

SMASH IT OR CRACK IT.

*Designing interventions for emotional eaters to engage
in behavioral expressions of emotional distress*



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My family and dearest friends.. Without you, this would not be possible. I went through such hard times but you were always by my side (some physically, some spiritually) to support me, to calm me down and to make me believe in myself.

Now, I would like to open a special parenthesis for Burak and Ezgi, who were the closest witnesses of those darkest times. How lucky I am to have you. Thank you for your endless patience, encouragement, and support.

One of the biggest gainings of conducting a self-initiated project was to learn how mad I can go. Figuring out the boundaries always a good learning objective.

If you become emotional after these words and crave some chocolate to cheer yourself up, wait a minute, there is something for you in the following 150 pages. :)



EXECUTIVE SUMMARY

All human beings eat food, but not always with the same intention. For many people, food can bring a feeling of comfort, at least in the short-term. As a result, some people turn to food in an attempt to heal emotional problems. The term 'emotional (over)eating' has been defined as eating in response to emotional cues, often as a coping response to negative emotions like stress, boredom, loneliness, chronic anger, anxiety, frustration, and so on. Emotional (over)eating behavior can affect overall healthiness of a person in both the short and the long term. If untreated, it may lead to food addictions and even obesity.

The aim of the project is to transform current mindless and impulsive eating practice into an experience that cultivates awareness regarding emotional responses and eating behavior. The human-centered design approach will lead to come up with **design interventions** creating **attitudinal and behavioral change** on emotional eaters.

As a result of this self-initiated research & design project, two interventions were designed to tackle emotional (over)eating behavior; **SMASH & CRACK**. These are special snack containers which work as mediators between impulsiveness and food by bringing a physical interaction. They aim to enable emotional eaters to express/alleviate current emotional distress before reaching craved food via behavioral expressions. Thanks to interactions, impulsiveness is transformed into mindfulness. As a conclusion 'a mindful moment of indulging' prevents overeating of comfort foods and eliminates accompanying negative feelings.

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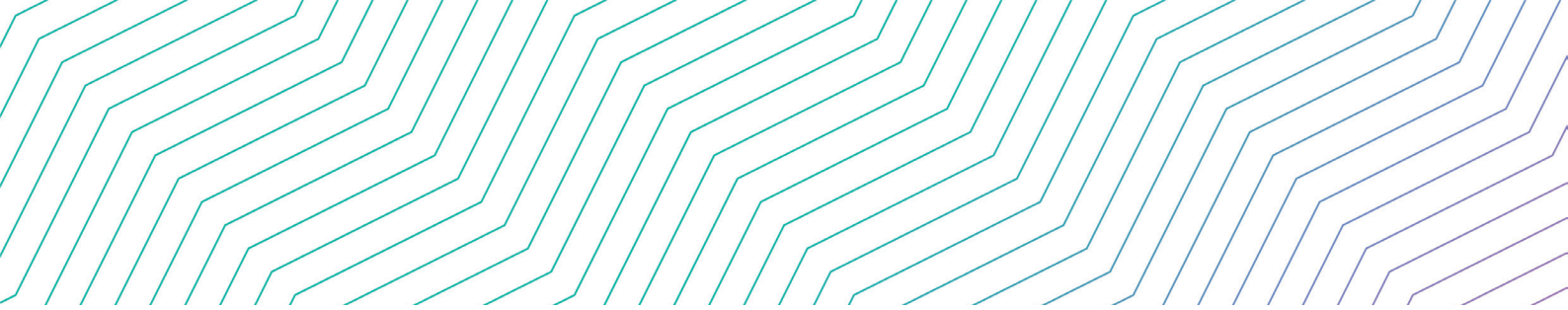
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INTRODUCTION

In this part of the thesis, you will find a brief explanation of the project, structure of the report and, design approach applied throughout the process.

THE PROJECT

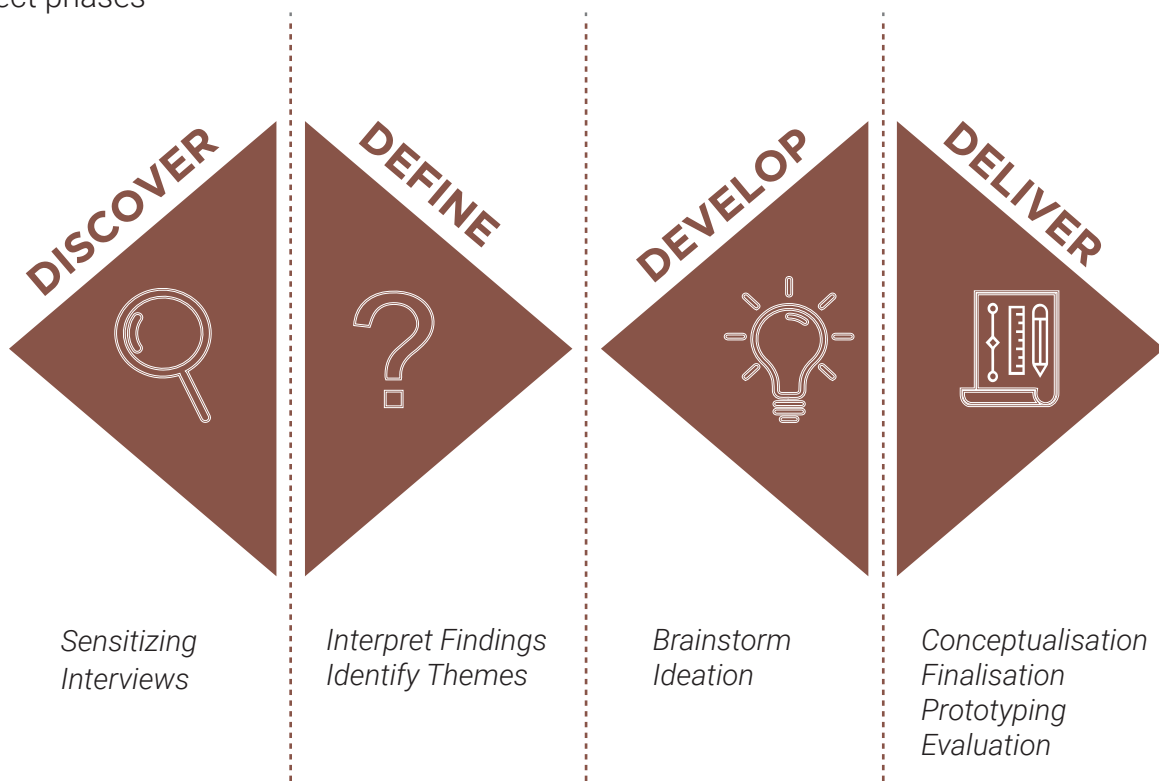
Problem definition

All human beings eat food, but not always with the same intention. For many people, food can bring a feeling of comfort, at least in the short-term. As a result, some people turn to food in an attempt to heal emotional problems. The term 'emotional eating' has been defined as eating in response to emotional cues, often as a coping response to negative emotions like stress, boredom, loneliness, chronic anger and anxiety, frustration, and so on. Emotional eating behavior can affect the overall healthiness of a person in both the short and the long term. If untreated, it may lead to food addictions and obesity.

In this project, I will analyze the abilities, concerns, feelings, practices, and interactions of emotional eaters, within their specified situation and context. Insights from these analyses will enable me to develop new interaction scenarios, helping emotional eaters to re-frame their unhealthy relationship with food.

The aim of this project is to transform current mindless and impulsive eating practice into an experience that cultivates awareness regarding emotional responses and eating behavior.

Project phases



Approach | Double diamond model has been applied during creative process.

THE REPORT

Design for Food & Eating Design Lab

This graduation project is a self-initiated research and design project within the scope of Design for Interaction Master's Program at the Technical University of Delft. It has been conducted within a lab in the Faculty of Industrial Design Engineering. The Food & Eating Design Lab aims to bring together designers and researchers with stakeholders in agriculture, the food industry, the hospitality sector, health professionals and any others who try to improve people's interactions with their daily foods.

Designer's perspective on topic

Apart from a highly clinical perspective on emotional eating, there is an opportunity for a designer to approach topic from the perspective of experience and interactions with food in the current context.

Since we are, as designers, trained in understanding the impact objects have on people's lives, their experiences, motivation, and their behaviour, I am able to map out current interactions in the context of emotional eating behavior by pointing out weaknesses, needs, and motivations of those people.

The human-centered design approach will lead to come up with **design interventions** creating **attitudinal and behavioral change** on emotional eaters.

Structure

Chapter 1 | Literature Research

This chapter aims to convey insights gained from literature study gathering knowledge from psychology, sociology and nutritional sciences to better understand emotional eating notion.

Chapter 2 | Theory & Model

This chapter explains which theoretical models utilised during the project.

Chapter 3 | Contextual Research

This chapter aims to communicate purpose, process and outcomes of contextual research study focusing on real-life experiences of emotional eaters and current interactions around them.

Chapter 4 | Design goal

This chapter illustrates the define phase in design process. Target group is defined and design goal is formulated in this chapter to lay the foundation of conceptualisation phase.

Chapter 5 | Conceptualisation

This chapter explains the creative process of defining design spaces, ideating, selecting and conceptualising intervention ideas with an iterative approach.

Chapter 6 | Finalisation

This chapter explains how concepts were further developed and detailed in terms of material, size, structure and usage scenarios.

Chapter 7 | Evaluation

This chapter aims to communicate the final evaluation session outcomes and further recommendations as well as conclusions and reflections.



STRESS

Chapter 1

LITERATURE RESEARCH

In this chapter you will find a summary of an extended literature research conducted to gain knowledge on human-food relationships, influence of psychological needs and emotions on individual's eating behavior, mechanisms and contributing factors of emotion-induced eating behavior, health implications and, current professional and personal strategies to cope with emotional eating.

1.1 PURPOSE

The aim of contextual research was to explore the context of emotional eating behavior, to map out current interactions and personal experiences. The insights gained from this phase are going to serve as a basis to designate possible intervention areas.

The following research questions were formulated to be answered by literature research:

RQ1: Why emotional eating is bad for health?
What are the health implications of emotional eating?

RQ2: Why do people establish certain relationships with food besides its primary function as fuel?

RQ 3: How emotions influence eating behavior?
What is emotional eating?

RQ 4: What are the mechanisms behind "emotional eating" behavior?
What is emotion regulation?

RQ 5: What are the factors/determinants that may lead to emotional eating?

RQ 6: How to diagnose an "emotional eater"?

RQ 7: What are the current strategies and interventions aimed at emotional eating?

1.2 Preventive healthcare

relation with emotional eating

With increasing awareness and developing technology, the importance of 'prevention' in healthcare gained popularity. Thanks to the trend in preventive care, interventions aiming to transform unhealthy behaviors of people, which may lead to negative consequences on overall healthiness and wellbeing, started raising. One of the medical fields which can greatly benefit from preventive healthcare is 'nutrition and dietetics'.

Every year, the number of obese and overweight individuals multiply worldwide. Obesity develops over time and once it has done so, is difficult to treat. In this sense, obesity prevention gained importance and interventions can be implemented in different levels based on the seriousness of symptoms and risk factors (See figure 1).

Preventing obesity is possible by targeting constructs of obesity with attitudinal and behavioral interventions. These interventions may change people's perception, namely attitudinal, or target the factors which may lead to excess weight gain; such as consuming calorie-dense foods or overeating, namely behavioral, or both.

One of the many constructs of obesity is deemed as 'emotional eating' which is explained in detail in the following sections of this thesis. In the scope of this graduation project, target group of to-be-designed interventions will be individuals engaging in emotional eating behavior and use over/eating as a primary emotion regulation strategy.

Why is addressing emotional eating important?

Emotional eating has important physical and psychological health implications. For example, it is related to higher weight status, eating disorders (e.g. binge eating, bulimia nervosa) and mental disorders like depression (Geliebter & Aversa 2013). Previous studies (Lazarevich et al, 2016) stated altered eating behavior obtained at younger ages can continue in older ages and cause weight gain and other chronic medical conditions. Besides that, emotional eaters are in high risk of developing food addictions due to consuming large amounts of comfort foods.

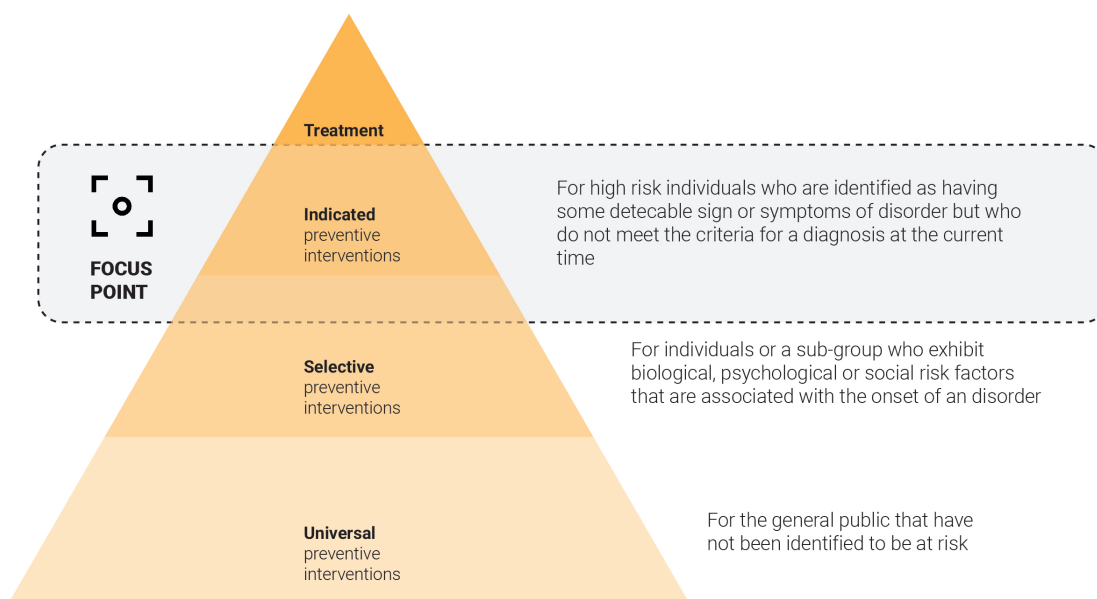


Figure 1 : Levels of preventive interventions based on seriousness of symptoms

1.3 Human-food relationship

Food is the primary source of life for us. Every human being eats food but not with same motives behind. We may eat a snack to quickly mute our belly and keep working, we may give a feast to cherish our loved ones in dinner, or we may use food as a means to replace annoying feelings with pleasurable ones. As we see, food does not only fulfill a person's physiological needs, like the amount of calorie needed for body to function, but also plays an important role in fulfillment of social and psychological needs as well (Robinson et al. 2004).

The relationship that a person establishes with the food is directly affected by three interrelated needs of a person (Figure 2). These needs influences which specific food is consumed, where it is consumed and even how much it is consumed.

Imagine a birthday party of your closest friend, there is probably a birthday cake ready on the table. It may not be welcomed if you refuse to eat because the cake is not there to fill your hunger but to represent welcoming of new age. Eating together with friends in this scenario stands for cherishing the moment spent with people you care.

In a different context, food is used in some religious ceremonies as well. For example, during the eucharist, which is a sacrament, Catholics consume bread and wine as a way of remembering Jesus Christ's last meal before he died, Here, the food is acknowledged as a part of something greater than nutrients, which is religious beliefs. These two examples are social occasions prompting people to eat regardless of hunger.

On the other hand, psychological needs may, also, bring a desire to eat either out of habit, because you are emotional or upset, or because it tastes good and is "fun" to eat. Everyone might recall similar memories where they indulge in a bag of chips or chocolate when feeling down or see eating as an activity to keep themselves busy when they feel purposeless. However, when this behavior becomes habitious and person's eating behavior is altered, then harmless indulgence moments may turn into serious health problems.

So, how does it work? Why do some people turn to food under particular feelings? Why are there some foods associated with certain feelings?

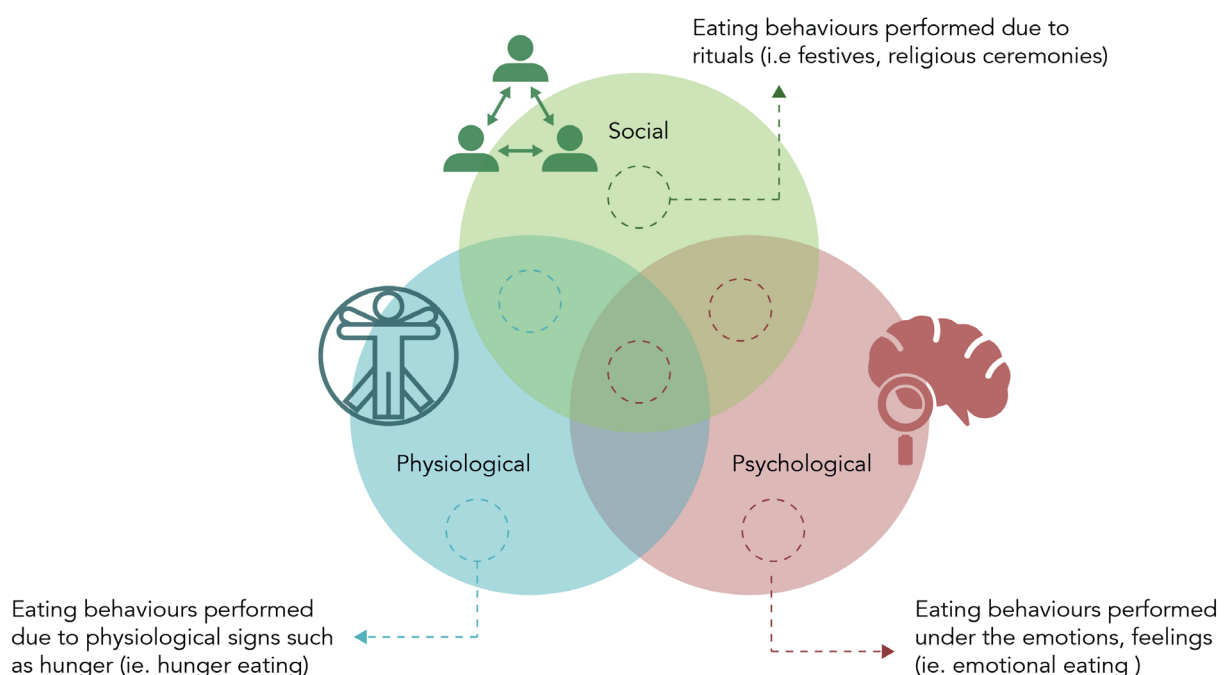


Figure 2 : Interrelated needs of a person

1.4 Variability across emotions

We mentioned the psychological needs of an individual is one of the reasons for eating practice or influence it. To strengthen this argument, there should be a detailed explanation of how this phenomenon occurs. In the scope of this project, we will focus on the underlying cause of our psychological needs: emotions, and their relation with eating behavior.

Emotions are defined as a positive or negative experience that is associated with a particular pattern of physiological activity.

Not every emotion results in the same eating behavior in every person, some people may increase their food intake, others may lose their appetite or no change may be observed in eating behavior. So, why this happens?

While handling such complex relations, it is essential to map out how different emotions and their dimensions influence eating behavior. There are three dimensions used to classify emotions; valence (pleasure-displeasure)(positive-negative), arousal and intensity (Figure 3) (Macht, 2008). According to Macht (2008) emotions having different valence, intensity or arousal lead to different changes in eating behavior.

Experiencing positive and negative emotions act differently in affecting eating behavior. It is claimed that (Macht, 2008) low-arousal emotional states such as boredom, loneliness increase the food intake more in comparison to high-arousal states like fear.

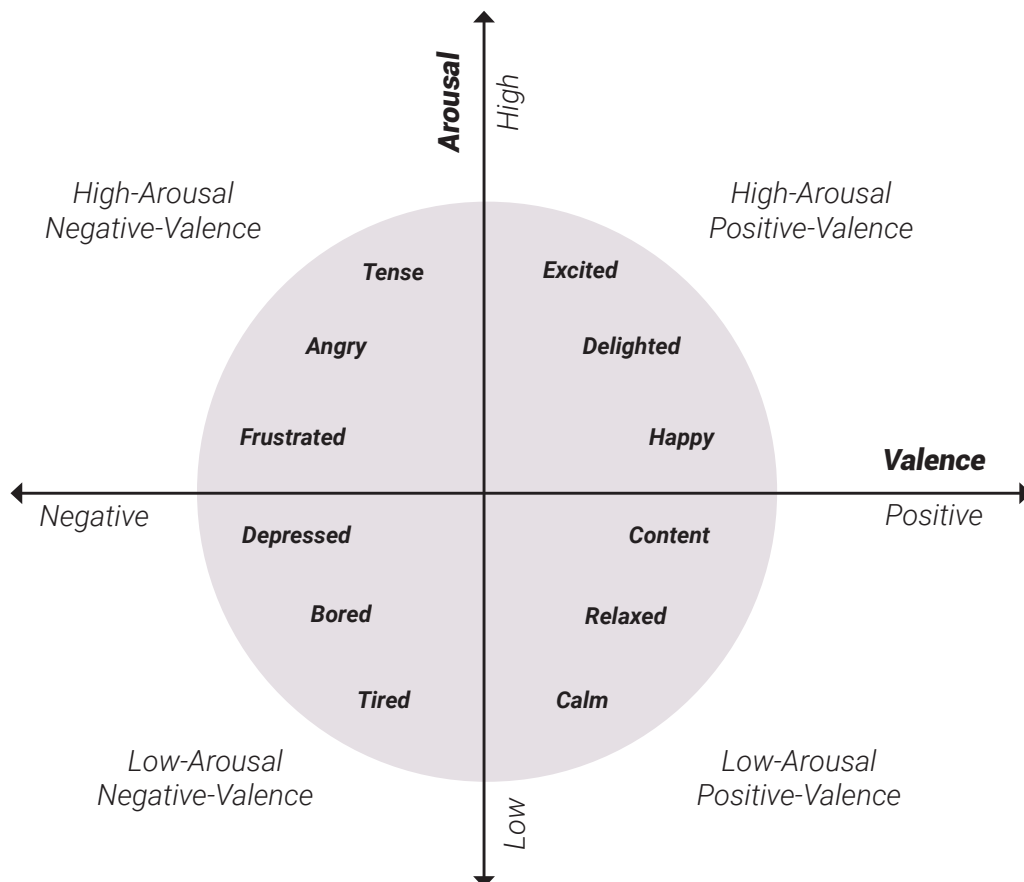


Figure 3. The two-dimensional circumplex emotional model adapted from Russell (1980)

There is quite a complex relationship between emotions and food. According to Macht (2008) there are five categories of emotion-induced changes of eating: emotional control of food choice, emotional suppression of food intake, impairment of cognitive eating controls, eating to regulate emotions, and emotion congruent modulation of eating (Figure 4).

Based on the proposed model, changes in eating behavior, which is influenced by emotions, might be the outcome of intervening of eating with emotions, a spin-off of emotions or a consequence of emotion regulation strategies.

Sometimes, emotions may be originated from the food itself and let us decide what to eat nor not. For example, if a person is allergic to gluten, s/he may feel fear of having a reaction in her body and avoid food consisting of gluten. Which is an example of control of food choice.

Let's imagine another scenario. Encountering with a thief in the middle of the night leads to increased tense and fear thus, thinking about something to eat may be the last thing coming in mind due to decreased appetite.

Or, let's say, a meal which you eat because you are starving may boost your mood because it is perfectly prepared. Just the contrary, it may awake disgust due to poor preparation.

We came across similar situations in our everyday lives without noticing. In the scope of this project, we will approach to relationship between food and emotions from a different point of view.

This project focuses on behavior of using food to regulate emotional status. There is a particular name given to this behavior: emotional eating. Although this behavior is still being studied by researchers and psychologists to better understand, this thesis will try to explain the notion, reasons and how this behavior occurs thanks to existing knowledge from literature.

