast, so there was not much time to build Wilson. Only the most basic attributes were implemented in Wilson. A short list of demands was formed of attributes that should be incorporated within Wilson:

- Wilson must convey emotions. Primarily humor. A minimalistic smiley face will be put on Wilson so that most users can still identify themselves with him.
- Wilson is a pet. He cannot perform any task, he is only available as emotional support.
- Wilson will use a very basic Social Dynamic, he will respond to sound.
- Wilson will be built within a ball, but smaller than a volleyball. This way he can easily move around and remain symmetrical and thus attractive.

A new study

It took around a week to build Wilson to let him respond on sound. The movements are minimalistic. It is the most basic Social Dynamic that could be incorporate in the prototype on such a short notice. Of course it was still a prototype, so there were a few issues to work with. Sometimes Wilson did not listen to sound and sometimes he just went crazy after hearing loud noises. But it was time for the next step: experimentation.

During one week ten participants were scheduled to experiment with, in which each participant performed a 'boring', Introjected Motivational task, like dishwashing, at their own home. The participant performed the task for four minutes without Wilson and then four minutes with Wilson. Afterwards a short interview was conducted to find out if Wilson managed to motivate the participant and this is what came out…

Insights

Wilson increases motivation

six out of ten participants said they would like to perform the 'boring' task again if they could use Wilson. This means they would voluntarily perform the action, thus resulting in Identified Motivation. All four of the remaining participants said they would like to perform the action again, if there would be more variation in Wilsons actions.

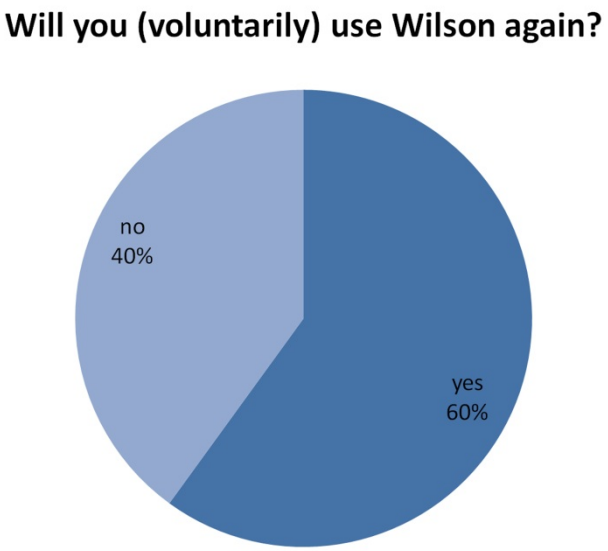


Figure 10a.

Another important factor to keep in mind is that out of the four participants that did not notice any increase in motivation, Wilson did not respond correctly during 3 of them. These issues were caused by:

1 *Inductive surfaces.* Wilson was placed on a really inductive surface, responding too much on any sound or vibration around him.
2 *Distance.* The participant was too distant from Wilson while performing the task.
3 *Loudness.* The task did not make enough sound.

With this in mind, it is fair to say that Wilson does increase motivation. Even for the most boring tasks. The effect is only for a short time, after participants get used to Wilson, the effect disappears.

Three of the ten participants mentioned they started playing with various sounds to find out what the limits would be of Wilson's interactions. These are marks of Intrinsic Motivation. Wilson did increase motivation to the level of Intrinsic Motivation, if only for a short period. These participants even lost consciousness of the end goal and focused solely on triggering Wilson.

Social Dynamics are key when focusing on relatedness

The participants who said they needed more variation in Wilsons actions, explained these variations as types of Social Dynamics. A participant with a social job, explained she required more options to communicate with Wilson. A game designer explained he would like Wilson to play social games with him.

A nice pattern emerged from these answers that shows that most participants require a different version of Wilson, focusing on Social Dynamics that are identical to their own. Persuasive Technology explains this by research, that similarity in personality does indeed persuade (Fogg, 2003, p. 99).

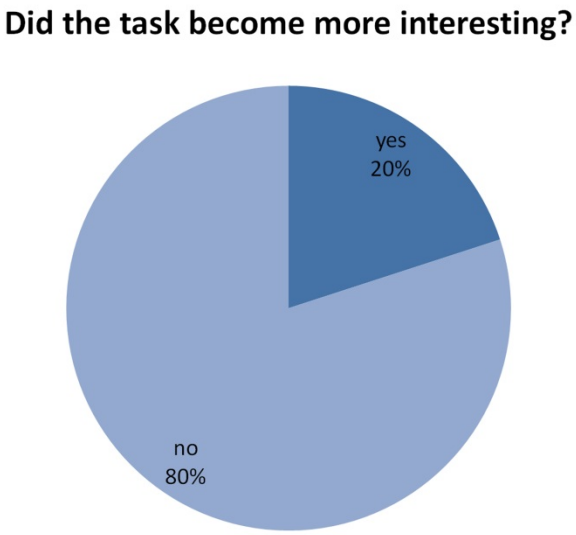


Figure 10b.

Wilson is a positive distraction

Eight of ten participants explained that the task has remained the same. However, four out of these eight participants did mention that the interaction with the task has gotten more interesting. Wilson became a positive distraction and turned the task into a tool to interact with Wilson. Because participants were not focused on the task itself anymore, they also were not focused on their annoyance towards the task.

Can we increase the motivation of tasks that people perform in their free time, through the use of Motivational Principles?

As we have learned in the first chapter, motivation can be divided into five different levels: External Motivation, Introjected Motivation, Identified Motivation, Integrated Motivation and Intrinsic Motivation. This study focuses on designing prototypes that increase the level of motivation for a specific task.

I have come to believe that the most difficult challenge in increasing the level of motivation is the difference between Introjected Motivation and Identified Motivation, the difference between forced action and voluntary action. The challenge to add interest for the user. This is especially difficult for designers, because designers communicate indirectly through the use of a product. But I managed to give you the first piece of the puzzle by adding relatedness to the task.

Wilson, a prototype that responds to sound, manages to increase motivation for participants to perform tasks they would normally only perform when being forced. These tasks became voluntary actions for a short period. Wilson increased motivation from Introjected to Identified. However, the key factor in making Wilson work, was adding Social Dynamics. With appropriate Social Dynamics, people would not be able to relate to the prototype.

I believe this is just a first step uncovering a whole new area in design, but I also believe that this is a very important step. So to answer the final sub question, I say 'yes, it is possible to increase motivation through the use of Motivational Principles!'.

Conclusion

I have built prototypes using principles from various fields that focus on motivation: Self Determination Theory, Persuasive Technology and Gamification. Unfortunately my first three prototypes did not manage to increase motivation for the user at all, something was missing.

But once I figured that the problem was getting tasks from Introjected Motivation up to Identified Motivation, I build a new prototype that did increase motivation for users. This prototype was called Wilson and also used a principle from Persuasive Technology: using Computers as Social Actors. Wilson used a basic Social Dynamics (responding to sound) and managed to increase the motivation of participants for Introjected Motivational tasks, like dishwashing.

Experimenting with ten different participants, showed that:

- Wilson increases motivation when performing Introjected Motivational tasks.
- Social Dynamics are key when trying to increase motivation through the use of relatedness.
- Wilson is a positive distraction.

Conclusion

In my introduction I stated that I was completely driven to find the answers how we can use motivation in design. This was completely true. But even with that passion I lost my own motivation during the project. Luckily, in the end, I came out stronger.

How does the interaction in daily routine tasks decrease our motivation and can we repair those low motivations?

There are several levels of motivation, based on their internalization.

5 Intrinsic Motivation.
4 Integrated Motivation.
3 Identified Motivation.
2 Introjected Motivation.
1 External Motivation.

Internalization means how much a task is performed for yourself. A strong, healthy motivation is performed completely for yourself, with no addition of any extrinsic rewards. By using a lower level of motivation on a task that is currently using a higher level, it is possible to decrease motivation.