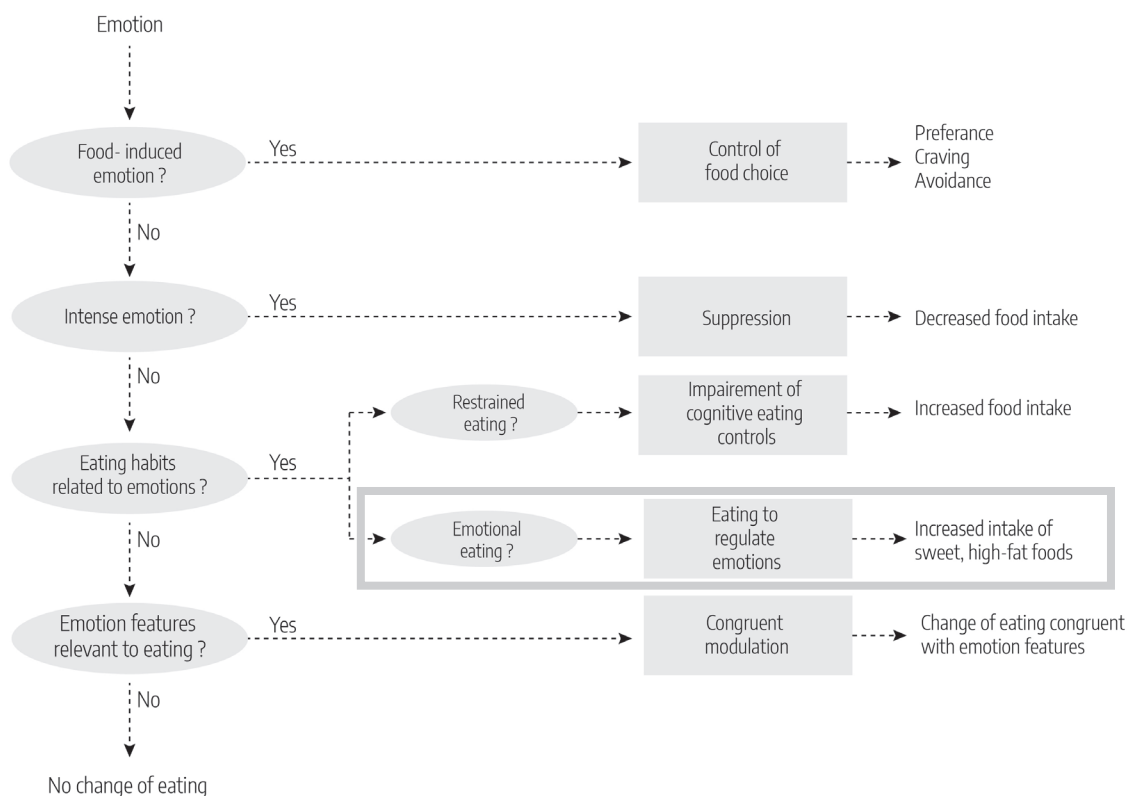


Figure 4: A flow diagram to predict basic classes of emotion-induced changes of eating

1.5.2 Emotional short-circuit

In the case of an emotional eater, it is easier to illustrate a typical sequence of actions and affectivity (Figure 7).

When negative emotions descend and start making a person feel uncomfortable, the mind looks for the quickest way out from the current situation. Adopted ways of regulating emotions may differ from person to person however getting through to comfort food is seen as the primary way for an emotional eater.

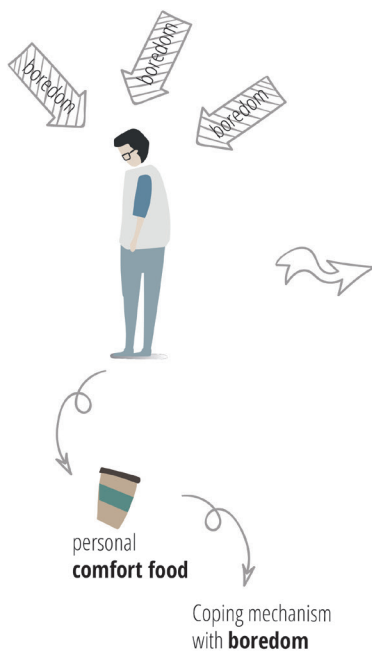
Although comfort foods bring a temporary gratification at the time of eating, which makes person feel better, overconsumption of food item leads to feeling uncomfortable with a stuffed tummy.

Besides being physically uneasy, there is another level; psychological consequences. Person falls back to his/her initial negative emotional state after overeating. This is because, food does not cut off the underlying reason of negative emotions, instead it works as a temporary distraction.

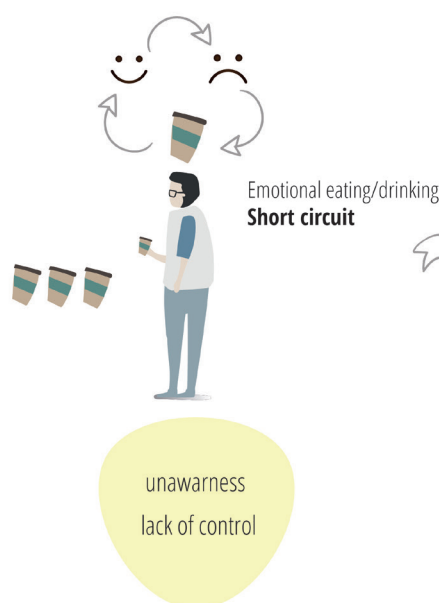
People usually feel guilty and ashamed after gaining unnecessary calories and be alone with unsuppressed negative emotions. This situation creates a short circuit of positive and negative emotions triggered and influenced by eating practice.

In conclusion, it brings us the conclusion that underlying reason of emotional eating behaviour might not be experiencing negative emotions but acquiring unhealthy mechanisms, overeating comfort foods, to regulate emotions (Evers et al, 2010).

1. Being exposed to negative emotions



2. Emotional eating patterns



3. Negative health outcomes

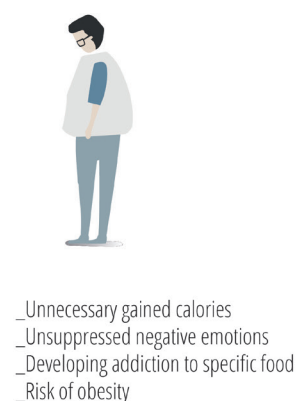


Figure 7: Typical sequence of an emotional eating period

1.5.3 Psychological mechanisms behind emotional eating behavior

In this part, we will try to understand what is the driving force behind emotional eating. There are theories from psychology field to explain mechanisms behind emotional eating behavior. (Evers et al, 2010)

Three theories

Theory one: Emotional overeating is an attempt to escape from negative self-awareness, narrowing down the attention. Attention is focused on the immediate stimulus environment and away from more meaningful levels of cognition, allowing the individual to avoid dealing with ego-threatening information.

Theory two: Emotional overeating increases the experience of positive emotions. Individuals derive pleasure from the consumption of food because of its qualities (taste, odor) or because of the joy of eating “banned” substances.

Theory three: Masking theory, posits that overeating is an attempt to misattribute perceived stress to eating, so as to distract from the original source of distress.

All three theories suggest that people experience negative affect before overeating happens. But, they cannot handle the affect properly so, it causes them to deploy a maladaptive emotion regulation strategy.

Therefore, emotional eating phenomenon is not necessarily associated with the experience of negative emotions per se but rather with the lack of healthy emotion regulation strategies available to regulate negative affect. (Evers et al, 2010) At that point, it is important to make sense of what emotion regulation is and how it works. In the following pages, this notion will be addressed.

1.5.4 Emotion regulation

The concept of emotion regulation refers to the efforts people initiate to influence the experience and expression of their emotions. Emotion regulation has been described as the process by which people modify their emotions, their response to the emotions or the situations that evoke emotions so as to react suitably demands originating from the condition. Particular emotion regulation strategies have generally been argued to be “adaptive” or “maladaptive” based on their immediate effects on affect and behaviour. (Brockman, et al. 2017) (Figure 8).

Maladaptive behaviors inhibit ability to adjust healthily to particular situations. In essence, they prevent people from adapting or coping well with the demands. In other words, they are more harmful than helpful (Brewer et al, 2018). Thus we can speculate that overeating results from maladaptive emotion regulation. More specifically, expressive suppression, as a maladaptive emotion regulation strategy, result in increased food intake compared to other emotion regulation strategies.

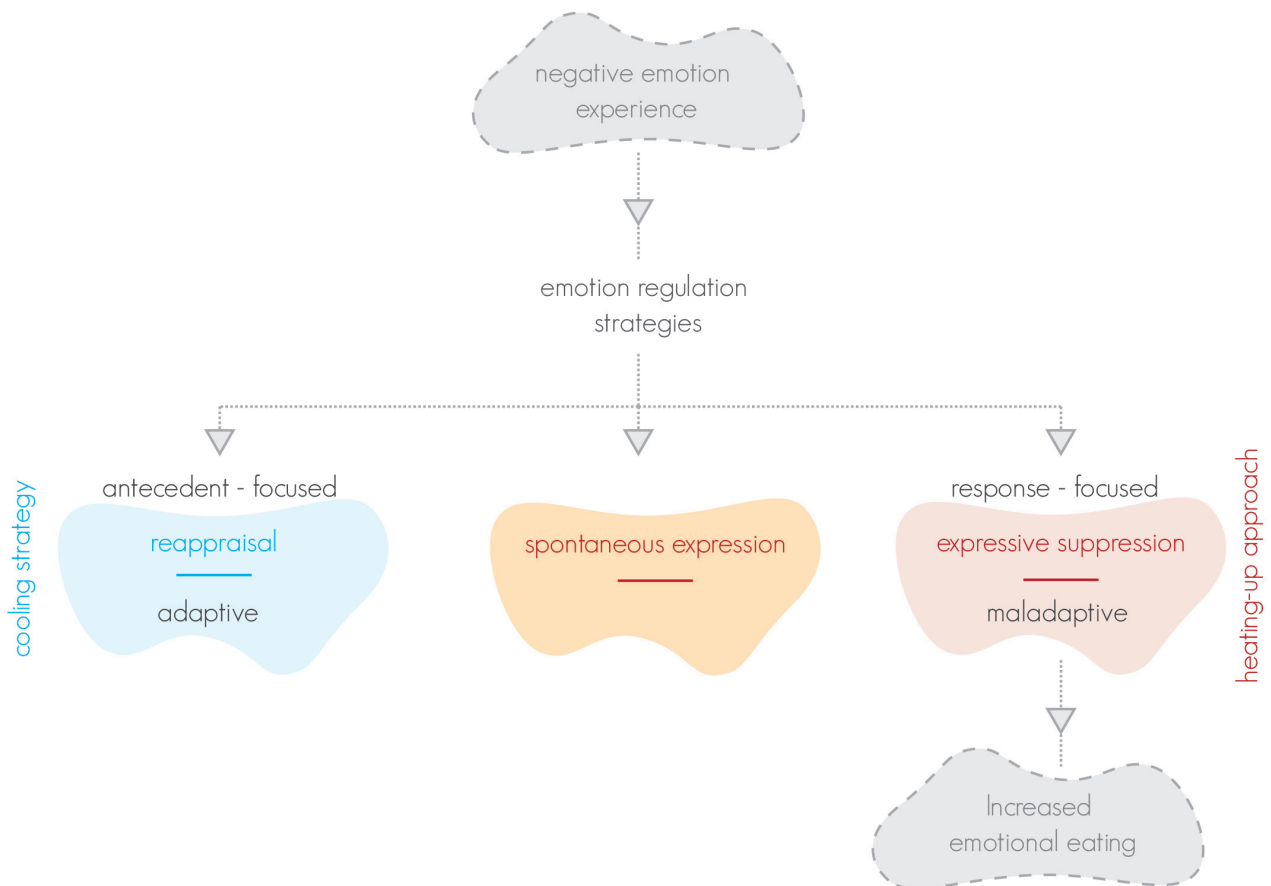


Figure 8: Emotion regulation strategies and their influence on emotional eating behavior

Emotion regulation strategies can be divided into three;

Antecedent- focused strategies take place before emotion response tendencies have become fully activated and have changed behavioral and peripheral physiological responding. Reappraisal is an adaptive emotion regulation strategy and seen as a cooling strategy.

Reappraisal can be exemplified by thoughts like “When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm” and “When I want to feel less negative emotion (such as sadness or anger), I change what I’m thinking about.” Thus, changing the point of view while experiencing emotional distress refers to cooling strategy.

Response-focused strategies occur once an emotion has already been fully triggered, thus after response tendencies have been activated (Gross & John, 2003). Expressive suppression is a maladaptive emotion regulation strategy and it is seen as a heating up approach.

Expressive suppression refers to the reduced or non-expression of emotions when in an emotional state (Gross & John, 2003). It can be exemplified by thoughts like “I control my emotions by not expressing them” and “I keep my emotions to myself”.

Spontaneous expression refers to showing current emotional status without filtering or manipulating at the exact time when going through an emotional state.

Emotional eaters have difficulty in recognizing and managing their emotional states and substitute effective emotional regulation for eating (Lazarevich, et al 2016). Eating is a kind of expressive suppression strategy which leads to increased emotional eating. Food is seen as a natural reward or an instant gratification habit by people using maladaptive coping strategies for negative emotions (Lazarevich, et al 2016).

In addition, expressive suppression is associated with increases in **physiological responding** and **decreases in behavioral expression**, but it fails to diminish experience of emotion. Also, it has been stated that recurrent emotional suppression is associated with less social support, symptoms of depression, lower self-esteem, less life satisfaction, and lower overall well-being (Gross & John, 2003).

Based on a study done by Evers and colleagues (2010), as higher consumption of calorie-rich snack foods can be acknowledged a negative outcome healthwise, suppression resulted in unhealthier behavior than did reappraisal and spontaneous expression. A powerful example is Vohs and Heatherton’s (2000) finding that dieters increased ice cream consumption after having suppressed their emotions, whereas this was not the case when they were allowed to express their emotions freely.

It has been suggested that it may not necessarily be the emotion itself that elicits the change in eating behavior but rather the manner in which the emotion is dealt with (Wiser & Telch, 1999). This approach clarifies why some people turn to food and some do other activities (e.g. calling a friend vs. indulging in ice-cream while feeling lonely) while experiencing same emotions.

To sum up, even though it may sometimes be impossible to avoid experiencing negative emotions, it may be possible to change the way we regulate these emotions and thereby remove an important provocateur of emotional (over) eating.

1.5.5 Factors & determinants having influence on the behavior

There are some additional factors mentioned in the body of literature which might be responsible for an individual's emotional eating behavior. Touching upon them is necessary to make sense of whole the picture of factors having an influence on this concept.

Some individuals tend to engage in emotional eating behavior more than others. The underlying reasons may be something that people's own choice like "dieting" or something composing their personality like "alexithymia".

Alexithymia

Alexithymia is defined as difficulty identifying feelings and distinguishing between feelings and the bodily sensations of emotional arousal. A research found that individuals who were poor in recognizing their feelings in response to emotional arousal consumed more foods (Tan et al, 2014) because those people with high alexithymia mistaken emotional arousal as hunger cues. It has been speculated that when individuals are confused between emotional arousal and hunger, they may mistake the arousal sensation as hunger cues that lead to overeating (Kaplan & Kaplan 1957 van strien & Ouwens, 2007).

According to Kaplan and Kaplan (1957), it is possible that intense emotional arousal, including heightened stress levels causes individuals to become insensitive to their own hunger and satiety cues.

In the scope of this project, the sample group was asked a couple of questions to detect whether they show indications of this personality trait. None of the participants mentioned any difficulty in differentiating emotions and states prompting them to eat.

Dieting | Restrained eating

It has been speculated that people who are trying to avoid certain foods tend to be tempted to those foods more and more. In other words, people tend to think more about 'banned' or 'bad' foods when they are on a diet and become more sensitive to triggers. Thus, emotional eating behavior is observed more among dieters than normal eating population.

There are particular differences in between physical hunger and emotional hunger in terms of signs of hunger on the body, eating speed, food choice, eating environment and timing (Figure 9).

PHYSICAL HUNGER		EMOTIONAL HUNGER
Stomach Belly	Where to feel it?	Mouth watering Need to chew sth Chest
Predictable Gradual 3-5 hours after last meal Regular	Timing	Urgent Hormonal Evening When alone
Slow Mindful	Rate	Rapid Out of control
Open to diverse foods	Choice's	Highly specific food craving
Eat with others	Context	Eat in isolation Shame

Figure 9: Comparison of emotional hunger and physical hunger

1.5.6 How to diagnose?

an emotional eater

Although emotional eating is mainly associated with overweight and obese people, as it is a construct of obesity and eating disorders, normal weighted (non-clinical) people, also, engage in emotional eating behavior to some extent in their everyday life. That is, in healthy, non-restrained individuals the phenomenon of emotional eating has been observed as well.

While diagnosing people with emotional eating behavior, it is required to measure the relationship between eating behaviour and emotions. To identify the seriousness (level) of emotional eating behavior for an individual, the Emotional Eater Questionnaire (EEQ) was developed by Garaulet (2012).

The EEQ contains ten questions with four possible answers for each question (see Appendix) (Figure 10). Total scores are classified into four groups named non-emotional eater, low emotional eater, emotional eater and, very emotional eater.

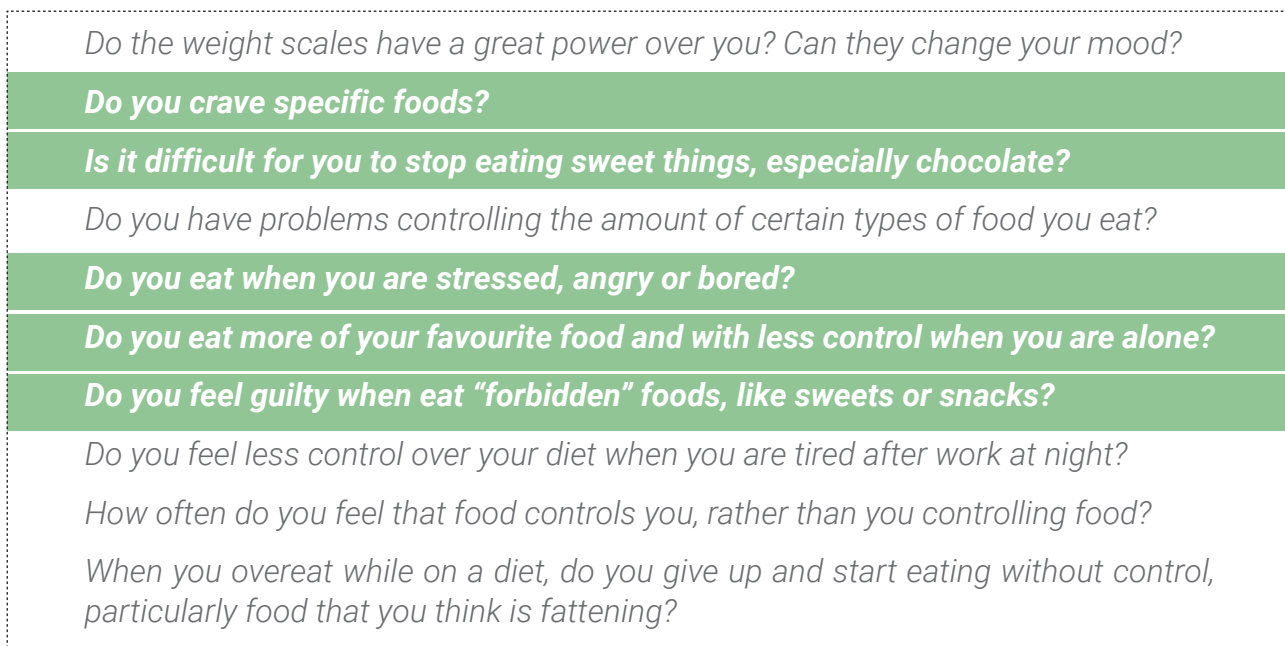


Figure 10: Questions of Emotional Eater Questionnaire

1.6 Current strategies & interventions

aimed at emotional eating

There are existing strategies and interventions used by dietitians and psychologists to treat or overcome emotional eating behavior.

Teaching intuitive eating

In the literature, it was mentioned that people who work with emotional eaters (dietitians, psychologist etc.) could consider targeting individuals' eating dysregulation when designing interventions. It was found important to design an intervention that teaches participants to focus on their internal cues (e.g. rumbling stomach) to guide eating behaviors. There are hunger-fullness scales to consult while finding out hunger state of individuals.

It is seen possible that by teaching adults to be aware of internal signs of hunger and to be able to differentiate between emotional arousal and hunger, they may reduce their overeating behaviours in response to stress and other negative emotions.

Emotion and stress management

Since the problematic eating behavior is multilayered with psychology and diet, only focusing on one aspect does not provide effective results. Thus, research findings (Bennett et al, 2013) indicate a multidisciplinary intervention focusing on "emotion and stress management" in addition to dietary behavior change should be developed to reduce the potential health implications associated with emotional eating.

Daily meditation, physical exercising and other stress management techniques such as guided imagery, where the individual thinks of another place by engaging in all senses for relaxation, are recommended in dealing with and building resilience for emotional eating.

Mindfulness-based interventions

Whereas emotional eating can be perceived as an escape from experiencing negative emotions (Cochrane et al, 1993), mindfulness encourages willingness to approach and embrace emotions, and is, therefore, likely to reduce avoidance based coping, such as emotional eating.

Mindfulness is seen as a promising strategy to be used in emotion regulation, so in emotional eating, according to Brockman et al (2017) but it is highly dependent on the context.

One of the interventions in the field is 8 week mindfulness courses including mindful eating (awareness of sensations such as taste) (Figure 11), awareness of physical sensations (hunger, satiety, craving and stress), awareness of thoughts and feelings related to eating (e.g., inner self-talk, beliefs, judgments, expectations, (diet)-rules, fear, sadness, shame and guilt), acceptance and non-judgment of sensations, thoughts, feelings and body, awareness and step-by-step change of daily patterns and habits of eating and physical activity.



Figure 11: Questions to be asked while doing mindful eating

1.7 Conclusions

Cognitive-behavioral therapy

The initial treatment of emotional eating behavior is done by cognitive-behavioral therapy techniques given by clinical psychologists and guided self-help programs.

These programs include teaching people to identify their own sense of eating due to emotional distress, recognizing the emotion and providing a way to manage that specific emotion more effectively. Psychologists teach emotional eaters dealing with problems, causing emotional distress, by breaking them into smaller parts, focusing on current problems and how to change negative thought patterns (Figure 12). These techniques mostly used with people having eating disorders (e.g. bulimia nervosa).

Counseling

Counseling is a type of talking therapy in which emotional eaters can talk to counseling psychologists about the thoughts and feelings that they cannot handle. This method aims to overcome emotional issues by sharing and receiving support and, mostly used with milder mental health challenges.

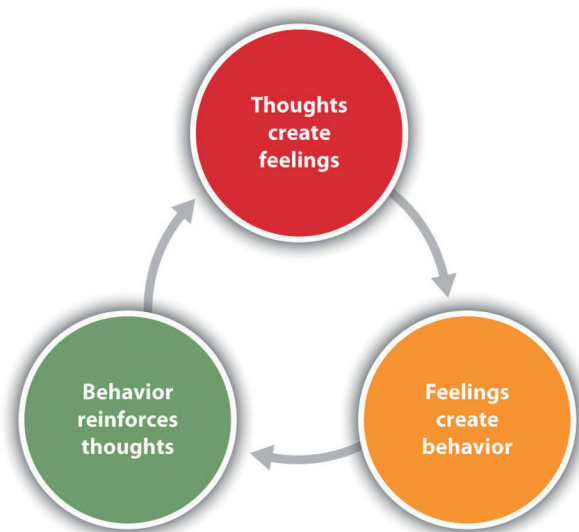


Figure 12: Three components of cognitive behavioral therapy

RQ* 1,2,3

Emotional eating behavior is "expressive suppression" used to regulate and cope with (mostly) negative emotional arousal. It is a common behaviour among people which may cause greater health problems if turned into a habit. The most significant health outcomes are weight gain, food addiction, obesity, and psychological disorders like depression.