A diary study was conducted to discover what kind of tasks decrease our motivation. Apparently frustrations and negative interruptions always decrease our motivation. Next to that, algorithmic interactions decrease our motivation as well, but are more efficient than heuristic tasks, because they still focus on a specific end goal. We should only use algorithmic tasks with caution.

The last phase of the study, experimented with various prototypes, trying to discover how we can increase motivation for tasks with a low level of motivation. The experiments showed that the challenge when facing low motivation, is to trigger Identified Motivation. The final prototype, Wilson, shows that relatedness can trigger this level of motivation by applying appropriate Social Dynamics to the product.

More possibilities should be explored on how to design for higher levels of motivation, for now I discovered two interesting follow-up studies:

1. The product Wilson only uses one basic Social Dynamic to increase motivation. Experimenting with a few participants showed that adding more advanced Social Dynamics (identical to the user) could improve this effect. This is an interesting insight but has to be studied further.
2. Wilson managed to increase motivation for a short period. I still do not know how long this effect can hold, or if it is possible to increase the duration of the effect.

This study was just a small step in uncovering ways of increasing motivation, but I believe it also is an important step.

I want to thank you for your interest in the subject motivation. I hope this article has been very clear and inspiring. If you have any remaining questions, please send me an e-mail to *me@finkingma.com.*

Before you close this article and go on with your life, I want to ask you one thing:

If you found this article interesting, if you think you have learned something valuable by reading this article, I would like to use the power of Identified Motivation and ask you to send this article to at least another person. My goal with this article is to educate as many people as possible and I cannot do this without your help. Please send it around.

Thank you!

Let us find out if the world is ready for Motivational Design.

Resources

CSIKSZENTMIHALYI 1975. *Beyong Boredom and Anxiety*, Jossey-Bass.

DECI, E. L. & RYAN, R. M. 1985. Intrinsic Motivation and Self Determination Theory in Human Behavior. 1985 ed.

DICTIONARY, T. F. *Algorithmic, definition* [Online]. The free Dictionary. Available: http://www.thefreedictionary.com/algorithmic.

DICTIONARY, T. F. *Heuristic, definition* [Online]. The free Dictionary. Available: http://www.thefreedictionary.com/heuristic.

EDWARD DECI, R. R. 2002. Handbook of Self Determination Research. University of Rochester Press.

FOGG, B. J. 2003. *Persuasive Technology. Using Computers to Change What We Think and Do.,* San Francisco, Morgan Kaufmann.

J LAZAR, J. H. F., H. HOCHHEISER 2010. *Research Methods in Human-computer Interaction,* West Sussex, John Wiley & Sons Ltd.

PINK, D. H. 2009. *Drive,* New York, Riverhead Books.

PINK, D. H. 2010. RSA Animate - Drive: The surprising truth about what motivates us. Youtube. Available: http://www.youtube.com/watch?v=u6XAPnuFjJc

Cast Away, 2000. Directed by ZEMECKIS, R.

NORMAN, D. A. 2004. *Emotional Design,* Cambridge, Basic Books

THALER, R. H. & SUNSTEIN, C. R. *Nudge*. London, Penguin Group.

ZIMBARDO P. G. & LEIPPE M. R. 1991. *The Psychology of Attitude Change and Social Influence*, USA, McGraw-Hill

LOWE, T. 2009, Motiveer! Utrecht, LeV

SHELDON, K. 2010. *Positief motiveren in 6 weken,* Tielt, Lannoo

Interaction Design Blog. 2008. *Interaction design blog | How Aibo improves the lives of elderly | Interaction design.* Available: http://www.interactiondesignblog.com/2008/07/how-aibo-improves-the-lives-of-elderly/.