RQ4,5

Psychological mechanisms, laying behind behaviour, changes from misattributing perceived current stress to distract from source of negative emotional stimulus, trying to boost current mood, or trying to narrowing down focus to prevent negative self-awareness.

Dieting and alexithymia are some of the factors negatively contributing to emotional eating behavior.

RQ6,7

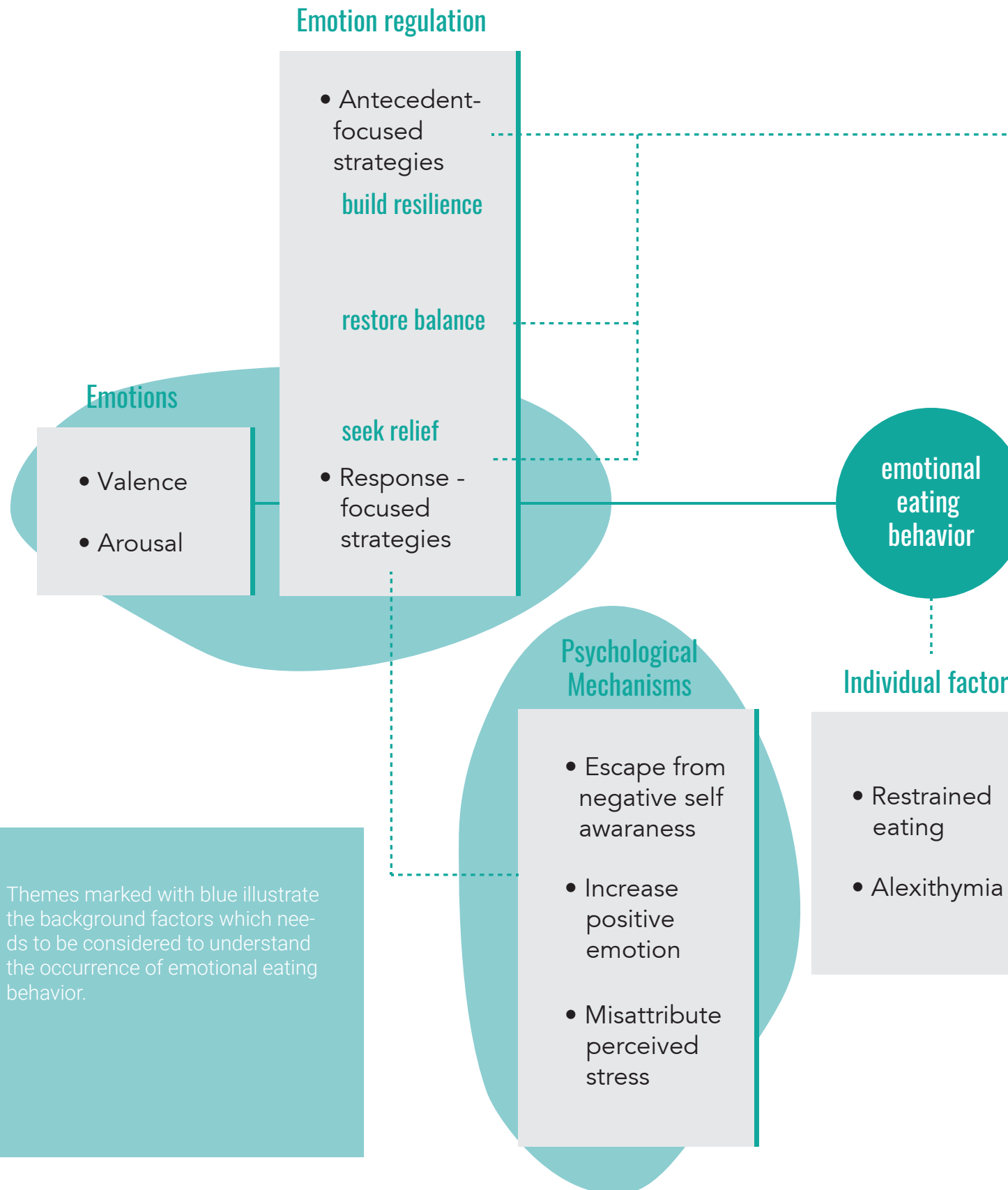
There is an EEQ to screen individuals regarding the seriousness level of emotional eating behavior. Professional and personal strategies employed to cope with this behavior include teaching intuitive & mindful eating and, emotion & stress management techniques, including meditation and physical activities. As the seriousness of behavior increases, cognitive-behavioral therapy is used by psychologists to change thought-behavior patterns leading to overeating based on emotional cues.

To sum up, besides approaching the topic from a psychological perspective, there is an opportunity to address emotional eating behavior from the perspective of interactions and experiences in the context.

* RQ: Research question

1.8 Conceptual framework

of literature review topics



Themes marked with blue illustrate the background factors which needs to be considered to understand the occurrence of emotional eating behavior.

Professional strategies

- Emotion and stress management
- Teaching intuitive eating
- Cognitive behavioral therapy
- Mindfulness-based interventions, mindful eating

Personal strategies

- Changing food choice
- Non-food activities

Health implications

- Food addiction
- Obesity
- Psychological disorders

Spin off's

- Mindless eating
- *Overconsumption

This conceptual framework illustrates a complete overview of themes covered in literature research and their relationship with each other.

Themes marked with a orange background, spin off's of emotional eating, professional and personal strategies to avoid this behavior, represents the foundation of this project.



Chapter 2

THEORIES

In this chapter, theories that facilitate reviewing emotional eating through the perspectives of motivation and behavior will be introduced. Then, their relevance with the project will be discussed.

2.1 Self-Determination Theory

Self-determination theory suggests that all humans share three basic psychological needs which are autonomy, competence and relatedness (Figure 13). Sufficiency in all three needs brings motivation to a person in his decision-making process and behavior. Social and physical environment can promote or hinder these needs (Gagné & Deci, 2005).

Autonomy is supported by attempting to grasp and acknowledge the person's wishes, preferences and perspectives, conveying an understanding of their point of view, providing a rationale for engaging in a behavior, and providing choice in how to behave. Supporting someone's autonomy also means refraining from trying to control or pressure them to act in a certain way.

Competence is supported by providing the person with optimal challenges and opportunities (specific goals that are challenging enough, but not overwhelming), encouraging their sense of initiation, providing structure to mobilize and organize behavior, providing consistent and clear expectations, and providing relevant feedback.

Relatedness is supported when others are involved and show interest in the person's activities, are empathic in responding to their feelings and convey that the person is significant, cared for, and loved.

When these needs are optimally supported, evidence suggests that people are more autonomous in their behaviors, are more likely to persist at their behaviors, and feel better overall. In this case, they need more assistance in understanding their own goals, identifying barriers, and gathering the knowledge, skills and support to re-engage in the behavior.

In the scope of this project, self-determination theory offers a framework to analyse current behaviors of emotional eaters from the basic needs perspective. In the case of emotional eating behavior, inhibited motivation to change behavior may result from insufficient fulfillment of all or some of the aforementioned needs.

Conclusions

To-be-designed interventions might boost people's motivation to change current eating behavior by targeting some or all of the three aforementioned needs. For example, autonomy might be supported by leaving a space for eater to independently decide what to eat rather than a restricting approach. Or, via designing triggers (e.g setting small challenges), in line with an emotional eater's capacity, training her competency in controlling the behavior might lead to increased motivation (e.g. thanks to the feeling of accomplishment). In terms of relatedness, including emotional eaters social environment into behavior change process in an encouraging and supportive way might promote motivation for change.

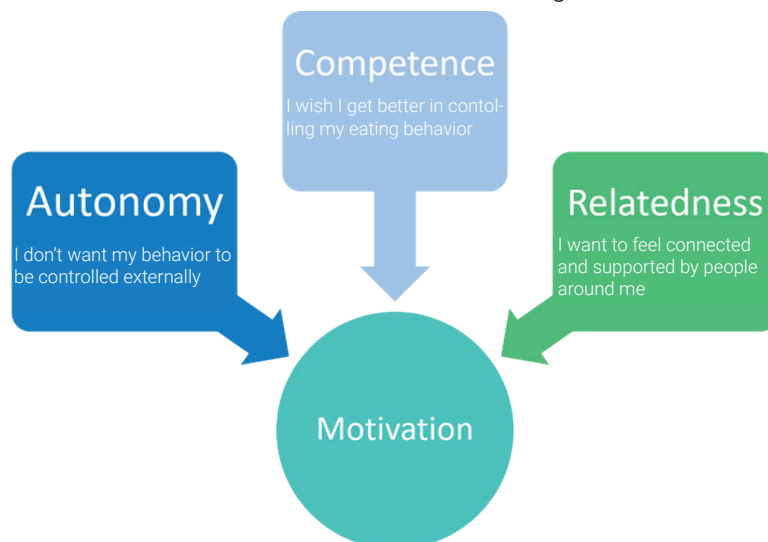


Figure 13: Self-determination theory model

2.2 Designing for dilemmas

In the scope of this project, it is important to remember emotions are the outpouring of personal values and concerns. Our personal values and concerns determine our decisions in life.

Thus, same concerns may define an individual's behavioral response to a particular situation. In our daily life, situations and context elements (products, environments, people etc.) might evoke certain emotions in us and based on our concerns we take actions. For example, a student may feel bored while studying for an exam because she thinks topics, of course, do not address her point of interest, and may drop out of course. However, decision making may not be that easy all times, especially if there is a conflict of personal concerns. Like, same student may want to complete her studies on time without any extension, thus she has to keep working even if topics are irrelevant. These conflicting concerns may lead to dilemmas.

In design field, it is believed that personal dilemmas can be used as an opportunity to inspire fruitful user-centered design activities (Ozkaramanlı et al, 2016). Ozkaramanlı et al. (2016) suggests three ways of designing with dilemmas: resolving dilemmas, moderating dilemmas, and triggering dilemmas.

Resolving dilemmas

These interventions aim to design products, services, or environments in such a way that

conflicting concerns can be simultaneously fulfilled thus, people do not have to choose one option over the other.

Moderating dilemmas

These interventions aim to help people manage their dilemmas by explicitly prioritizing one concern over the other thus, eliminates the hesitation time in decision making.

Triggering dilemmas

These interventions aim to draw attention to the concerns aroused by the dilemma and thus create awareness about the dilemma itself, without necessarily fulfilling any one of these concerns. This approach can particularly be useful when people do not realize the consequences of their actions in the first place.

Conclusions

There is an undeniable dilemma in emotional eating periods as illustrated in figure 14. On one side there are immediate concerns like having pleasure, distracting attention from emotional distress and experiencing relief with indulging, and on the other side distant concerns regarding being healthy namely avoiding weight gain and consuming high calories. Although engaging in emotional eating behavior, already, demonstrates the predominance of satisfying immediate concerns, given decision by user may be reversed or neutralized with the help of design interventions.

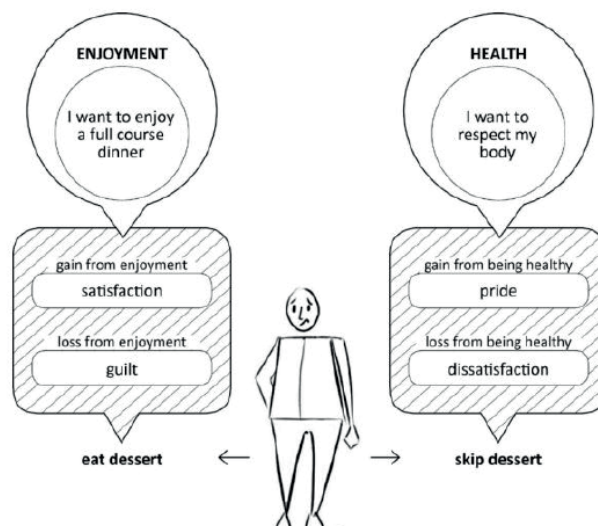


Figure 14: Model of dilemmas for designers illustrating the three main ingredients of dilemmas (mutually exclusive choices, conflicting concerns and mixed emotions) (Ozkaramanlı et al, 2016)

4. Personal strategies to avoid eating foods you crave

How often do you experience it? *every day*

Where are you at? *at home*

What time is it? *17:30*

What are you consuming? *chips*

Which feeling is the trigger? *Lonely*

I was doing my work suddenly my BF called me

3. Your relationship with the food

How often do you experience it? *every day*

Where are you at? *at home*

What time is it? *17:30*

What are you consuming? *chips*

Which feeling is the trigger? *Lonely*

I was doing my work suddenly my BF called me

Products around me

You feel negative emotions. What are you using?

my phone

my laptop

Which emotions you refer to in these activities?

What are you doing with these products?

What do these activities and products provide you?

chill (yuzusaki) salad

I am coping with food cravings triggered by an emotion

Interacting with the food

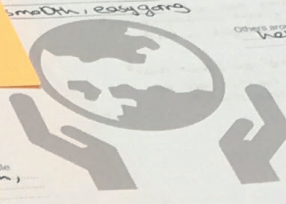
Should be the best interaction with your food in your best moments

actions around me *small, easygoing*

Others around me *happy, helping, not stressed.*

The products around me while eating *calm, fresh, simple.*

Where are you at? *at my imaginary kitchen.*



7. What is your mind saying?

How I wonder what kind of thoughts come to you when you eat?

The project is not easy, she needs to...

That will be the time in my moment

Let me know I have meat...

18:30

Where are you at? *City center (alone)*

What time is it? *18:30*

What are you consuming? *Fried potatoes*

How often do you experience it? *every day*

Which feeling is the trigger? *Lonely*

I was doing my work suddenly my BF called me

18:00

Where are you at? *Albert Heijn on the bike + home (alone)*

What time is it? *18:00*

What are you consuming? *Potato chips*

How often do you experience it? *every day*

Which feeling is the trigger? *Lonely*

I was done with one interview and about to go home then my BF asked me to cook

I even couldn't eat on the bike

I bought

Baklava (Turkish desert?)

I thought about eating only 2 pieces (small)

19:00

Where are you at? *Patisserie (alone)*

What time is it? *19:00*

What are you consuming? *Patisserie*

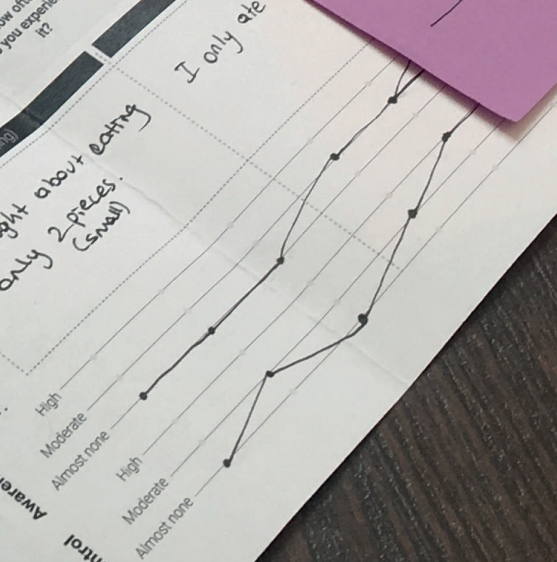
How often do you experience it? *every day*

Which feeling is the trigger? *Lonely*

I understood that I am done with working today maybe I will study more in the evening still I deserve the reward.

I bought today signing

Reward eating



Chapter 3

CONTEXTUAL RESEARCH

In this chapter, you will find insights gained from the research activities; sensitizing booklet exercise and laddering interviews. Insights include causes, influential factors and context elements of people's emotional eating experiences to enlighten food-human relationship.

3.1 PURPOSE

of the study

The aim of contextual research was to explore the context of emotional eating behavior, to map out current interactions and personal experiences. The insights gained from this phase are going to serve as a basis to designate possible intervention areas.

The following research questions were formulated to be answered by this study:

R.Q 1: How do emotional eaters perceive the influence of emotions in their eating patterns?

How do dimensions of emotions; valence and arousal, affect eating behavior in terms of food choices, eating environment, pleasure of eating experience etc.?

R.Q 2: What are the causes of emotional eating periods?

What are the 'personal' 'environmental' 'social' triggers and factors affecting emotional eating behavior?

R.Q 3: What kind of relationships do emotional eaters establish with their comfort foods?

How do they describe the identity which is attributed to food by themselves?

R.Q 4: How do those people perceive being an emotional eater?

R.Q 5: What are the strategies that emotional eaters use to regulate their emotional eating behavior?

How would be the "ideal world" scenario to escape from this unhealthy behavior?

R.Q 6: What kind of emotion regulation strategies are deployed by emotional eaters, besides eating, when negative emotions descend?

What are the activities and products emotional eaters engage in?
Which purpose do they expect those activities to serve?

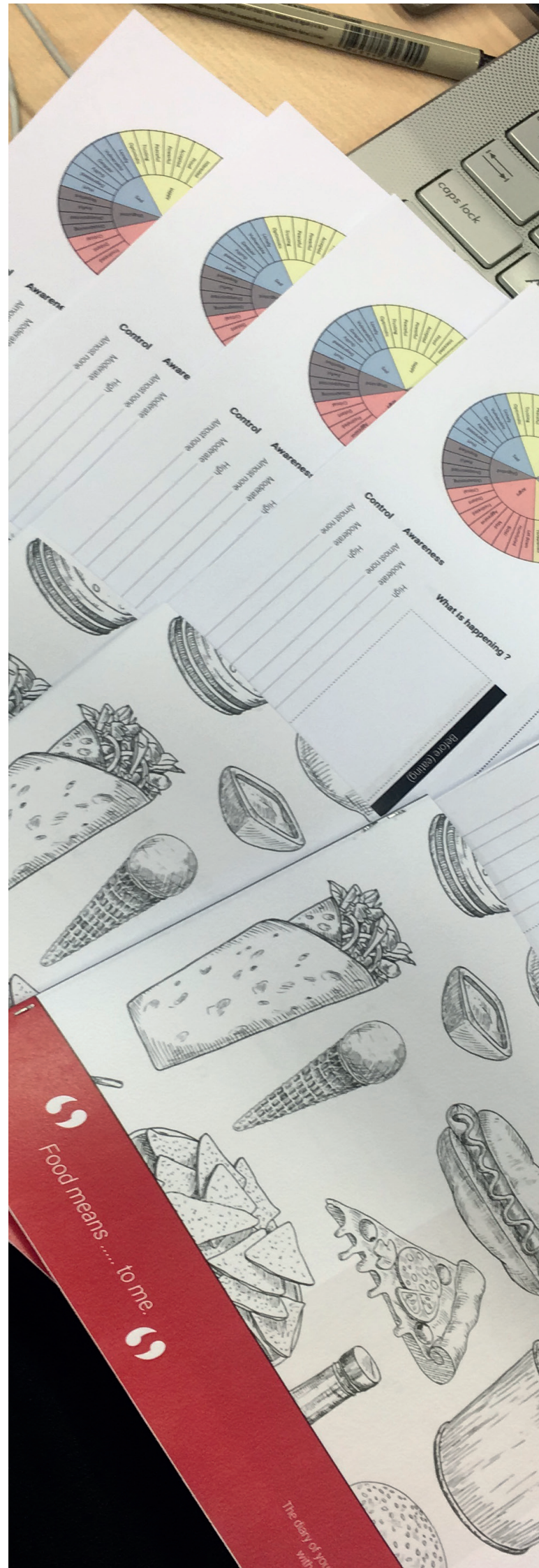
Study set-up

Participants will fill the sensitizing booklets for seven days. After completion, each booklet will be reviewed by me to prepare individual questions. Face-to-face and online laddering interviews, will be done in the Industrial Engineering Faculty. They will be informed that the interview will be audio recorded for transcription purposes.

Study materials & process

A file folder including a sensitizing booklet, consisting seven activities covering different aspects of emotional eating behavior such as causes and compensatory behaviors, four “food experience journey” templates and one “instructions” card, explaining the aim of the study and asking participants to take photos of context while engaging in emotional eating period, was prepared for each participant. (See Appendix B)

The intent of the sensitizing booklet exercise was to raise participant’s awareness of eating behavior in relation to their emotions. Also, booklet exercise created a starting point to talk about context factors and interactions influencing emotional eating behavior. Besides that, the aim of “food experience journey templates” was to collect illustration of actions taken, products interacted with and thoughts descending just in time of emotional eating. In addition, what is the frequency of engaging in this behavior, experienced feelings during an episode and the rate of perceived control and awareness on eating were examined.



Participant Recruitment

Participants of this research study were purposively selected based on their emotional eating scores on the Emotional Eater Questionnaire (EEQ) from Garaluet (2012). In total, thirty questionnaires were filled by people living in the Netherlands, mostly students from TU Delft, to recruit potential participants. Participants were from the non-clinical (aka normal eating) people to fit this project's purpose namely focusing on prevention.

There is a valid reason to choose this questionnaire to detect possible participants of the study. Instead of using a screening questionnaire, which addresses nutritional behavior holistically, such as The Dutch Eating Behavior Questionnaire (DEBQ), using the one with a condensed focus on just emotional eating behavior was needed to maintain the focus of the research without losing track in complex mechanisms of eating behavior. To illustrate, in the Emotional Eating Questionnaire (EEQ), questions "Do you feel guilty when eat "forbidden" foods, like sweets or snacks?" and "Do you feel less control over your diet when you are tired after work at night?" are considered important because feeling guilty/ashamed and overeating are significant determinants of emotional eating behavior yet are not present in the Dutch Eating Behavior Questionnaire (DEBQ), while questions regarding Restrained and External Eating of DEBQ (e.g. 'When preparing a meal are you inclined to eat something?'),

'How often do you try not to eat between meals because you are watching your weight?') are seen as less relevant with this study because the main of this study is to examine experience of emotional eating.

Each question in the EEQ had four possible replies: 1) Never, 2) Sometimes; 3) Generally and 4) Always. Each answer was given a score of 1 to 4, the lower the score, the healthier the behaviour. The total scores are classified in four groups based on the score collected. Score between 0-5: non-emotional eater. Score between 6-10: low emotional eater. Score between 11-20: emotional eater. Score between 21-30: very emotional eater (Garaluet, 2012).

There were three people scored between 21-30, out of maximum score of 30, referring to 'very emotional eater' and four people scored in between 11-20 referring to 'emotional eater'. These seven people, scored between 15-25 on the EEQ, were chosen to be part of the further research activities namely sensitizing booklet exercise and following in-depth interviews. Special attention was paid to include participants from both genders in equal number. The overview of participants with demographic informations are illustrated in Figure 15. It is good to mention that all of the participants live on their own either in university dormitories or studio apartments, aged between 25-28.

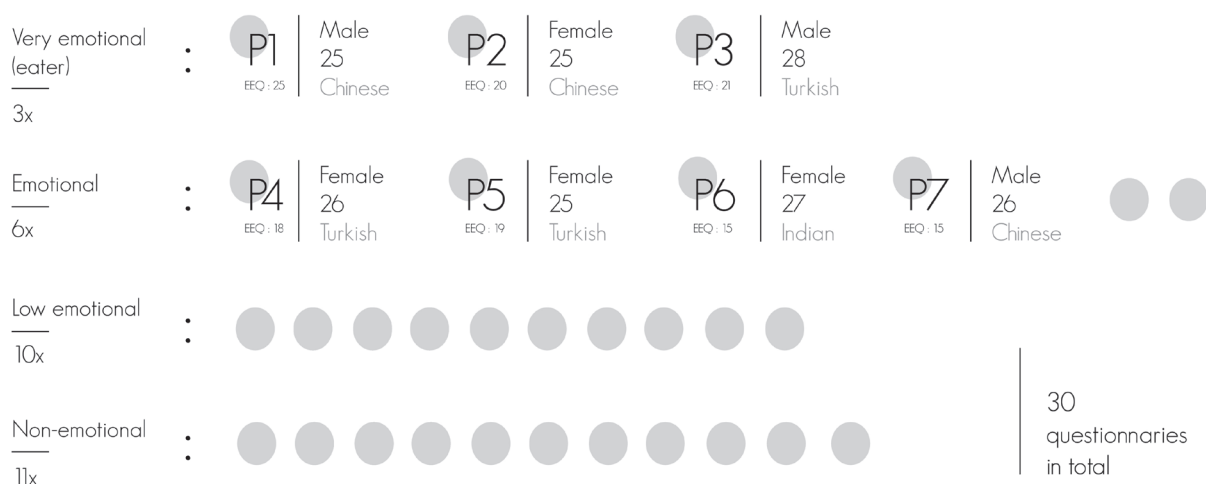


Figure 15 : overview of demographic information of participants

Data collection

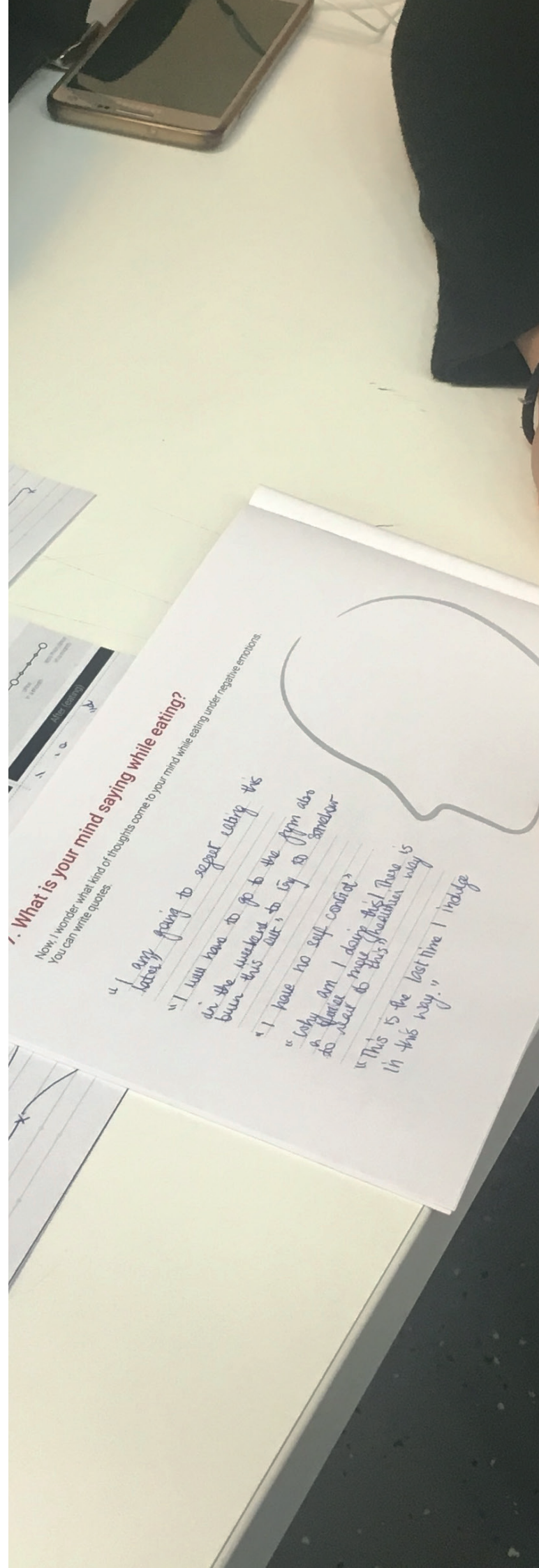
Exploratory qualitative research was conducted, including 7-day sensitizing booklets named 'relationship with food' and laddering interviews, with seven participants to gain understanding of participants' perceptions on emotional eating behavior and context interactions. Context photos were asked to be taken from participants while filling the sensitizing booklet in order to have an understanding of the environment. While doing so, Contextmapping method was a guide I referred to. This method elicits the tacit needs of the user and reveals the connections of context elements. (Sanders & Stappers, 2012)

Analysis

Thematic analysis method was deployed to analyze seven interviews in total. Selected method strives to identify patterns of themes in the interview data. In this manner it perfectly fits to explorative nature of our research.

Not all of the participants could provide photos from the context.

Filled sensitizing booklets were reviewed to understand the participant's eating behaviors and experiences in their real context. When asked about the booklet, all participants stated they completed it to the best of their ability. From this brief review, additional open-ended questions for the interview, specific for each participant, were written down in addition to semi-structured questions.

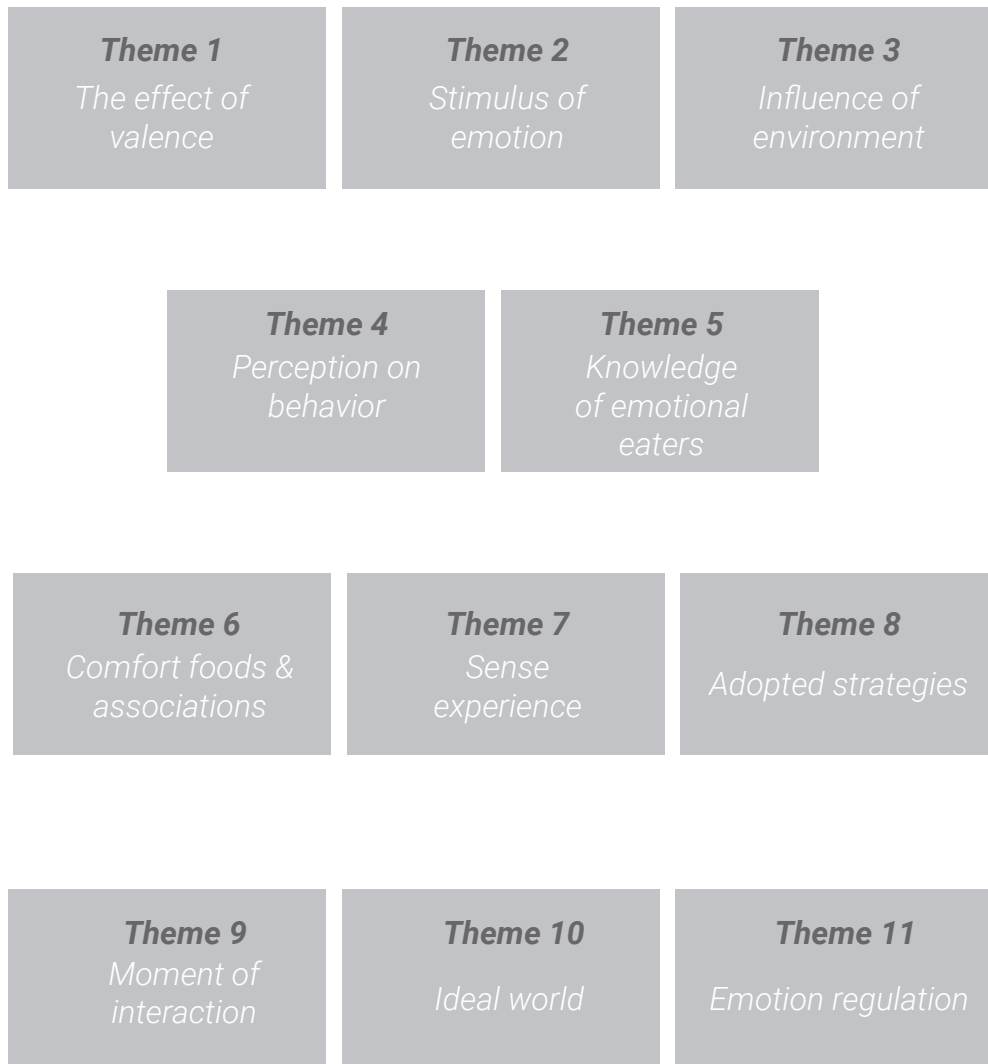


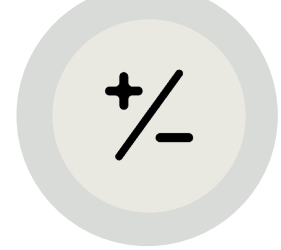
3.2 RESEARCH FINDINGS

We already gained basic knowledge on scientific explanation and mechanisms of emotional eating behavior as discussed in the literature research section of this thesis.

In this chapter, results of the explorative study reveals uncovered themes by holding a magnifying glass on the real life emotional eating experiences of people while adding upon the existing scientific knowledge.

Themes overview





3.2.1 The effect of valence

Positive vs Negative - distinctions between emotions

The participants were asked to do a comparative evaluation of eating experiences that were triggered by negative and positive emotions in terms of food choices, how they decide and how they perceive their actions.

First of all, while experiencing emotions in the positive side of the valence chart (figure 16), such as content, calm, relaxed, almost all participants tend to eat healthily, they are capable of making conscious choices and have raised control over their eating behavior like ability to regulate speed of eating. The tendency to be explorative in terms of food choices is mentioned. In addition, based on what was emphasized, enhancing overall well-being by eating healthily brings fulfillment and a sense of completeness into life.

“ If I am happy and cooked something healthy for myself, it’s like really living my best life. (P7)”

Although there is a common understanding of feeling positive leads to eat healthier, this does not mean that we can generalize by saying all positive emotions lead to healthy eating. Unfortunately, case is not that straightforward but rather complex. As two of the participants mentioned, they might eat unhealthy food (e.g. sweets) to even enlarge the experience of positiveness.

A possible example for this case can be ‘reward eating’. When there is a situation to celebrate, for example a project is completed or a business achievement is gained, indulgence comes into stage, and food is consumed to celebrate achievements.

Contrary to positive valence, cognition becomes limited and rational decision making mechanism is interrupted under the emotions which are on the negative side of valence chart (Figure 16). This shortage in cognition results in irrational decisions which are not considered normally. Irrational decisions in the scope of eating behavior refer to choosing unhealthy foods and overeating by showing diverse reasons (accessibility, eating convenience, certain nostalgic associations etc.)

Arousal level of emotion has an important role in decision making as well. When feeling bored, which is a low arousal emotion, eating becomes an activity to fill time, and most of the time there is no food preference in the first place. When stressed, paying attention to what is eaten is not a priority, instead of completing the work related tasks requires all the attention. So, this situation usually ends up in overeating snacks or chocolate by hoping to perform better.

In some cases, if higher levels of stress and anxiety are being experienced, it might end up in loss of appetite. Before meeting with the supervisors or before an important business meeting can be considered as example cases.

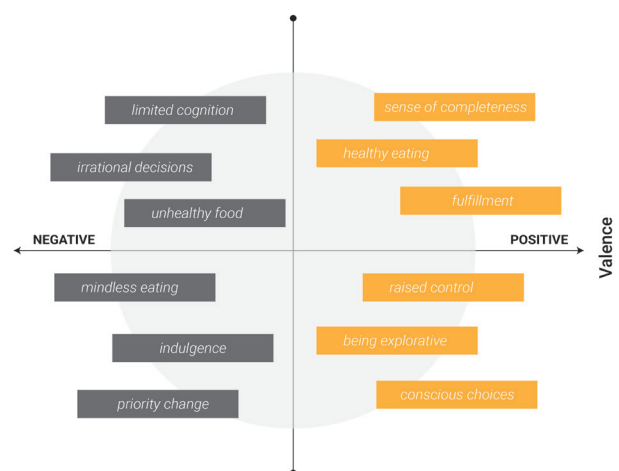


Figure 16: Overview of how eating behavior differs based on valence

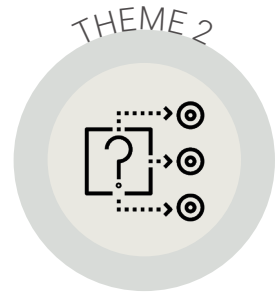
3.2.2 Stimulus of emotion

The triggers of emotions

One of the research objectives was to examine if emotional eating behavior is relatable to a single definable stimulus. Two stimuli areas were identified by analyzing seven interviews: **interpersonal relations** and **work-related factors**.

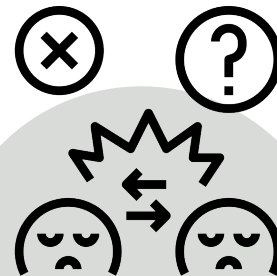
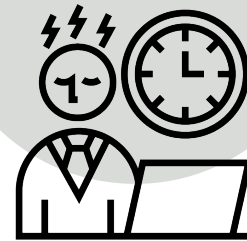
Negative emotions aroused by interpersonal relations, like arguing with partner or family members, are mentioned to contribute overeating. There was one example showing how dangerous the effect can be. In the case of a participant, who used to be overweight, judgments and pressure targeting her weight backfired and led her to eat even more due to obstinacy. Eating unhealthy and overeating became a way to prove that it is able to be happy even if she is overweight. Unfortunately, this unhealthy relationship created a loop of feelings, from happy to depressed, and contributed to unhealthy eating behavior.

In the case of all participants, work or study related negative emotions and states, **mostly stress**, are mentioned as a significant reason of emotional eating. During the day, work related stress cannot be totally eliminated with the fast pace of our lives. Thus, seeking for relaxation steer people to eat while watching videos or TV series. It has been defined as **"an escape from tough reality"** when the person is alone.



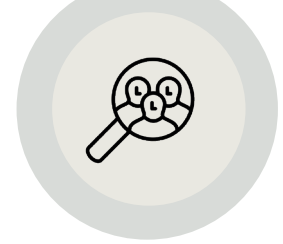
Deadlines
Project deliverables
Meetings
Work-overload

Work life



Private life

Heat burden
Misunderstandings
Arguments
Dissappointments



3.2.3 The influence of environment on behavior

Physical and social context

The role of environmental factors like time of the day, people around, and physical features of the context are emphasized to be effective in the decision of engaging in behavior and the easiness of control it.

Most of the participant stories confirmed that **being physically alone is a facilitator of emotional eating**. It is why, in those moments people tend to confront certain feelings and thoughts by staying on their own. With a straightforward relation, we can explain why some people experience emotional eating periods mostly in afternoon or late at night. Even though the majority experiences it as an intimate eating experience, there are cases exemplifying situations with multiple actors.

When asked about how environment affects the control over behavior, one participant defined the perceived control as the ability to adjust the speed of eating. In the case he is alone, the speed of eating increases and little or no attention is shown on how much eaten. But, if there are people around accompanying than the speed of eating is adjusted based on others speed. In a situation where he finishes the food earlier than others, discomfort and feeling of embarrassment leads him to buy another food item and keep eating to stay with friends.

As one participant mentioned, it is way easier to control cravings if there are people cherished, because in these situations she doesn't want people to see her engaging in an unhealthy behavior due to responsibility towards them. This encourages her to look for healthier ways to regulate her emotions.

"I'm there as the bigger sister... I have to be a role model for her (her sister). And that I'm trying to do good stuff. (P5)"

Another interesting insight was the effect of familiarity on eating environment. Eating in an unusual place was mentioned to bring awareness and feeling of content.

To conclude, in the presence of others, some people try to use more controlling mechanisms on their eating so, they are more conscious about what and how they are going to eat. This consciousness can go both ways, it may lead to not overeating or keep eating for the sake of staying with friends or family.

Attitude of others

Having people sharing the same goal, such as being healthy in general, makes it easier to control eating behavior thanks to support they provide each other. This reveals the importance of the source of motivation and the way motivation is provided. Sometimes the intention to give motivation may breed unintended consequences because of the wrong attitude chosen. In one of the cases, participant mentioned she kept engaging in overeating out of obstinacy due to her mom's judgemental approach regarding her weight. This confliction used to end up in more emotional eating periods and didn't help her to obtain a healthier relationship with food.

"My mother is saying that when you were a child you were quite slim and right now look at yourself... I would eat a little bit more to make my mom angry... (P2)"

To conclude, while designing interventions motivational elements from social and physical environments may be used.

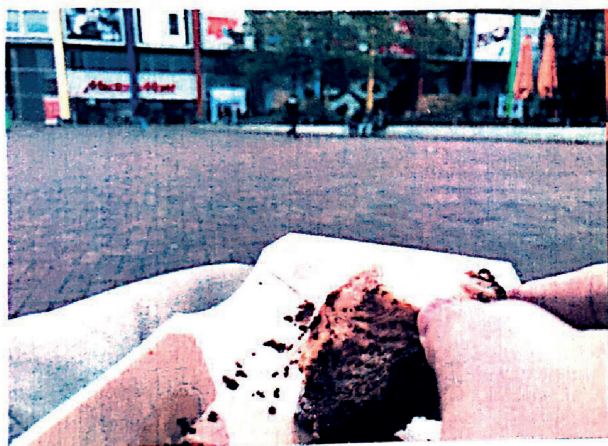
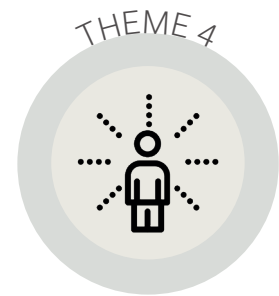


Figure 17 : Context photos of emotional eating periods



3.2.4 Perception of being an emotional eater

How to perceive it? Frightening or no fuss?

There were contrary perceptions with regards to engaging in emotional eating behavior. While some participants believe it is a totally normal behavior, some felt anxious for the further consequences which may turn up to serious health problems: obesity, food addiction.

Since none of the participants were familiar with the notion 'emotional eating' until this study, it was hard to commentate on their behavior in the first place. When they were asked how to differentiate emotional eating from hunger eating, the biggest clue was perceiving the hunger not in the stomach but rather in thoughts. The motivation of choosing food is defined as mental satisfaction during emotional eating periods.

One participant mentioned feeling uncertainty in judging who is in charge of the emotional eating behavior, is it the food or her actions? Difficulty in blaming creates fear and confusion, it is the fear of lacking control over her own behavior and, following confusion regarding lack of knowledge on how to control it. In addition, trying to stop this unhealthy eating behavior by applying normative strategies like restraining food intake, thinking of self punishment as well as fighting with emotions leads to tiredness. Since these strategies are dysfunctional once person is defeated by the emotions, she/he starts to feel even more affected and desperate.

".. It creates confusion, I think like... who is in charge? Does the food have more control over me? or can I control it? (P5) "

In another case, one participant believes that everybody has a mechanism to reward themselves when they achieve something, and eating is his way of doing it. There is an acceptance and internalization of unhealthy eating behavior because he associates his behavior with his home country's tradition where his parents take him to eat after his achievements. He believes he developed a habit. However he thinks it is normal and he doesn't have to control his behavior.

" Sometimes I know its not good for me but most of the time feel 'Oh I did something really good or I am feeling really bad.. so.. why not eating? (P1) "

A participant mentioned that when the ultimate goal is to put on weight, the specification of which food is healthier blends into background and focus shifts to gaining calories even the source of calorie is not healthy. That is why, contrary to what we mostly think, a period of emotional eating may not bring uncomfortable feelings like shame or regret depending on the higher value and intentions of that person. However, the fear of developing a food addiction remains as a concern.

In conclusion, there was an acceptance and normalising of unhealthy behavior among the participants who are slightly high in body mass index or used to be overweight in the past. On the contrary, participants who fall into normal/underweight category emphasized the desire of controlling the behavior and readiness to take precautions (Figure 18). The approach of normal weight participants confirms the relevance of this project with 'prevention'.

3.2.5 Current knowledge on behavior

Beliefs and interpretations



Limited knowledge was shown when participants were asked whether they have a comprehensive understanding of emotional eating behavior. A smattering of information about the impact of physiological reactions due to chemicals inside food was mentioned by several participants. The general belief was food's capability of creating serotonin, and serotonin is a chemical which makes us feel happier that is why they are engaging in this behavior. Although which is partly true, attributing this behavior to just physiological mechanisms remains vague.

The likelihood of a connection with psychology was briefly introduced but the interpretation concentrated on why people cannot stop their mouth at the very moment of eating practice.

The notion "oral erotism", driving pleasure and satisfaction from the characteristics of food such as taste, texture etc., was mentioned as a cause of uncontrolled eating.

In those moments, even if the person is capable of differentiating unhealthy behavior from healthy one, the mouth doesn't let take a pause.

It was proven that raising awareness regarding this unhealthy behavior is an important step because it lays the foundation for functional interventions, however just informing people does not lead to behavior change most of the time. To illustrate, curiosity prompted one participant, who used to be overweight in the past, to find out possible causes of her unhealthy eating behavior. She identified the trigger while watching a TV show about lives of obese people. Learning other people's stories led her to draw conclusions for her own experiences and detect reasons of her emotional overeating periods. In that sense building knowledge from similar stories may help in to-be-designed interventions.

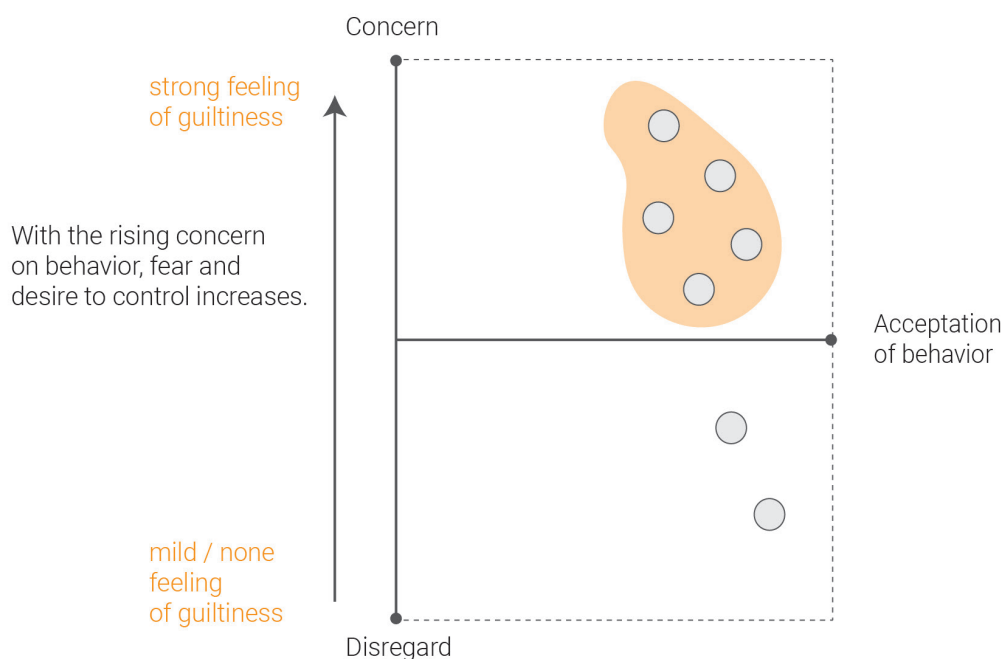


Figure 18: Participant distribution based on the perceived seriousness of behavior

3.2.6 Comfort foods

Nostalgia & Attributing an identity to food



One of the research objectives was to examine what kind of connotations comfort foods have for individuals. In the case of a participant, whose comfort foods are fries and sweets, she associated both foods with certain stories from her past. She recalled a memory from her childhood where she is rewarded with candies due to her achievement on a certain task. Also, a ritual she used to engage with her dad where they eat hamburger and fries every weekend in her childhood was speculated as the invisible responsible of emotional eating behavior. We can see the reflections of past memories in her recent emotional eating periods where she tends to see food as a reward or a companion. Similar stories, associating food with comforting memories, were told by other participants living far away from their home culture like in the case of Chinese participants and their culture's traditional dish, noodles.

Although loneliness feeling may prompt people to search for food with connected stories, it is not possible to generalize it for all emotional eating periods. In some cases, it has been emphasized that while eating because of boredom, the type of food has no difference what is available in the first place can serve a purpose.

One of the activities of sensitizing booklet was to come up with a fictional conversation between the selected comfort food and participant.

The intention of this activity was to reveal the identity attributed to food by individuals. Making sense of it would help us to dig deeper the intimate relationship between food and them while opening up the actual needs of those people in emotional eating periods.

Based on the conversations created, food was illustrated with many diverse adjectives (Figure 19) which ranges from emperor to haven. In one of the conversations where food was an emperor, surrendering was stated as the only option. We can interpret that even if a person's consciousness is on, feeling incapable may lead to giving up.

Another participant defined food as a platform to show his creativity due to its openness to exploration. Playing with flavors does let him express his creativity when he is bored. Other activities with the same expected pleasure would be engaged but he chooses using food as a mean.

Majority of participants portrayed food as sympathetic and helpful who is always there if you need a piece of mind or comfort. Food serves as a haven when worries descend. The fictional context made up was a warm environment, just like sitting together with someone that knows the 'emotional eater' for a long time.