Furby. 2012. Furby - Wikipedia, the free encyclopedia | Wikipedia. Available: http://en.wikipedia.org/wiki/Furby

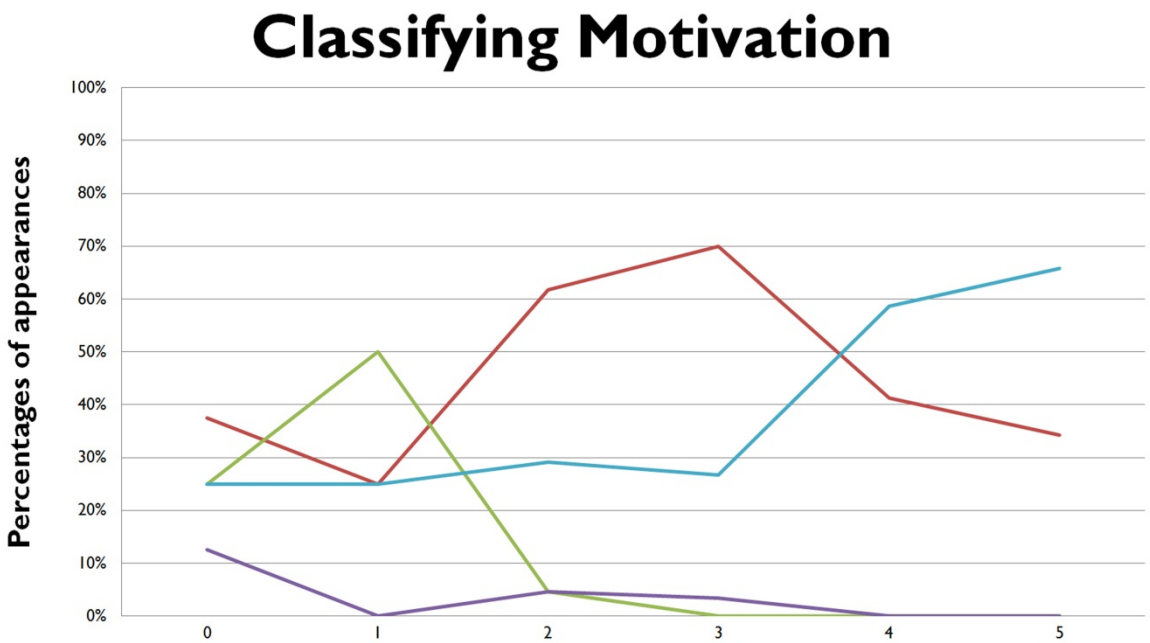
BJ Fogg. 2009. *Creating Persuasive Technologies: An Eight-Step Design Process*. Stanford University. Available: captology.stanford.edu

Attachments

Occurances of the four classes in motivation.

The four classes are: Algorithmic, Heuristic, Frustrations, and Interruptions.

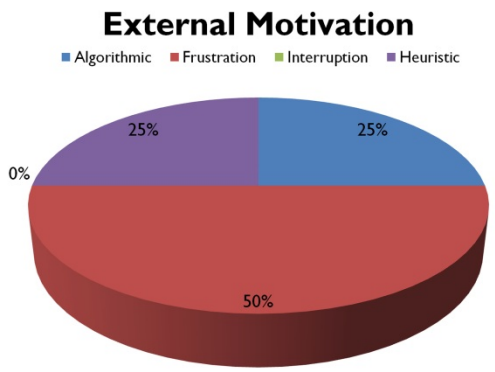
This graph shows how algorithmic tasks occur often in motivation level 2 and 3, but occur less often in the higher levels of motivation. Heuristic tasks take over in motivation level 4 (Integrated Motivation).