Figure 19: Participant's perception of food



3.2.7 Avoidance strategies

Regulation attempts

I was wondering what kind of personal strategies were deployed to prevent eating craved food or eating less of it and what was the success rate of them. It is possible to collect strategies in two categories based on the execution time: strategies used at the very moment of behavior and strategies as precautions.

1) At the time of eating

a) Inner-talk

All participants mentioned inner-talking as a way to convince themselves not to eat. The content of inner-talks is, most of the time, reminding negative consequences like gaining weight, feeling guilty afterwards etc. However negative inner-talk is proven to be ineffective by almost all the participants. Almost all of them found themselves indulging in their comfort foods.

b) Replacing unhealthy option with other food items

Replacing unhealthy food choice with something healthier was a strategy mentioned most of the time. To illustrate, while craving for chocolate, preparing yogurt with cinnamon to eat. Besides totally avoiding the food item, some strategies tries to reduce the intake amount of unhealthy food.

For example, consuming healthier options first or drinking any kind of liquid, due to filling effect, before eating craved food will naturally lead to eat less. An example can be drinking two glasses of water before indulging in a package of chips.

2) Before eating

a) Changing environment

One of the strategies was setting challenges before reaching craved food item. For example, removing the food item from eyesight, keeping it far away and even hiding it. If the food item will be purchased from a store on the way to home, changing the route thus, eliminating the trigger, was used and this strategy was found useful.

b) Decision making based on priorities

An external factor which might contribute to limitation of the intake of food item defined as the necessity of managing the budget. If there is limited money source, people tend to abandon products which are not vital in the first place. This means, mostly indulged food items, namely snacks, can be pushed aside.

As can be seen, none of the strategies are functional in terms of addressing the core reason of negative emotion or focusing on solving the problem but, they are functional in terms of limiting the unhealthy food intake. All participants mainly focus on reducing the negative impact of unhealthy food choice.

3.2.8 Holistic experience of senses

To complete experience?



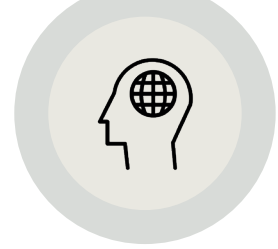
In the cases where participants eat to deal with boredom, all of them mentioned watching some kind of movies, TV shows or series. When watching to distract attention from the cause of negative emotion, there is a tendency to enhance the watching experience with eating practice.

Food is deemed something additional to other activities which does not require full attention. Most of the time eating becomes an activity to fill time and keep individuals busy. Thus, individuals do not pay attention to food which usually ends up in overeating while multitasking.

There was another belief that all senses (figure 20) should work together to create the best experience and to get ultimate pleasure. The sensory characteristics of food (e.g. crunchy texture, spicy aroma) is considered to reinforce watching experience.



Figure 20: All senses (touch, hear, taste, see, smell) illustration



3.2.9 Ideal world-scenario

Reign of calmness

One of the sensitizing booklet activities was picturing the ideal world where coping with emotional eating behavior is easier. The intention of this activity was to facilitate expression of what those people look for and what may help them. In this sense, storifying method worked well. All participants came up with the ideal world stories picturing the best interactions, environment and vibe. There were three characteristics of all the ideal world scenarios in common: calmness, control and support (Figure 21).

Calmness

When asked about the vibe of imaginary world, adjectives like chill, smooth, easy-going were used by many of the participants. It is indicated that in a relaxed world it would be so much easier to control unhealthy behavior or not to attempt.

Most of the participants portrayed holiday scenarios to describe their ideal world where the calmness reigns. The metaphor of being at the beach and feeling the warmth of sand was used. There it is understood that, people are looking for some sensory experiences to get calm.

Support

In all scenarios, the necessity of a social support environment was emphasized. Having positively influential people who eat healthy creates a kind of community feeling and provides support. One of the scene portrayed was a peaceful outdoor space where other people are sympathetic. From these remarks, we can comprehend the necessity of social connectedness when dealing with the unhealthy eating behavior.

Control

At the very moment of emotional eating behavior, some participants were open to be controlled externally since they believe their will-power is not enough. Seeking help and having restrictions from others were mentioned in their ideal scenarios. Another control related wish was having time to stop and think cautiously about what is going to be eaten instead of behaving impulsively.

"I wish seller won't sell me fries or my friends will say buy this instead of that one... (P5)"

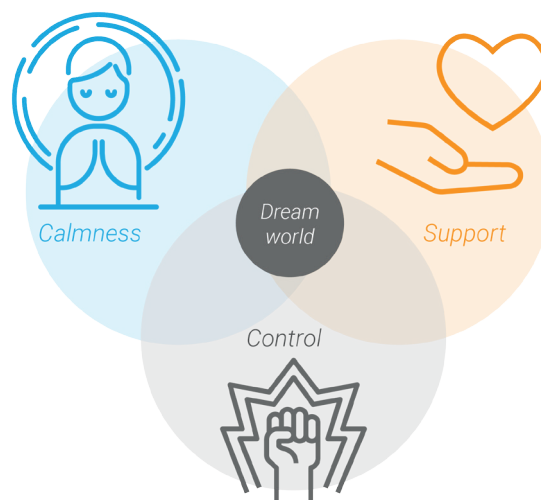


Figure 21: Components of an ideal world scenario

3.2.10 Interaction moment



One of the research objective was to comprehend interaction context of emotional eating behavior. The context includes what emotional eaters think, how they behave, what kind of products they interact with and what helps or not help them to control their behavior in the exact moment.

There were two mostly referred themes from seven interviews with regards to moment of interaction: control of portion size, reassurance and compensatory behaviors.

1) Controlling portion size

a. Effect of eating environment

Sometimes visual cues help people not to overeat. For example, to witness how much oil used to fry potatoes raised the awareness of one participant while waiting in the line of a fries shop. This confrontation helped her to become more critical about the amount she consumes. Then, if there is enough time and attention to perceive food, controlling the portion size becomes easier.

As there are cues to control portion size, the opposite situation is also possible. For instance, eating distractions has a great negative influence on controlling portion size. While multitasking - watching movie, TV series, working and eating at the same time- it is almost impossible to manage the portion size which leads to overeating without even noticing.

b. Effect of physical features of food

The way food displayed or packaged, also, has a negative influence on control. For instance, the slices of chips trigger people to keep eating piece after piece. In addition, instead of using cutlery, using hands to eat mentioned to increase food intake by some of the participants.

2) Reassurance and compensatory behaviors

Besides negative inner-talks, which are mentioned in the avoidance strategies theme, almost all participants have a way to give reassurance themselves. Some of them say "I will eat less tomorrow" while overeating, but usually don't keep the promise in the longer term.

"I say.. I will eat less tomorrow (P1)"

If food is consumed early enough then, some participants may think there is still time to burn the calories gained. Encouraging inner-talk is a way to alleviate guilty feeling which comes after overeating. In addition, in some cases overeating is seen as a trigger to go gym and compensate gained calories.

Sometimes reassurance may come before eating happens, in these cases engaging in physical activity such as going to food store by foot is seen as a way to deserve food item and it minimizes guiltiness which usually comes after indulging.

"If I go to (food) store by foot, I will deserve it, so I don't feel that guilty because of eating... (P4)"

3.2.11 Emotion regulation strategies

Escaping is easier than thinking..



As we learned in the literature research chapter of this thesis, emotional eating behavior is defined as a maladaptive/unhealthy emotion regulation strategy in clinical practice. Starting from this point of view, I wondered how participants of this study cope with negative emotions in their daily life, what kind of activities they engage in and where the eating activity is positioned in their repository of strategies.

It is good to remember three main categories of activity-based mood regulation strategies; seeking relief, restoring balance and building resilience (Figure 22) before diving into participants' own.

Relief-focus strategies aim to alleviate the unpleasant feeling associated with a bad mood, restoring balance aim to correct the imbalance between one's available resources and the demands that require spending these resources, building resilience includes mood-regulation strategies that employ the bad mood as a means for personal development (Desmet, 2015).

According to seven interviews in total, coping strategies, generally, are depended on the severity of the emotions experienced. In other words, intensity of the emotion is a significant determinant of which emotion regulation strategy will be implemented. For instance, if the intensity of feeling is described as mild to moderate then, engaging in activities to understand cause of emotion and embrace experience of emotion is commonly used. However, when the severity increases and feelings become unmanageable then, eating is seen as the easiest way to deal with it.

"If it's really really negative... will stay in my home and eat, if it's not that strong feelings than I can do other activities (P1)"

Most of the activities mentioned as emotion regulation strategies include watching videos, TV series, sleeping, checking social media, talking to friends about the emotional stressor. All these activities are focused on seeking relief, either by seeking distraction or venting. Acquiring these activities to cope with negative emotions offers only temporary results and prevents participants to build healthier coping mechanisms.

"movies like stepping into another world.. action movies, superhero movies are best distractions from real world (P7)"

Not all of the strategies applied by participants were unhealthy. There were some inspiring methods as well such as developing or engaging in a hobby to cope with negative emotional states. To exemplify, while experiencing boredom, doing activities facilitating self-expression, such as do-it-yourself (DIY), is seen as an alternative to eating. Or, strolling outdoors to release stress, with the following feeling of accomplishment thanks to engaging in a healthier activity, ends up in a healthy and a better state of mind.

Limitations

Lacking external resources

Sometimes participants might up to healthier ways of coping with negative emotions like doing physical activity, running. However, if environmental factors (e.g. unfavorable weather conditions) do not allow, this option becomes quite rare.

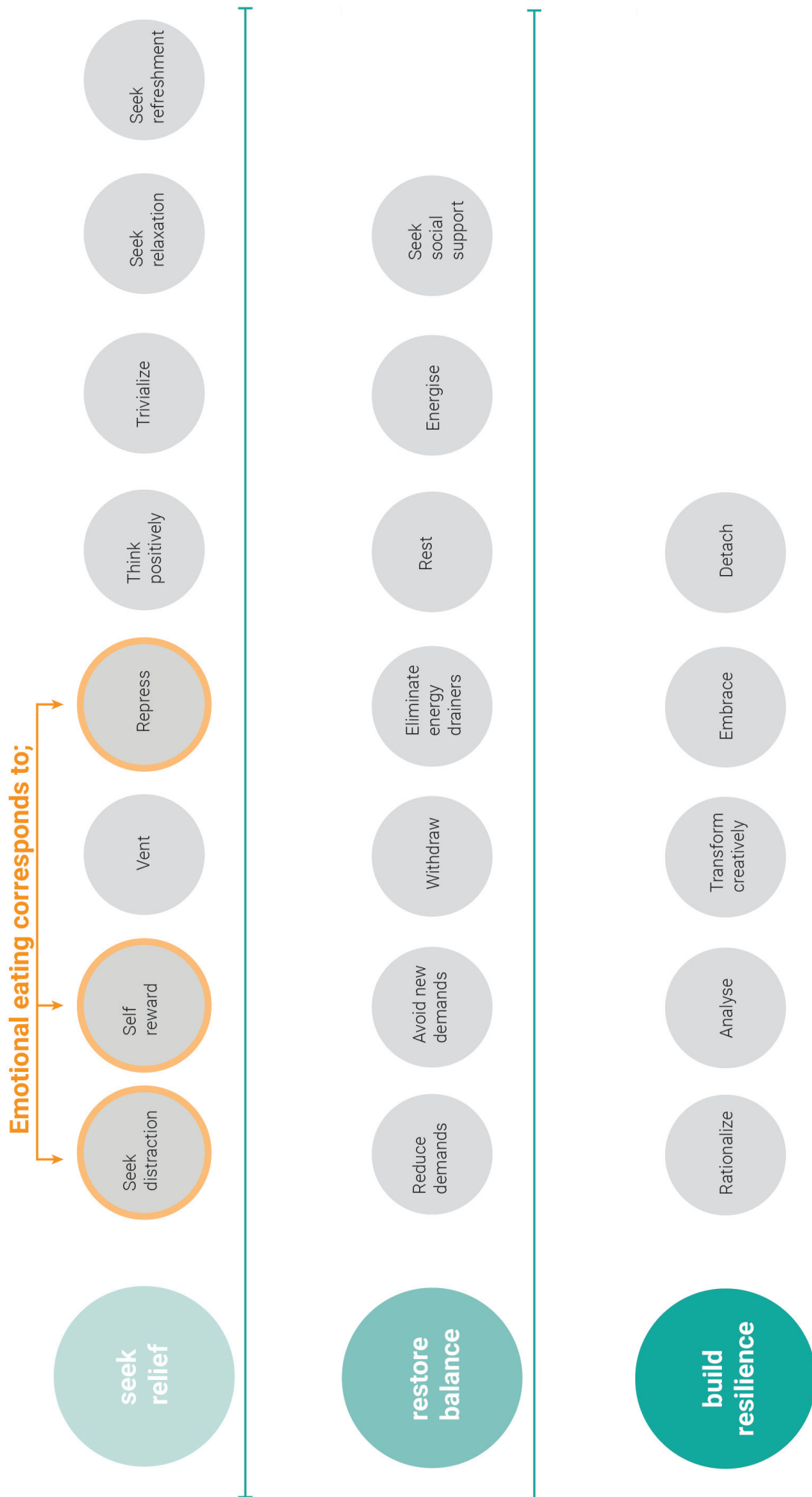


Figure 22: Mood regulation strategies (Desmet, 2015)

3.3 Conclusions

RQ* 1,3

To sum up, common emotional cues to eating may involve negative feelings of anger, anxiety, hopelessness, boredom and lack of control as well as positive moods, such as happiness and celebration. During emotional eating episodes, food is deemed as a reward or compensation and periods take place mostly while snacking rather than regular meal times.

RQ 2

Although the emotional stressors triggering emotional eating differ from person to person, mostly mentioned triggers were work-life (e.g. deadlines) and private-life (e.g. arguments) related issues.

RQ 4

From a contextual perspective, most episodes of emotional eating happen at home when an individual is alone. It is because, emotional eaters feel being judged by their social environment namely, family members, friends. For this reason, they choose to hide this behavior. Yet, there are group of people having no concerns regarding the unhealthy eating behavior and, they show no intention to control it.

RQ 5

Experiencing calmness, feeling in-control and receiving support were mentioned as requirements of an ideal world where coping with impulses would be easier.

RQ 6

In terms of employed emotion regulation strategies besides eating, participants mentioned engaging in activities corresponds to seeking relief (e.g. talking to a friend) while experiencing negative affect.

Main insights drawn from the contextual research can be clustered in two categories; personal and external factors having a role in emotional (over)eating behavior.

* RQ: Research question

1. Personal factors

1.1 Experiencing impulsiveness | diminished cognitive abilities

Emotional eaters are able to recognize what they are doing (e.g. urge to eat cookies) but do not think why they are doing it (**no deeper reasoning**), since their cognitive abilities are diminished because of experiencing negative emotional state.

If impulsive eating behavior **becomes a pattern**, habit, it restrains people from reflecting on their decisions at the moment.

Emotional eaters are not capable of considering healthier ways of coping with emotions at the exact moment of decision making since they are looking for **instant gratification**.

Emotional eaters rarely use techniques addressing deeper levels of emotional management. This only happens when the intensity of emotion is mild.

Emotional eaters sometimes have difficulty in differentiating "emotional hunger" from physical hunger.

1.2 Limited knowledge on behavior

Emotional eaters have no or limited knowledge regarding "emotional eating" behavior including possible causes and health implications.

1.3 Self-judgement

Although negative inner-talking (e.g. you will gain weight, you are lack of willpower etc.) does not help emotional eaters, but feeds feelings of post-eating guilt and shame, all participants engage in it.

3.4 Reflection

The main reason of feeling guilt and shame is **not indulging but overeating**, because in the case where people could control the amount consumed, they did not mention any negative feeling afterward.

There are conflicting personal concerns. On one side craving of pleasure that food provides, on other side endeavours to stay and eat healthily.

2. External factors

2.1 Scattered focus

Emotional eaters are not able to take a pause while choosing and consuming the food item.

Multitasking (e.g. watching TV, working), while eating, leads to mindless eating, inability to control portion size and increased speed of eating.

2.2 Looking for support & guidance

Emotional eaters feel "not equipped" to apply emotion regulation strategies focusing on resilience building (employing negative mood as a means for personal development). Eating is seen as the easiest and quickest way to fix problems.

2.3 Social environment

Social context can both hinder and promote this behavior. Discouraging attitude of beloved ones regarding weight status of individuals leads to engaging more in emotional eating periods. Whereas more supporting approaches lead to positive influence on controlling the behavior.

The insights were drawn by knowledge gathered from a small sample group (seven people). Thus, further research is needed to generalise these findings for all emotional eaters. In the scope of this project, I will build design interventions based on particular insights applicable for this sample group.



Chapter 4

DESIGN GOAL

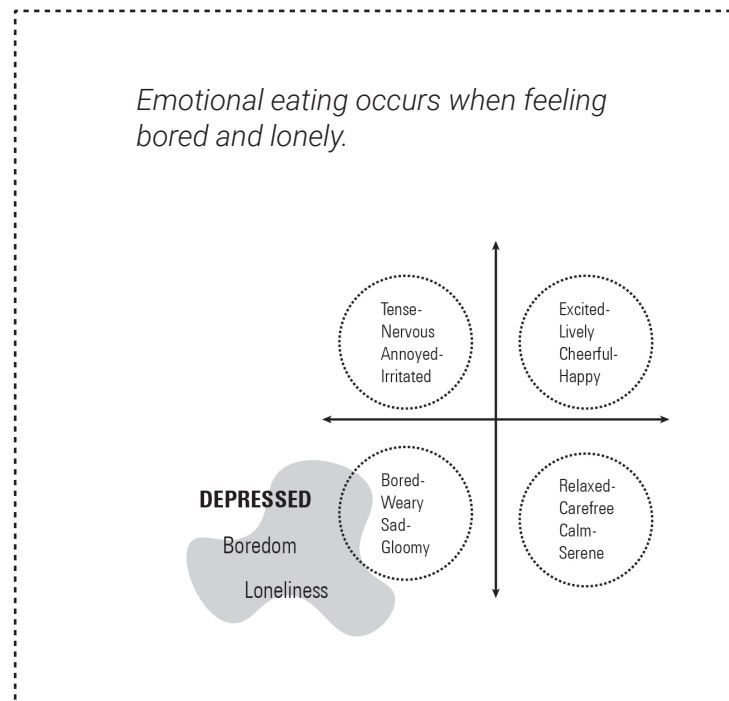
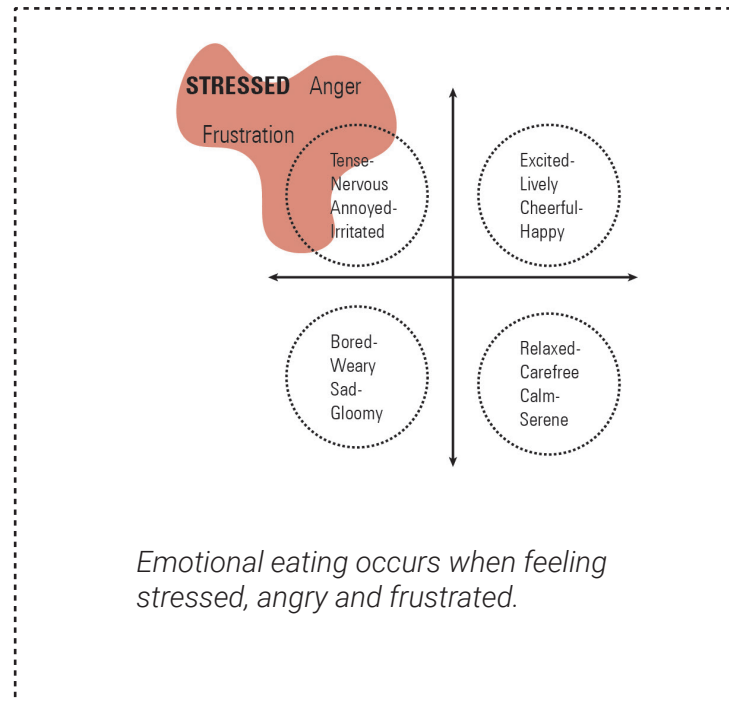
In this chapter, you will find how target group were portrayed in two personas and design goal was formulated and evolved during time. In addition, design requirements were generated to evaluate appropriateness of design interventions.

4.1 Target group

When it comes to the relationship with food, it is impossible to come up with a one-size-fit-all design solution for every single person due to multifaceted nature of these relationships. As we learned from contextual research each person has a unique experience of emotional eating in terms of food choices and underlying reasons, besides behavioral commonalities like impulsiveness, multitasking, or, paying little or no attention to food during emotional eating periods.

In the scope of this project, I decided to design for emotional eating experiences triggered by negative emotions and states like frustration, stress, boredom. In this sense, it might have remained too superficial to come up with one persona representing all existing experiences. That is why, two personas representing different personalities and experiencing different reasons for emotional eating were created based on real user's stories from contextual research insights. The main difference between two personas was underlying emotions prompting them to eat.

In the case of Boris (Persona 1), high arousal emotions lead to emotional eating whereas low arousal emotions work in the same way for Pelin (Persona 2).





It becomes harder to control portion size while eating and working at the same time.



Snacks were chosen in those moments due to their easiness in consuming.

PERSONA 1: BORIS

The effortless way of getting pleasure seems eating sweets when feeling down



Watching Netflix and bingeing may feel good at that moment but guilty feeling follows.



PERSONA 2: PELIN

PERSONA 1

“I feel like food can make me perform better when I need...”

THE STORY

Boris is a Data Scientist in a software company in Amsterdam. Depending on the projects, he works from home for certain days a week.

His intense work pace has a great influence on his eating behavior. Although he is a control freak at work, he cannot bring his emotional eating behavior under control. He constantly finds himself impulsively indulging in snacks or something sweet after a meeting with his boss or a conversation full of disagreements with his colleagues. Multi-tasking is inevitable in his worklife, he eats in auto-pilot while working with laptop.

Impulsive eating is an emergency exit from stress related situations.

Stress factors make him turn to food;

- * **Anxiousness** of staying behind project schedule
- * **Frustrating** discussions with colleagues regarding project deliverables

Pain points:

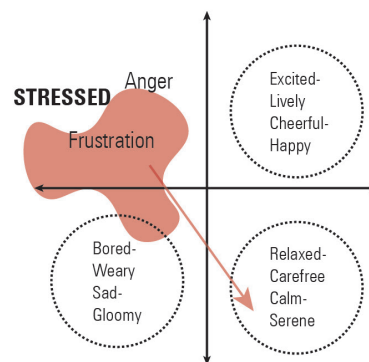
- * Gaining unnecessary calories cannot be burned at the time
- * Being not able to keep track of how much he consumes

Wishes & Goals:

- * To perform better at work
- * Overcome work-related stress
- * Maintain a healthy eating habit without sacrificing the pleasure food provides



BORIS
DATA SCIENTIST



Indulge both daytime and night time

Personal values;

Knowledge Passion
Control Friendship
Rationality

Influencers of his behavior:



Girlfriend



Colleagues

If his girlfriend or colleagues are around, he does not attempt to indulge.

PERSONA 2

“Ice-cream is never gonna let me down...”

THE STORY

Pelin is a master student at TUDelft. She is struggling with hard pace university life. She is away from her family and this creates an emotional void.

When she arrives an empty home after an exhausting day full of group work and assignments, she feels gloomy. Only think comes to her mind is indulging in her favorite ice-cream and watching Friends on Netflix at the same time to cheer herself up. She likes the shooting feeling that ice-cream gives her while eating, but not after emptying the whole package... She believes that ice-cream rituals with her father in her childhood may be the reason of why she loves ice-cream that much.