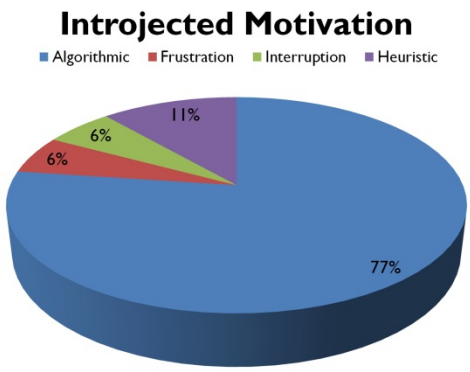
	0	1	2	3	4	5
Algorithmic	38%	25%	62%	70%	41%	34%
Frustrations	25%	50%	5%	0%	0%	0%
Interruptions	13%	0%	5%	3%	0%	0%
Heuristic	25%	25%	29%	27%	59%	66%

Occurances per motivation level

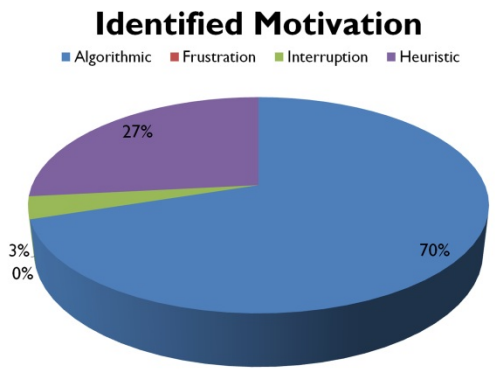
The five motivation levels with the amount of occurances of the four different categories.



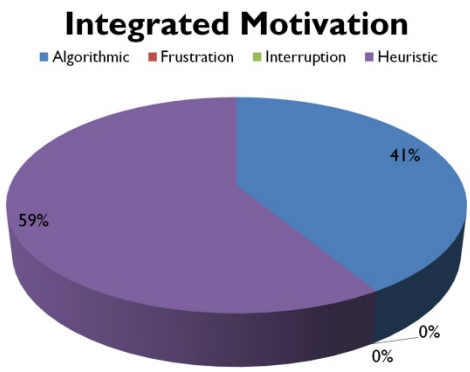
In total 8 tasks were documented.



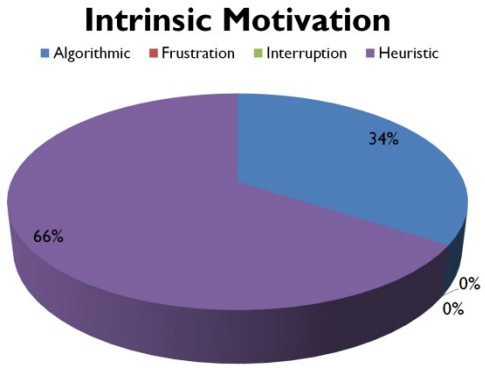
In total 35 tasks were documented.



In total 30 tasks were documented.

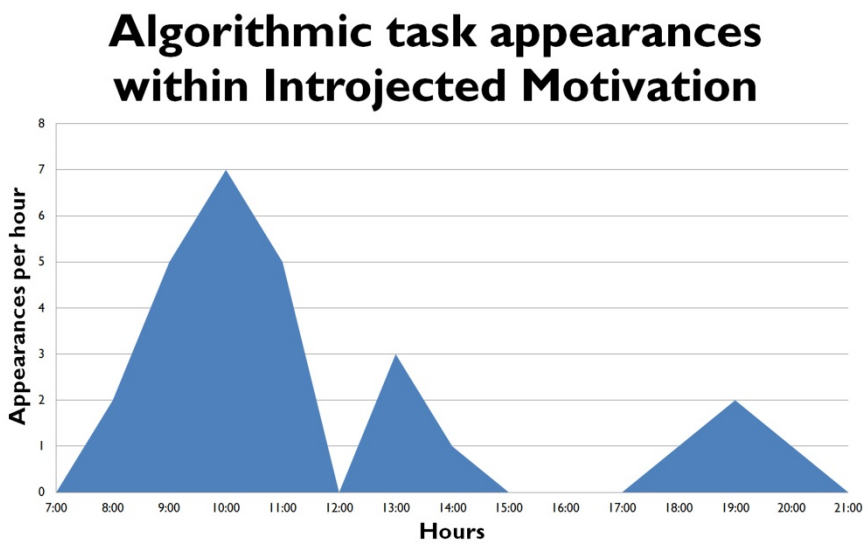


In total 46 tasks were documented.