Impulsive eating is **an activity to lift her mood status.**

Factors make her turn to food:

- * Feeling purposeless when there is nothing to do
- * Intense yearning of family who live abroad

Pain points:

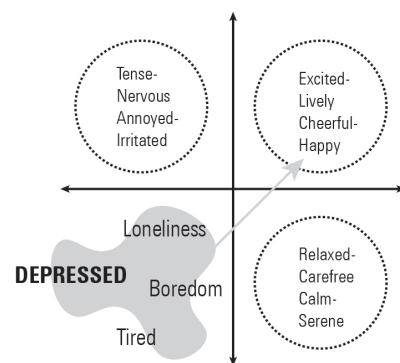
- * When she is alone at home, she could not think of any other activities to bring her joy
- * Although she does not want to finish all package of ice-cream she just cannot say no

Wishes & Goals:

- * Having more willpower to say no to ice-cream
- * Be a role model in the family with her responsible behaviors



PELIN
MASTER STUDENT



Mostly indulge late at night

Personal values:

- | | |
|------------|-----------------|
| Creativity | Family |
| Comfort | Spontaneousness |
| Caring | |

Influencers of his behavior:



Family



Friends

If her family or friends around, she engages in other mood regulation activities such as chatting.

4.2 Design Goal

The design goal sentence has evolved several times during the project span. It became more focused as the project progressed and enriched with insights gathered.

During iterations I managed to choose a specific group in emotional eaters who are people eating because of high arousal emotional states like stress, anger, frustration and low arousal emotions like boredom.

The intention was to bring awareness to these eaters during their impulsive moments. In addition, I was able to identify the experience I intended to design for my target group.

Final version of design goal successfully represents 'who' 'where' 'when' and 'the effect' that I want to create. Besides, it inspiringly feeds all different emotion-induced scenarios within emotional eating experiences.

“

I want emotional eaters to engage in behavioral expressions of emotional distress before indulging in snacks

”

4.3 Design Requirements

Based on the research driven insights concerning context interactions of emotional eating behavior, four design requirements have been defined to evaluate appropriateness of design interventions in the context.

Design intervention(s):

Should be for personal use

Since this behavior mostly occur at home when users are on their own, intervention should fit in the intimate experience of being alone.

Should be an agent or a trigger

It can guide user's behavioral responses but does not limit his/her actions, the subtle aim of intervention should be bringing awareness about unhealthy eating behavior.

Should give autonomy to make decisions

The aim of design interventions should not be establishing superiority over user's eating behavior. It should give autonomy to user to make decisions.

Should evoke positive feelings

Since this behavior is seen as a weakness by some people, intervention should not judge emotional eating behavior but may bring a humorous approach to interactions.

How to realize there is another way of fighting with negative emotions.

How can their "current support mechanisms" may not be used, transferred into the phase of overeating?

How to make people be aware they are overeating? the impact of overeating

How can we help individuals find relief with their emotions? how to show them other ways to cope?

What are ways in which people express their emotions?

How might we relieve the urge to eat to something beneficial?

beneficial sth else

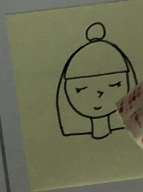
How can we help people distinguish what is emotional eating and what is actual hunger?

How can we communicate the effects of E.E. before doing the actual (stuff)?

Persona 1

First impressions

PROFILE PHOTO



NAME

QUOTE

Motivation & Beliefs

GOALS

What does the person want to achieve?

manage emotions + responses eat healthier

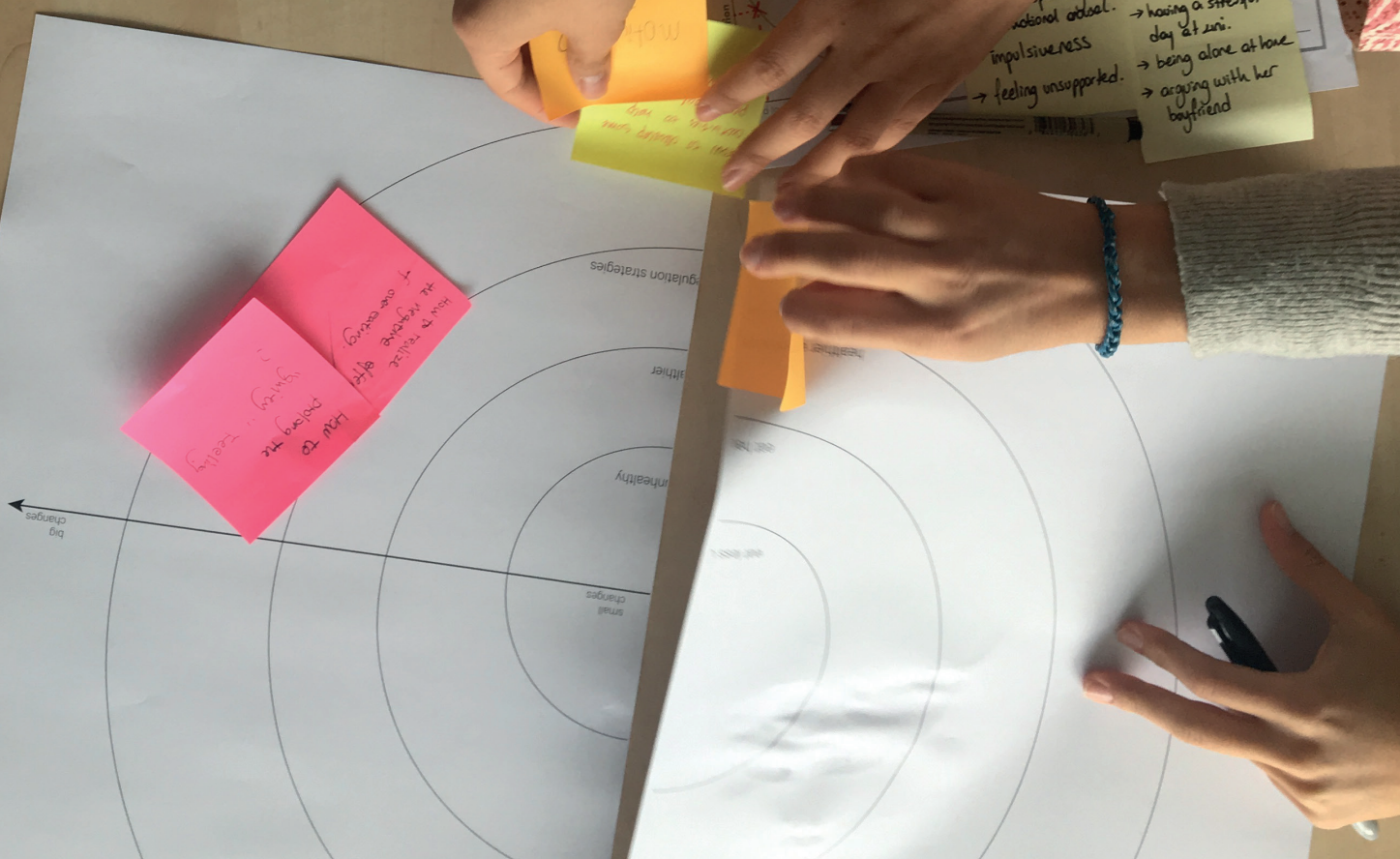
→ replace unhealthy food with healthy option
→ hide the food when (emotional eating)

talk to friends go running watch movies do chores (emotion management)

How to realize there is another way of fighting with negative emotions.

→ having a stressful day at uni.
→ being alone at home
→ arguing with her boyfriend

How to realize there is another way of fighting with negative emotions.



Chapter 5

CONCEPTUALISATION

In this chapter, you will find how I moved from design goal to concepts. The conceptualisation phase was the most tangled. Several design directions, focusing on different aspects of emotional eating behavior, were defined after a brainstorm session.

Set-up

of the workshop

A brainstorming session was held with five Industrial Design Engineering Master students from TU Delft. One hour session started with an introduction about emotional eating behavior, main insights gathered from literature and contextual research, and the aim of the project. User storyboards were provided to participants to make sense of insights and better connect them with specific moments in user's emotional eating journey (See Appendix D). Later, participants were asked to formulate HMW questions and position them on the canvas showing two main components of emotional eating behavior; emotional management and eating practice.

Purpose

The aim of this session was to break ultimate goal statement, which is "helping emotional eaters to establish healthier relationship with food" which is the main aim behind design goal statement mentioned in the previous chapter, "I want emotional eaters to engage in emotional expression before indulging in snacks at home", into smaller HMW (how might we) questions based on the main insights gained from contextual research in order to generate design spaces. Formulating HMW questions is a way of reframing issues as opportunities. These opportunities create clear and actionable design spaces to tackle components of bigger goal (Figure 23). Actionable design spaces were defined as design directions in the following section.

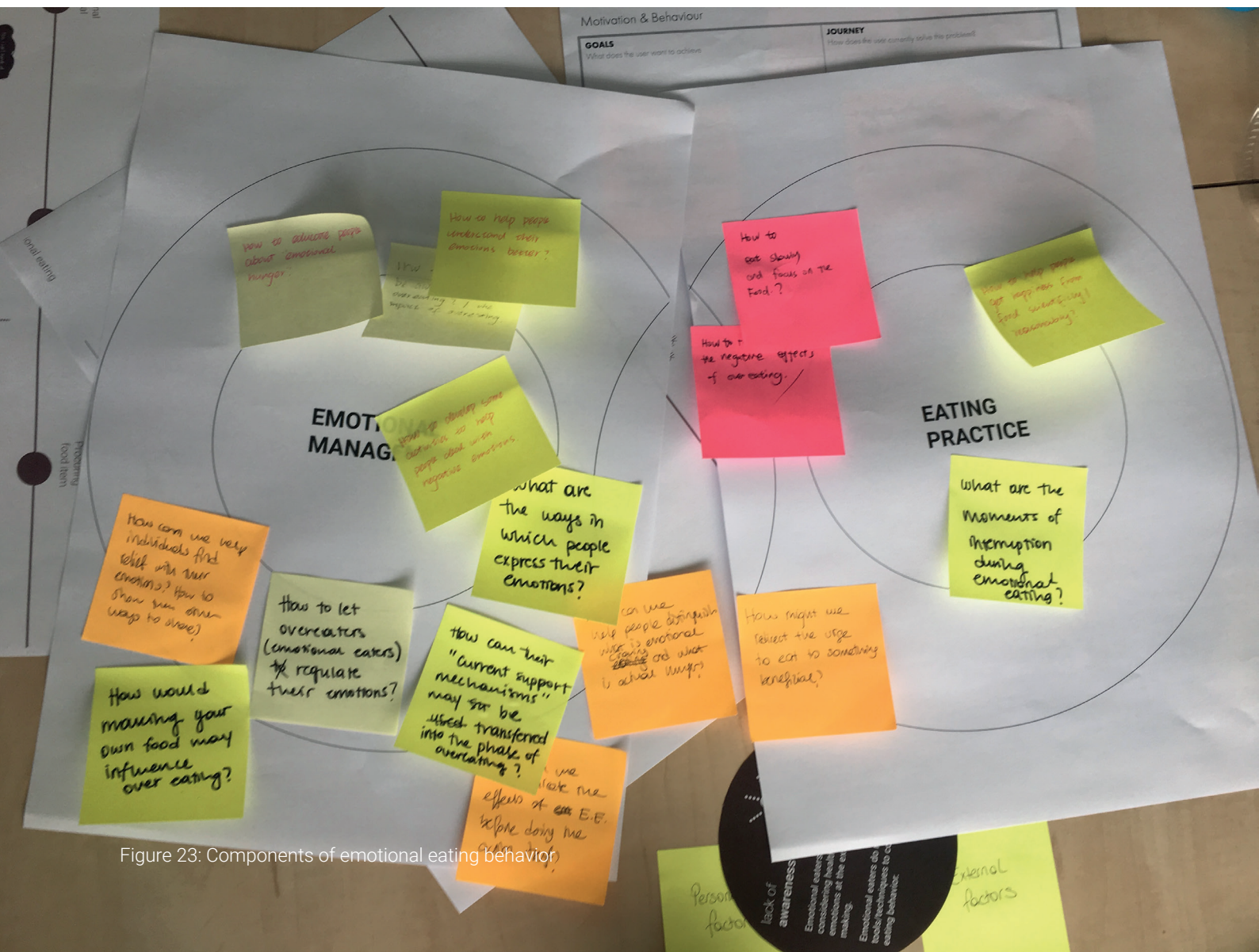


Figure 23: Components of emotional eating behavior

5.1 Defining directions

Most of the HMW questions targeted facilitating better emotional management which will not let people end up in emotional overeating. There were two main notions emphasized, and HMW questions were clustered under those notions: awareness and motivation.

Two main questions were formulated to lay foundation for design directions.

- 1) How to increase emotion and behavior awareness before and during eating?
- 2) How to boost motivation to regulate impulsive eating behavior?

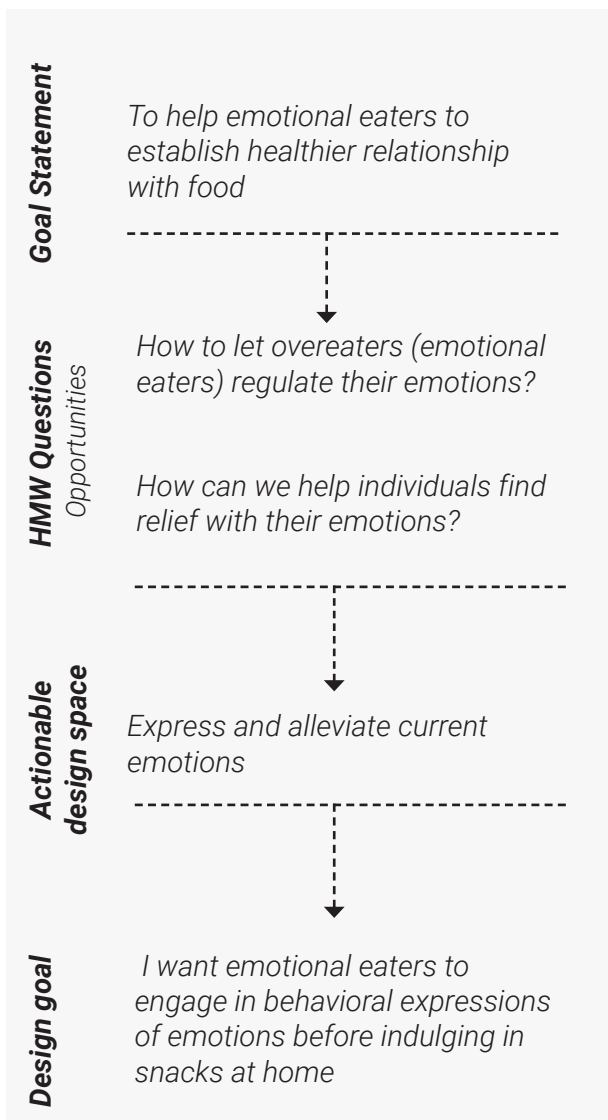


Figure : An example of moving from goal statement to actionable design space

5.1.1 Direction 1 | Engaging in 'healthier' emotion regulation strategies

The main theme of this direction was prioritizing distant concerns (staying healthy) instead of indulging immediate concern (deriving pleasure from food) by showing healthier ways of dealing with emotional arousal. An example may be having a walk outside when feeling stressed.

5.1.2 Direction 2 | Building a (new) mindful eating habit

Mindful eating uses a form of meditation called mindfulness, which enable people to acknowledge and manage emotions and physical sensations. This approach aims to bring people in a state of full awareness of experiences, cravings and physical hunger cues while eating. Since dealing with impulsiveness is the hardest task for emotional eaters, developing a new eating habit cultivating awareness and learning a new approach to food may bring a breakthrough change.

5.1.3 Direction 3 | Express and alleviate current emotions

As it is mentioned in the literature research section of this thesis, emotional eating behavior is a kind of suppression of emotions (a heating up approach) since emotional eaters are not willing to confront their negative emotions and states. This direction aims to turn the suppression of emotions into an expression of them in order to alleviate emotional distress. It is assumed that if emotional eaters can successfully alleviate the negative emotions prompting them to eat, they can better control their impulsiveness towards food.

5.1.1 Defining the concepts

Ideation was done for each direction to explore possibilities, create richness and bring diversity into design spaces.

In some concepts, there were overlapping of design directions. Brief explanations of each concept will be given in the following section.

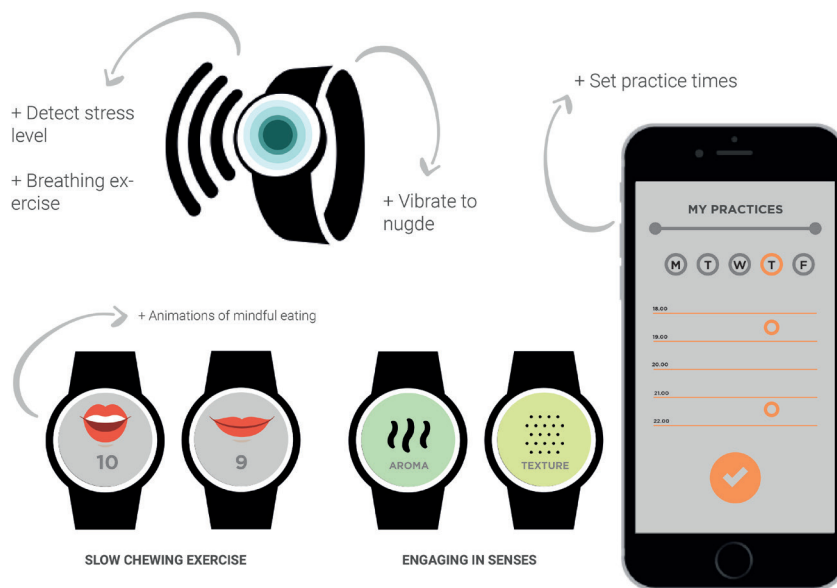
Later on, assessment of design directions and concepts will be made to find the most promising design solution. While assessing concepts, design requirements, which were mentioned in chapter 4 earlier, will be referred.



Concept 1| Direction 2 Reminder & practice wearable

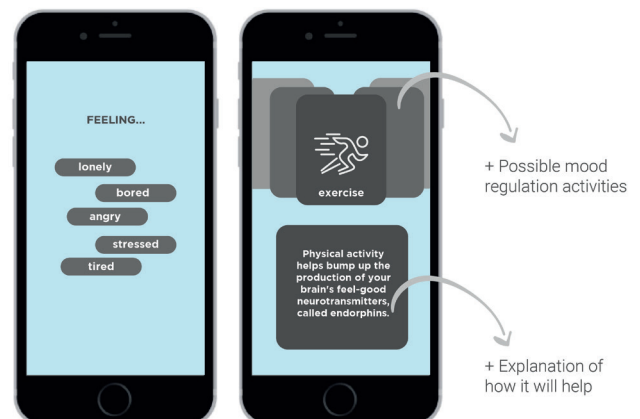
It vibrates to warn user when measured stress levels are high and proposes a breathing exercise to bring impulsiveness under control. Then, it gives instructions for mindful eating practice such as reminding user to focus on aroma, texture, and adjust eating speed. User can set mindful eating practice times based on his/her preference.

Advantages of this concept were providing a just-in-time support and guidance when urge to indulge comes. However, creating a relationship with a bracelet giving instructions might be hard. Also, based on user feedback, emotional eaters do not want their behavior to get attention from others. People would understand what this bracelet stands for and the idea of wearing it caused a feeling of discomfort for emotional eaters.



Concept 2| Direction 1 My activities toolkit

'My activities toolkit' was an application offering other possible ways of dealing with negative emotions. The idea was creating an emergency kit for each person with favorite activities that he can perform when urge to indulge comes. To illustrate, there are stress relieving and relaxation activities were group under the section of 'stressed'. When user chooses an activity, application shows him the health benefits of this activity to encourage engagement.

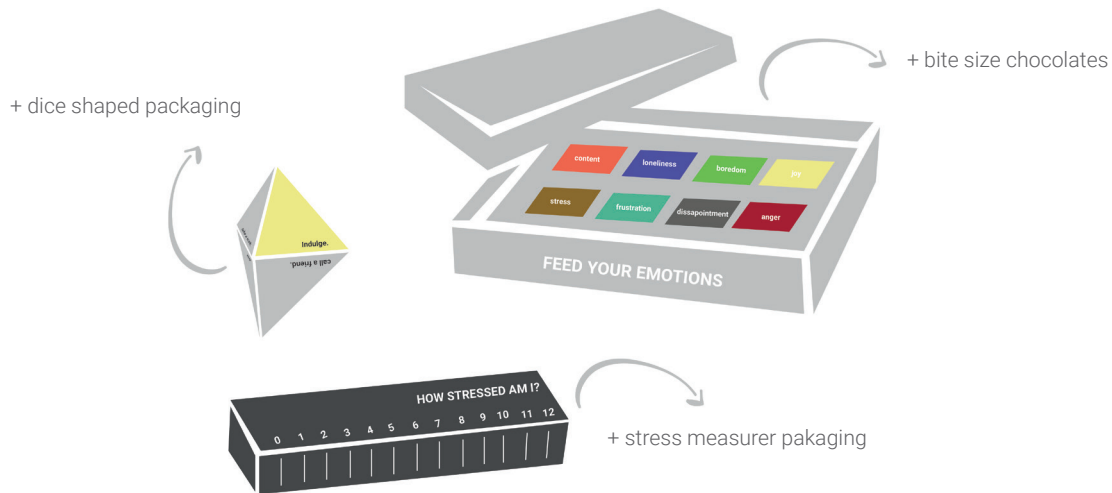


Concept 3| Direction 3

Confronting packaging

Confronting packaging concept aims to bring awareness to user in the moment of indulge by using a humorous approach. First product is a snack package using kind of ruler to measure stress level and control the portion size based on it.

Second products is a chocolate pack containing eight bite-size chocolates referring to different emotions like anger, frustration, boredom etc. There is a funny confrontation emphasizing feeding emotional hunger rather than physical hunger when eating these chocolates.

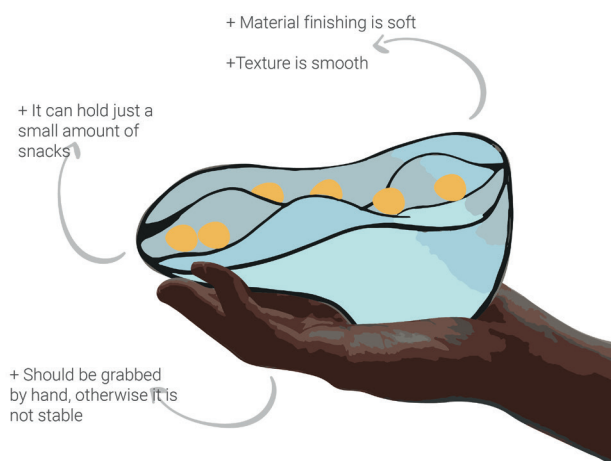


Concept 4| Direction 3/2

Emotion bowl & ritual creation

Emotion bowl concept was a special snack bowl which can hold only a limited number of snacks. The wavy shape of product nudges portion control. Whole concept is about creating ritual of mindful indulgence. The idea behind it was having a special product for a ritual makes people take care of the moment more thus, brings awareness and mindfulness at the moment.

Bowl is an agent of mindful eating which facilitates paying attention to taste, texture, aroma and colors of food thanks to its material qualities. Guidance and support is subtle. Autonomy is given to stress eaters, which means they are not forced to change their eating behavior but turn it into a ritual of mindfulness with the help of emotion bowl. In this concept symbolic meaning of product was higher than its functionality.