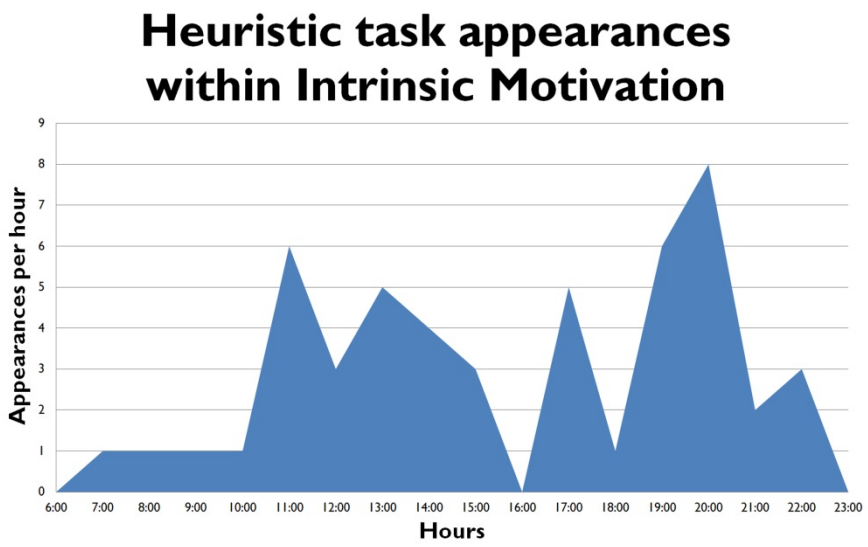


In total 76 tasks were documented.

Occurances by time of the day

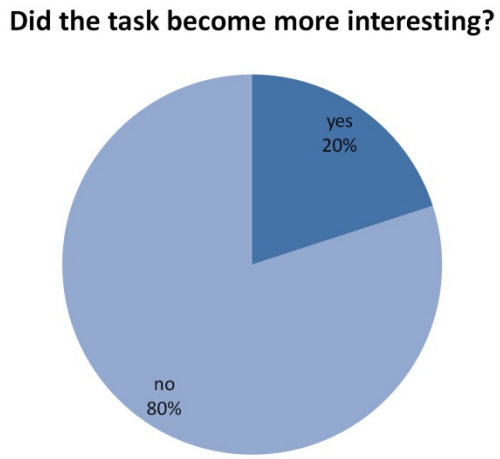


This figure shows the hours in the day in the horizontal axis, and the amount of appearances of tasks within these hours on the vertical axis.
58% of all documented tasks, were performed before 11 o'clock.

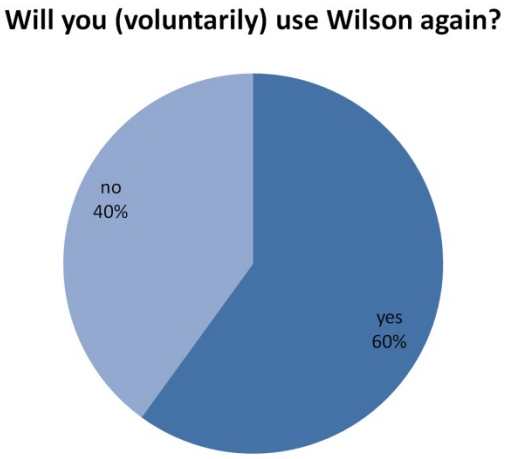


This figure shows the hours in the day in the horizontal axis, and the amount of appearances of tasks within these hours on the vertical axis.
92% of all documented tasks, were performed after 11 o'clock.

Insights from Wilson



8 of the 10 participants said the task itself didn't get more interesting by using Wilson. But 4 of them did mention that the interaction with the task did get more interesting.



10 participants. 6 of them said that they would like to perform the task again, if they could use Wilson. The other 4 claimed that he wasn't interesting enough, but they would like to perform the task if Wilson would interact more with them.