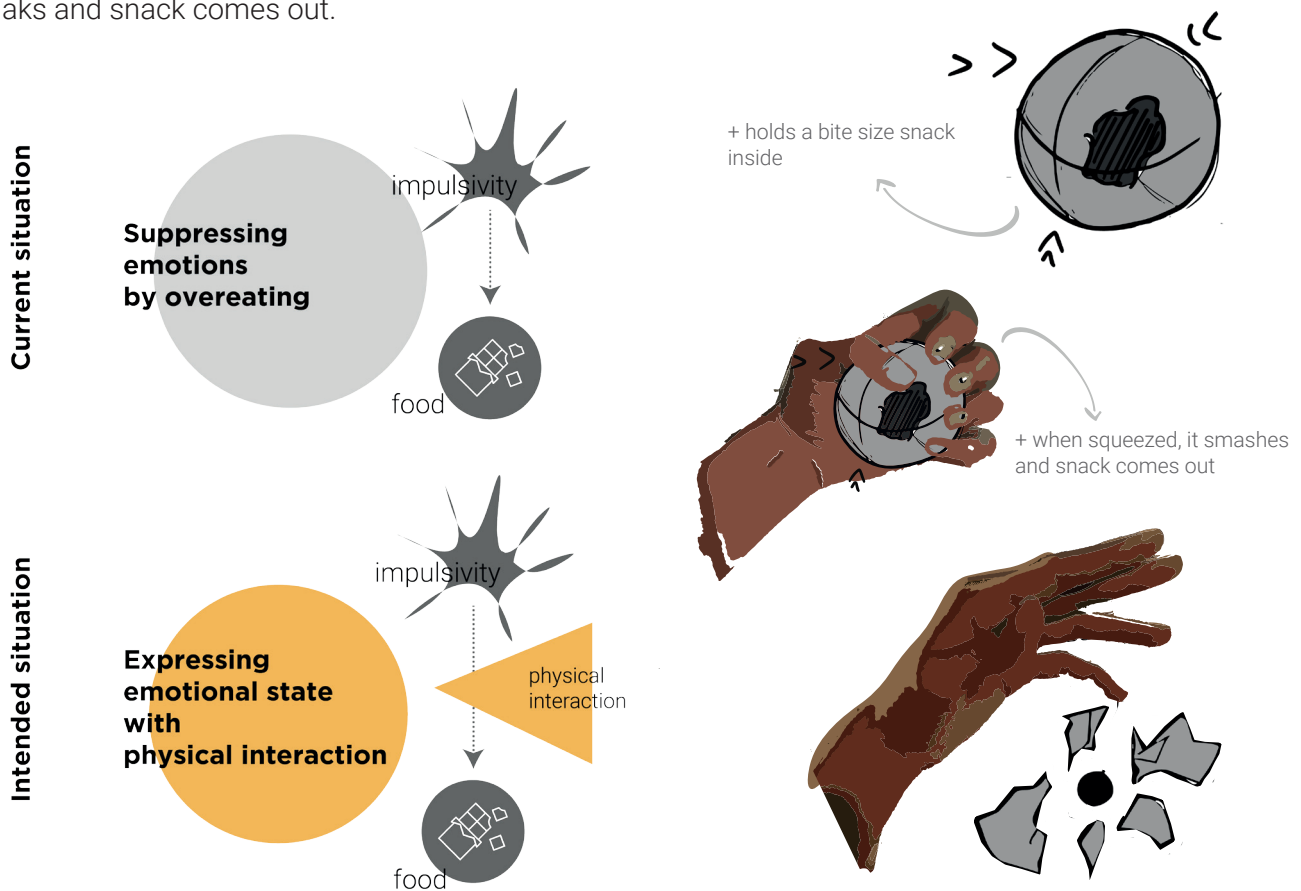


Concept 5| Direction 3

Emotionally expressive snack sphere

Flexible shelled spheres contain bite-size snacks to be consumed in emotional eating periods. This concept was inspired by the physical interaction with a stress ball. On the contrary to stress ball which can resist squeezing and pressure, emotionally expressive sphere can withstand only a certain degree of pressure. When pressure exceeds the limit of the material, it breaks and snack comes out.

In this concept, the intention is to absorb impulsiveness of emotional eater with a physical interaction (squeezing and releasing) before reaching to food. I assume the interaction with the sphere will create a moment of hesitation and prompt emotional eater to be more aware when urge to indulge hits.



5.1.2 Assessment of concepts

The main reason of selecting 'emotionally expressive snack spheres', as a base concept, was due to its richness in emotional experience by providing mixed emotions while interacting with it. In addition, this concept preserves the connection with food more than other concepts.

5.1.3 Assessment of directions

First direction, offering healthier ways of dealing with emotions, was a tricky direction to follow since as a designer I am not capable of labelling strategies as healthier or not. Besides that, the connection with food and eating practice was missing and focus was just on emotional management. Although it was a direction which can offer a longer term solution to emotional eaters' problem, I wanted to keep my design space more connected with eating practice.

Disadvantages:

- Motivation of user may be too low to perform activities
- Connection with food is missing

Although direction two (building mindful eating habit) was a promising approach which would work in the longer term and bring enormous benefits in both eating behavior and emotional management, it requires dedication and patience from user. When we look at the experiences of emotional eaters, we observe that they are looking for instant relief and gratification which is the opposite of what mindfulness practices suggest.

Trying to teach them a totally new eating habit requires a longer time span. Due to time constraints of this graduation project, it is not possible to test the real effect of design concepts generated from this direction.

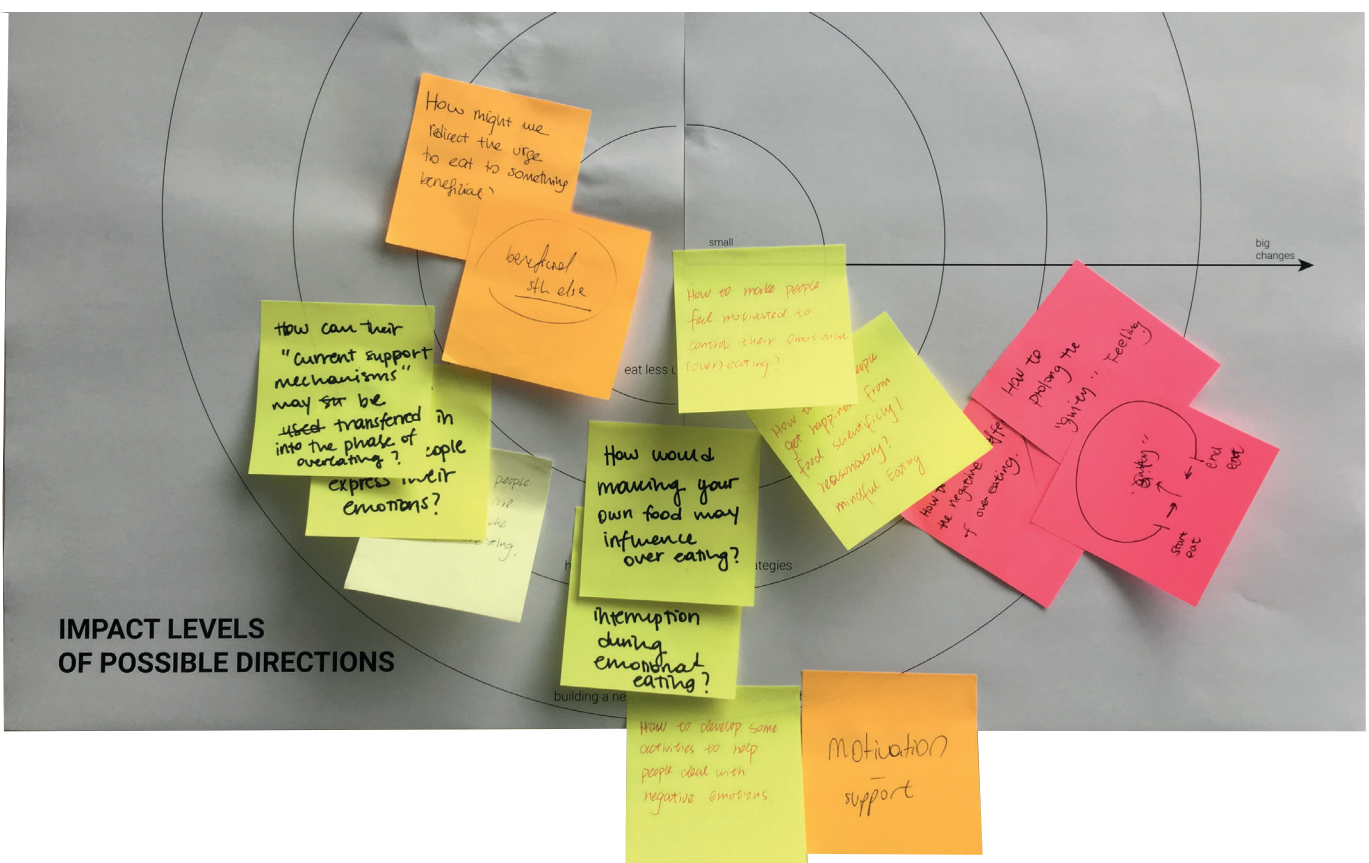
Advantages:

- + Pays off in longer term
- + Does not ban any food item
- + Increases pleasure obtained from food

Disadvantages:

- Requires practice and willingness

Contrary to first two design directions, third direction had a potential to combine two aspects of the emotional eating behavior; emotional management and eating practice. In addition, direction three was the most promising route to follow due to its openness for just-in-time creative interventions. Combining emotional expression with eating practice, also, draw my personal interest. Moreover, this direction focuses on indulging moment where overeating takes place. Thus, it has more potential to design new interactions and experiences with food to prevent overeating.



5.2 Detailing of concept

My aim in this project is not encouraging emotional eaters to eat healthier. But, to create a new interaction scenario that mediates the unconscious relation between emotion and food indulgence. What inspired and made me curious to experiment this concept was wondering what happens if a mediation is designed between impulsivity and food. In current emotional eater-food interaction scenarios, impulsivity and mindlessness govern the decision making mechanism of people and made them vulnerable to overeat under negative emotions. With this concept, I aim to create a physical channel to redirect negative emotions before reaching food. It is assumed that after interacting with the interventions, awareness may be cultivated regarding emotional eating behavior.

The sphere is acknowledged as a playful shape prompting people to play with hands. Therewithal, snacks are consumed with hands as well. By building on the initial concept, three sphere shaped snack holders were designed based on different usage scenarios. The reason of choosing snacks that emotional eating periods take place mostly while snacking rather than regular meal times as mentioned earlier. Three usage scenarios include eating because of stress, boredom and anger. Detailed explanation of each scenario can be found in the following section.

These spheres are the carriers of rich emotional experiences. They enable emotional eaters to express their emotional state before enjoying and appreciating food. When alleviating current emotions, interactions with spheres reveal new feelings such as confronted, surprised, satisfied. Then, the realization of what has happened enables a conscious decision of whether to eat or not. This experience is possibly accompanied by a more positive feeling of joy or appreciation. It is assumed that all of the three interventions increase the deservedness of food, because time or dare to disrupt is required to reach food inside.

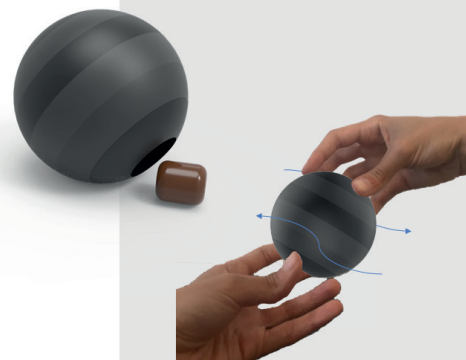
Break it
when feeling angry



Burst it
when feeling stressed



Solve it
when feeling bored



Emotionally expressive snack spheres

5.2.1 Three scenarios

for design interventions

As mentioned earlier in this thesis, there are different intentions (e.g. distracting attention, releasing stress, having pleasure) and experiences with food under different emotions.

Each scenario requires a unique interaction, thus, three emotion-induced scenarios were defined for designing interventions.

1



Anxiety & Worry

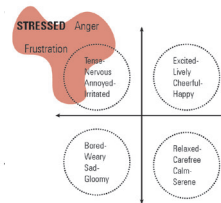
The feeling when you think about bad things that could happen to you. You are on guard, because you don't know what the threat is.

The feeling when something happened that could mean something bad will happen to you or someone else. You cannot stop thinking about this

Possible real life scenario:

You have to submit a paper in two days and you have been sitting behind the computer for a long time, but you haven't made any progress ...

You cannot estimate if you can finish on time or not and it's causing you experience moderate stress.



2



Anger & Frustration

The feeling when someone did something bad that harmed or offended you.
The feeling when you want to achieve something, but find your action blocked. Nevertheless, you keep trying.

Possible real life scenario:

You had an intense argument with your mother and you know you are right but it doesn't make any difference.

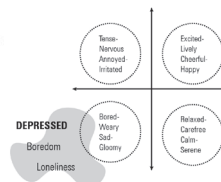
You are angry with her but cannot express it at that moment.

3



Boredom

The feeling when there is nothing interesting or engaging for you to do.



Possible real life scenario:

You are alone at home and recently finished TV series that you follow in a weekend evening. There is nothing interests you at that moment, and a sense of purposelessness comes.

Image references: PrEmo (Product Emotion Measurement Instrument) Pieter Desmet (concept & production)

Scenario 1 | *Food as a distraction (when stressed)*

Feeling stressed was one of the mostly mentioned emotional state leading people to indulge in snacks. Under stress food is seen as a source of distraction in mind from the original cause (e.g. fear of staying behind project schedule). Some of the well-known symptoms of stress are uneasiness in body reactions (e.g shaking legs) and tensed muscles. As we recall from the contextual research insights, stress eaters multitask which make them pay less attention to how much they eat and easily end up in overeating.

Stress balls are products prompting user to squeeze and release, which aims to leave user feeling less tense than they started.

The idea behind is releasing some kind of energy with physical interaction. I got inspired from this conventional product while creating a new experience for stress eaters.

In this idea, small snacks or chocolates are packaged in sensorially textured spheres allowing user to squeeze to relax. The intention of product to absorb the impulsiveness of user before it reaches to food. However, if user really wants to indulge, s/he needs to dare to burst it.

The moment of burst creates a moment of mixed emotions like fear of burst, excitement of reaching snack and relief.



Scenario 2 | *Food as a partner-in-crime (when angry)*

Another mostly mentioned reason of emotional eating periods was becoming angry with someone, something (e.g. after an argument with a family member), or feeling frustrated after a tough day at work/university. In these scenarios, food was defined as a partner-in-crime or a compensation by emotional eaters.

Under these high arousal emotions, people tend to look for quick relievers like punching, shouting, breaking to release their negative energy. Although it is not a constructive way of dealing with negative emotions, actually quite the contrary it is a destructive way, it helps people to become relaxed in the shorter term and serves the purpose.

Expressing negative emotions in a destructive way inspired me while coming up with the concept of breakable snack holder. Here, the intention is providing emotional eaters with a tool directing their impulsiveness to physical aggression instead of heading directly to snacks. The charming part of this concept is that it creates a moment of hesitation before breaking it. This pause in impulsiveness might contribute to avoid overeating and enable user to question craving.



Scenario 3 | *Food as a time-filler (when bored)*

The third scenario refers to eating when there is simply nothing to do. It is the time when all other activities seem requiring too much effort and willingness to engage in. In this low arousal emotional state eating activity is seen as the easiest and effortless way of obtaining pleasure. Food serves as a time-filler which keeps people busy in those moments. Most of the time, there is no food preference but the easiness of eating becomes a criteria. That is why snacks were mentioned as the mostly consumed food items when feeling bored by emotional eaters in this study. When looking for inspiration to design for boredom scenario, I referred to hobbies like solving puzzles which requires time and patience but also excitement.

I designed a snack holder containing several layers with holes in them. The design requires finding the right order of layers to reach snack inside, like a rubic cube. The manual interaction with product is thought to be more fun and engaging.

Compared to other two scenarios there is no disruption but patience and time is required to reach snack. The intention is dissolving impulsiveness of emotional eater while trying to reach snack.



5.3 Initial intervention testing

Purpose

The aim of this intervention testing was to investigate what would happen if a responsive mediator comes between emotions & food, and, whether the physical interactions proposed by prototypes were proper to relieve that specific emotion. Thus, the intention of this session was to test **'the effect of interactions'** on emotional state and eating behavior of participants.

Test set-up

Two sessions were held, one in Comfort Room in Industrial Design Engineering Faculty, one in the living room of researcher's home. The intention of choosing these locations was to test prototypes in a context which most likely resembles home environment where emotional eating mostly occurs.

Three people with previous emotional eating experience participated in the user test. Informed consent forms (see Appendix D) were signed by participants regarding goal and procedure of testing before start. Two of the participants were newly introduced to the project, whereas one of them was a previous participant in contextual research phase. All participants were master graduation students currently working on their final projects and undergoing moderate stress based on self-reports.

First of all, they were asked to read emotion cards with explanation of emotions then, asked to imagine a real life scenario in their mind where they crave for food while going through those emotions. Each participant tested all prototypes (Figure 24) in three different scenarios while thinking out loud.



Figure 24. Prototypes used in the testing session.

Findings | Scenario 1 | Food as a distraction



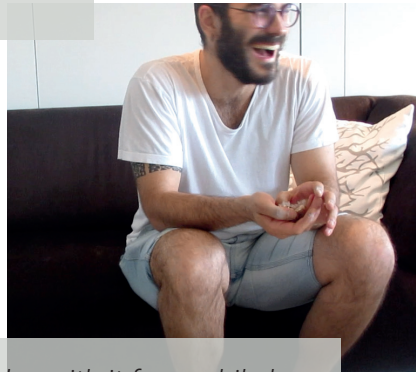
"In all of them after the process food itself doesn't matter that much."



"It would take a delayed time for me to get food."



"I probably play with it for a while because it's soft and funny to rub."



'Eating when stressed' was the scenario which all participants could relate. While grabbing, squeezing and bursting the prototype, participants mentioned feeling desire, excitement and calmness.

Although all participants enjoyed interacting with a squeezable and textured object when stressed, two participants found the sound of bursting quite loud. That sound made them think it may add to their stress levels.

Physical qualities of the prototype, such as being soft and textured, prompted participants to interact with it for a while to release their stress before bursting to reach snack inside.

This prototype was successful in terms of shifting the focus of users from food to physical interaction. It was mentioned that playing with it would be an activity they repeatedly do when stressed. On the other hand, participants were a bit worried about getting hurt if they burst it with their hands. This hesitation caused a slightly negative attitude towards this intervention.

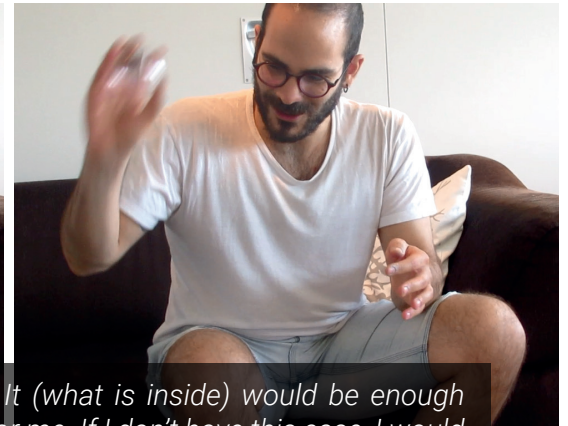
To what extent physical interaction is a proper reliever for the emotion on a scale of 1 to 7?

1-2-3- 4 -5-6-7

Findings | Scenario 2 | Food as a partner-in-crime



"I would be angry that it took me a while to get food but then I would forget previous emotions and be more **focus on how I get this food.**"



"I think throwing is more interesting than actually eating what's inside."

"It (what is inside) would be enough for me. If I don't have this case, I would eat 2-3 muffins."

Participants stated feeling happy, satisfied, relaxed, rewarded, vengeful and embarrassed while breaking the case and reaching food.

Different interaction ways were shown like throwing it to wall, to ground or hit it on the table to break. Breaking something and seeing snack is coming out was found like a metaphor of releasing anger. Thus, physical interaction was approved to be a proper reliever for high arousal emotions like anger and frustration. It is also mentioned that same interaction can be applicable for stressful scenarios.

Having snack in a case added an extra desire to reach food.

Physical interaction, namely breaking, was found quite powerful in terms of expressing emotional state with behavioral response. This strong expression was mentioned to have a positive influence on portion control as well. All participants thought they would not break another snack sphere and would be satisfied with what sphere provides as an amount.

To what extent physical interaction is a proper reliever for the emotion on a scale of 1 to 7?

1-2-3-4-5- **6** -7

Findings | Scenario 3 | Food as a time-filler



"It's more motivating for me to play if I know I am doing progress."



"I would expect a riddle to solve it. I want a clear instruction for it."



"The surprising effect was really nice."



'Eating due to boredom' was the second mostly recognized scenario by all participants. At first, prototype was found ambiguous. Participants needed some extra instruction to figure out how to interact with it.

More visual clue and feedback regarding the progress in solving was needed to keep user's interest in cracking. Participants might feel disinterested and annoyed after playing with the prototype for some time and still couldn't reach snack.

Participants felt happy and excited when they cracked it open whereas, seeing only one piece of snack comes out created a bit of disappointment.

Participants wanted to know the type of snack in it. It is stated that knowing will boost their motivation to reach it.

To what extent physical interaction is a proper reliever for the emotion on a scale of 1 to 7?

1-2-3-4- 5-6 -7

5.3.1 Conclusions

All three prototypes provided the intended effect in different levels in terms of alleviating negative emotional distress in three scenarios. Breakable and puzzled one were found highly proper.

Shifted focus to interaction

In all scenarios 'how to reach food' gathered more attention than 'eating practice' itself (See illustration on the next page showing sequence of interactions and interaction elements).

Delayed time to get food

The idea of directing impulsiveness to physical interaction worked well in terms of creating a pause between actions of emotional eaters and food.

Eating less than regular

As a spin-off of shifted focus, participants mentioned being satisfied with the snack amount that prototypes provide compared to one consumed during a regular emotional eating period.

To sum up, first and second scenarios will be combined in one concept to be used in high arousal emotions rather than dividing as stress and anger. Thus, two intervention concepts will be developed to be used in two contexts; high arousal and low arousal emotional responses.

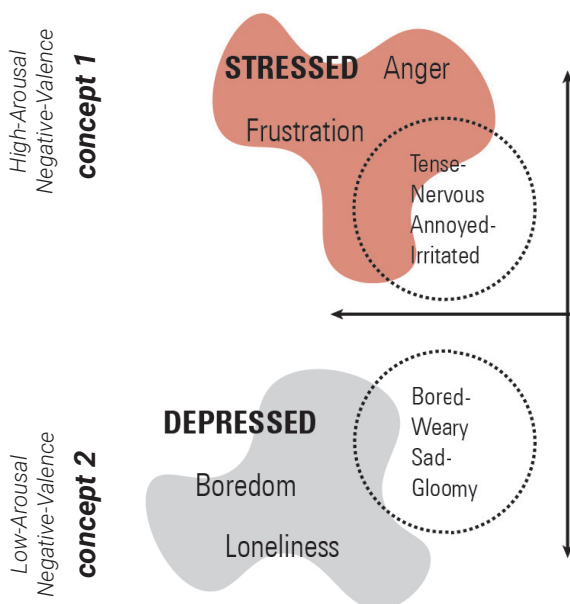


Figure 25: Two concepts for two scenarios

5.3.2 Discussion

There were some limitations of this user test. First of all, it was hard to induce specific emotions to participants since emotions arose after a certain stimuli which might be highly dependent on this person's own experiences and personality. Some scenarios were found difficult to resonate for some participants. For instance, a participant doesn't find eating practice relevant within high arousal emotions like anger/frustration based on his own experiences. That is why participants were asked to imagine a real-life scenario from their own experiences rather than being provided with pre-defined cases.

After successfully achieving the first goal, *putting interaction first instead of food*, there were three aspects of concepts needed further improvement; food selection, material and shape decisions, context scenarios.

1) Food selection

Specification of snacks be packed in products should be done in terms of size, amount and physical properties of them for both concepts.

2) Material & shape of products

Since material selection influences the interaction qualities, it is needed to redesign both concepts. In high arousal scenario, interaction with the product should be slower whereas in low arousal scenario, interaction should be faster to avoid annoyance. This can be reached by reconsidering material selection, shape and structure of products.

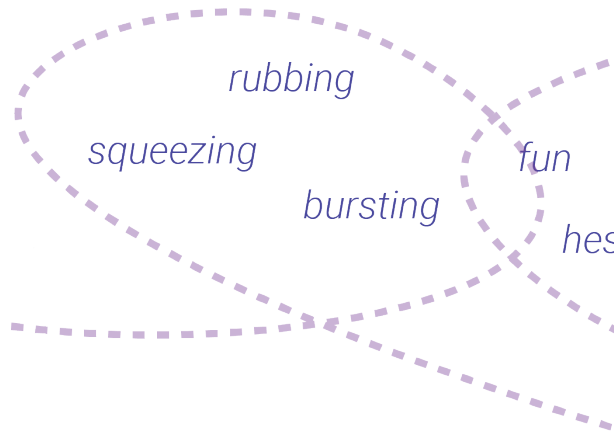
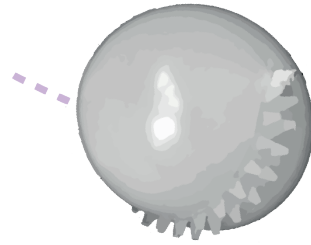
3) Context scenarios

After ensuring the effect of product concepts on emotional eaters emotional state and eating behavior, usage scenarios (i.e. how these products are maintained, how people reach them etc.) should be defined to create a better fit for interactions.

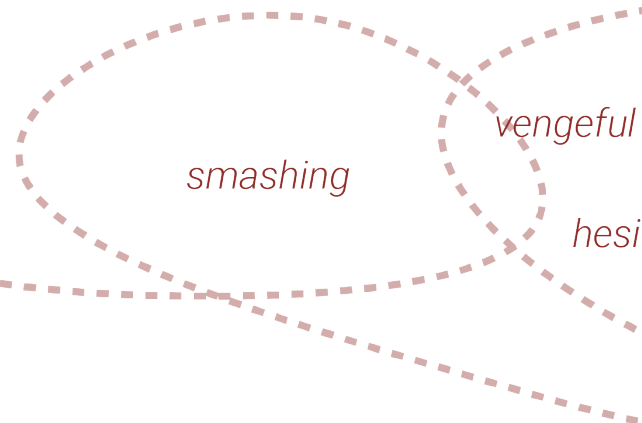
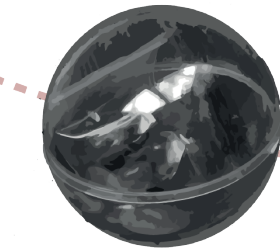
Emotional distress

Interaction

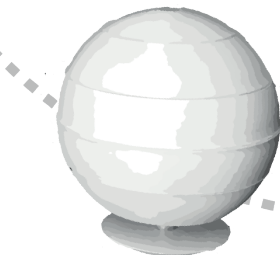
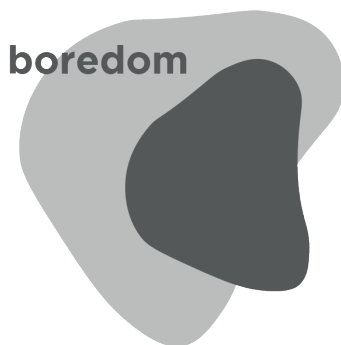
scenario 1



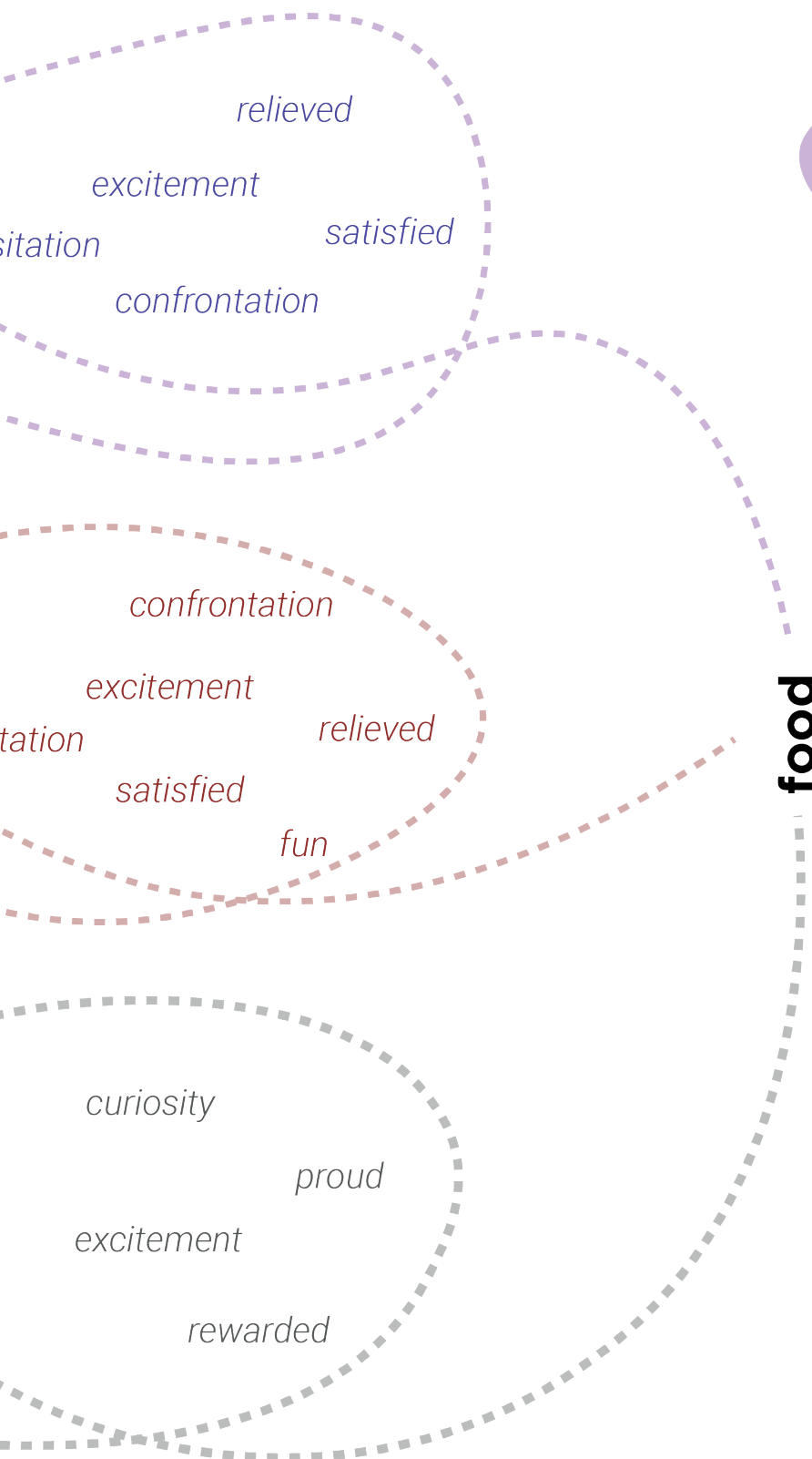
scenario 2



scenario 3



Feelings



Elements

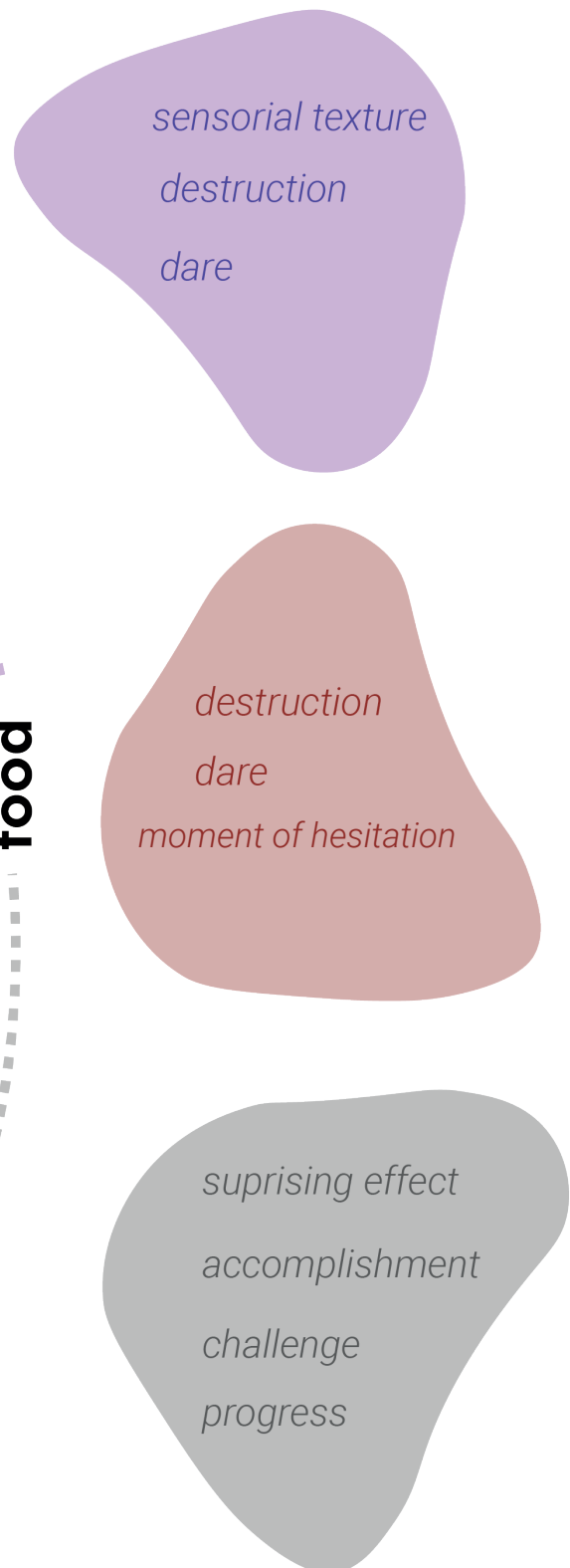
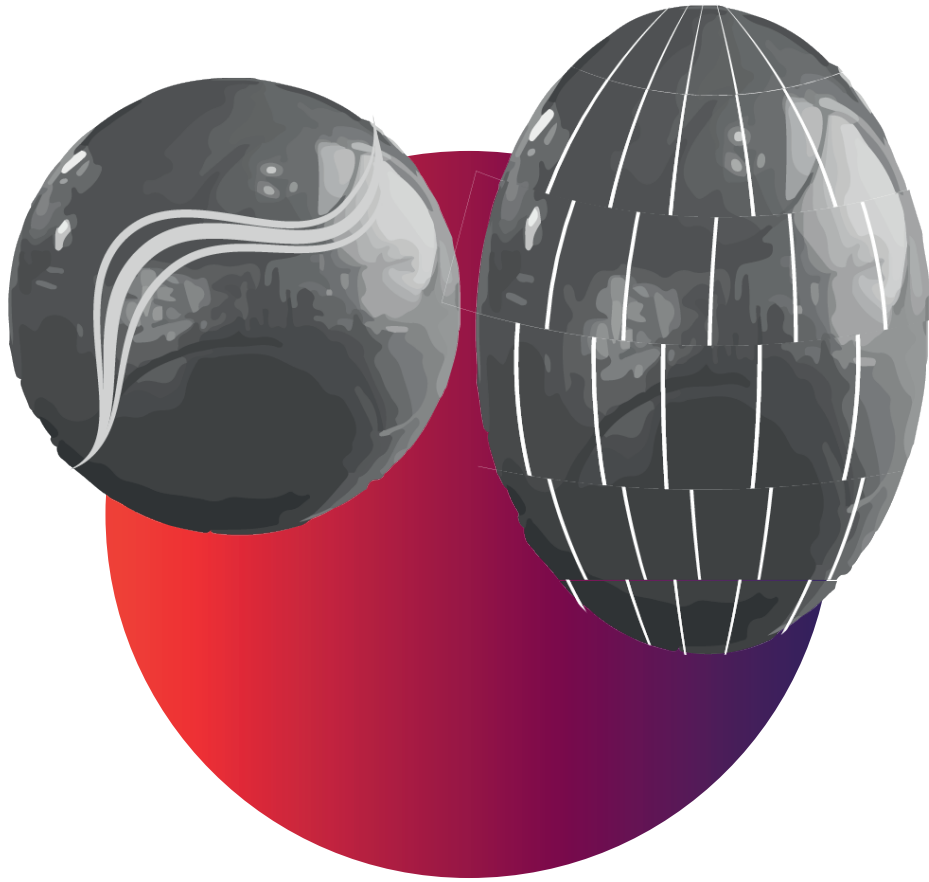


Illustration of the sequenced interactions and accompanying feelings during intervention testing



smash | crack

eat'n

Chapter 6

FINALISATION

In this chapter, three aspects of design interventions, namely food selection, material & shape decisions and usage scenarios will be improved. Later on, finalised intervention concepts will be introduced by reflecting on commercial feasibility and further potential of interventions.

6.1 Food selection

During intervention testing, when asked participants to imagine a snack that they crave during specific emotion-induced scenarios, diversity was observed in snack types. For instance, when feeling stressed, not everyone was craving for chocolate but muffin was an option which might make them happier. Thereupon, I run a small study to find out whether it is possible to cluster snack types in categories. The results of this study led me to strengthen the aspects of snack choices in terms of size, amount and properties.

Purpose

An online questionnaire with two multiple choice questions was prepared to map out mostly craved snack types under high and low arousal emotional states. Multiple choices included snack types (chips, chocolate, cakes, muffins, fries, jelly-tots etc.) which are mentioned by the participants during contextual research and intervention testing session. This research aimed at having a clear picture of snack types which will be proposed with the product concepts.

Data collection

Eight people (emotional eaters) filled the online questionnaire including participants from contextual research. Results can be seen in the figure on the next page.

Results

Chocolates, cakes/muffins and biscuit/cookies mentioned as mostly craved snacks by participants during high arousal emotional state (stressed, angry, frustrated etc.) whereas chips ,nuts/seeds and chocolate during low arousal emotional state (bored, lonely etc.) (Figure 26) Detailed answers can be found in Appendix D. **“Criteria of snacks”** were defined by considering properties of snacks, product concept and packaging solutions in two scenarios; high arousal and low arousal.

6.1.1 Criteria of snacks

High arousal scenario

1) Impact resistance

The snack inside shouldn't be smashed when thrown or obtained physical pressure. This can be reached by using smaller pieces of selected snack type such as bite-size chocolate or cake pieces.

2) Snack size

Snack packages inside shouldn't be bigger than 6 cm to fit in smashable ball. Bite size cakes, chocolates or cookies can serve the purpose.

3) Snack amount

Based on the feedback from testing, amount of snacks that a ball can provide (max. of 3/6 bite-size chocolate/cake pieces) was seen adequate by participants.

4) Snack prevention

Important information regarding ingredients (e.g. nutrients, expiration dates etc.) should be visible on the packaging.

Low arousal scenario

1) Snack size

Snacks inside should be with smaller pieces, nuts already meet this criteria. For chips and chocolates, circular shaped pieces of those snacks can fit better in product's working structure (i.e. Cheetos SHOTS, see Appendix D).

2) Snack amount

Amount of the snack that the product holds is not my primary concern in this project, whereas based on feedback from intervention testing, amount should be more than one snack piece to prevent disappointment.

3) Snack prevention

Important information regarding ingredients (e.g. nutrients, expiration dates etc.) should be visible on the packaging.

6.1.2 Discussion

The snack images below are only the representatives of snack categories they belong to and they are not meant to be used directly in those shapes with the product concepts. Smaller forms of all snacks should be used with two concepts.

There are some limitations of snack types which can be offered with product concepts. For example, snack types containing any form of liquid cannot be used with these concepts due to risk of spill.

In order to maintain the crunch of the chips and cookies it is critical to guard against moisture. A barrier to oxygen is also necessary to extend shelf life. Snack packagings should deliver a solution for these aspects as well. In addition, important information regarding ingredients (e.g. nutrients, expiration dates etc.) should be visible on the packaging.

These conclusions are gathered by the insights from a small sample group (seven people). Further research is needed to generalise these findings for all emotional eaters. Thus, snack categories may not represent snack choices of all emotional eaters. However, in the scope of this project, there was enough saturation in given answers to categorize snack types mentioned by participants of this study.



Figure 26: Categories of mostly craved snacks by emotional eaters during low and high emotional arousal

6.2 Iteration on shape, size & structure

For both concepts, different size and textures were prototyped and tested to find “the best fit” in terms of usage experience and contribution to interaction.

Concept 1

Grasping and rubbing experience

Several tactile patterns were 3D prototyped by considering them made of silicone. Intention was to find the best texture prompting user to grasp and rub the ball for longer time before smashing which contributes to relief. In addition, silicone pattern adds an aesthetically pleasing shape on the product.

In terms of size, smashable concept’s diameter was determined to be around 6cm to fit the palm and offer a better grasp. These dimensions also provide enough space for snack packages to be used with the product.

Maintainability aspect

Disposable shell concept was converted to rebuildable one. Rebuilding mechanism will be adapted from an existing toy in the market whose pieces can be put together thanks to joints it has (Figure 27).

Concept 2

In the previous version of the second concept, snacks were supposed to be transferred from a different snack package to this product by the user herself/himself. This way of filling was not a feasible usage scenario to be maintained for a longer time. Thus, a new way of restocking was designed by changing the upper part of product to “pre-packed snack capsules”. These capsules will be placed on top of product and placing movement will unwrap the protecting cover.

In order to hold more than one snack piece, the shape was enlarged. As a result, the length of the product became 13 cm.

6.2.1 Reflection

It is important to reflect on why a rebuildable concept was proposed as oppose to a single-time (smashable) one. From the studies, destroying element had an effect thanks to creating an experience pulling away negative energy, so this feature was decided to be kept in the final concept. But, destroying a product has some disadvantages in terms of sustainability when considered that this product will be used on a regular basis, then it means it may create a huge negative impact by producing material waste. On the other hand, emotional eating behavior is a long term habit and something with a longer life-span would be a better fit for whole experience. In addition, rebuildable concept brings diversity to usage scenarios by supporting autonomy of users.

Despite the fact that smashing action brings enjoyment to experience, putting the pieces of product back should be as easy as smashing and should not take much time of user. Thus, amount of the pieces, when smashed, was chosen as four.

Since people used to have quite low energy during low-arousal emotional states (e.g. boredom), having maximum enjoyment was aimed with minimum energy and movement in the second concept.

Another significant aspect was providing an easy-to-clean product for the second concept since snack pieces touch the inner walls while going through layers of product.

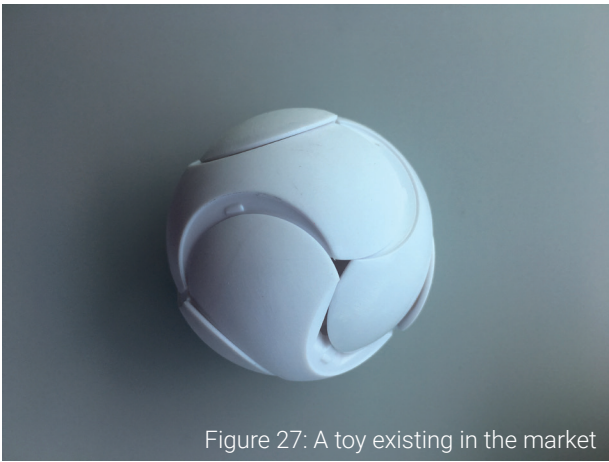
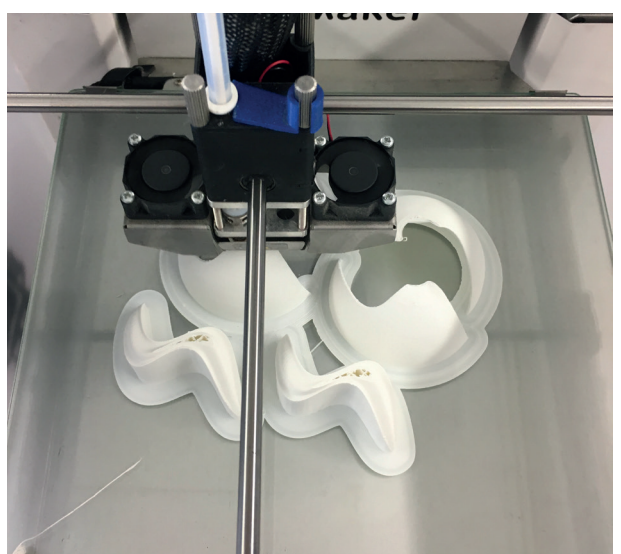
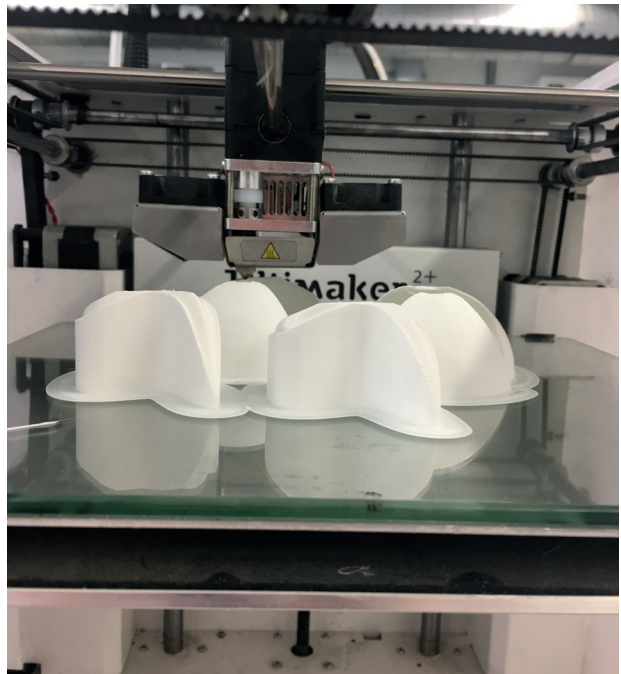
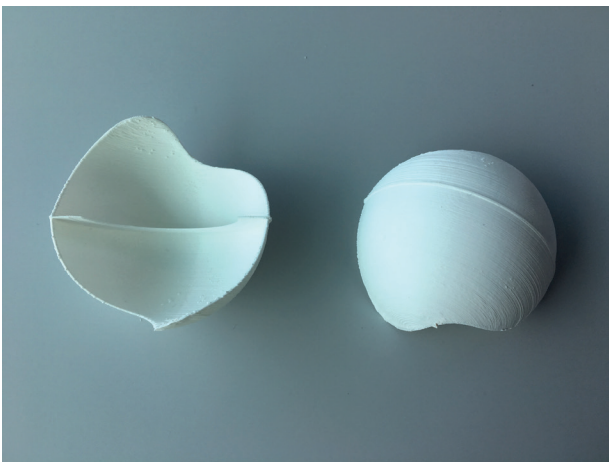


Figure 27: A toy existing in the market



6.3 Material & Shape

6.3.1 Concept 1 | SMASH

During intervention testing, squeezable prototype with soft and textured surface prompted participants to interact with it for a while to release their stress before bursting to reach snack inside. I wanted to bring a similar interaction in the converged concept while keeping the smashable element. By reason of, 'smashing' was found quite powerful in terms of expressing emotional state with behavioral response. The converged concept came to life by combining the advantageous features of both prototypes.

Properties of the concept:

(Re)smash and rebuild

Smashed pieces of the shell can be put together, so the product becomes more sustainable and can be used over and over again.

To extend physical interaction time with the product, it is smashed only after a certain pressure rather than a little impact. This enables users to try breaking the shell more than one time. While doing so, their impulsivity will be more focused on physical aggression/interaction (which is a way of releasing negative energy) rather than food itself.

Smashed shell pieces subtly nudge user to rebuild rather than leaving it in pieces. This physical property paves the way for next indulge moment. Thus, user can always feel safe without fear of overeating.

Sensorial surface

The wavy pattern on the ball is made of silicone, thus it enhances the experience of rubbing when stressed.

Prepacked snacks

To preserve snacks from getting dirty when falling on the ground, a layer of packaging will be covering them. Since snack packages will be purchased and disposed on a regular basis, offering a sustainable material solution for packaging is essential. Thus, a bio-based, compostable packaging solution can provide protection for snacks while supporting sustainability aspect of the concept.

Aesthetic style of concept:

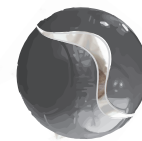
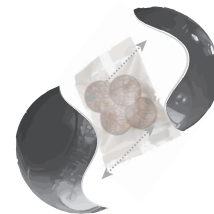
Possessing an aesthetically pleasing object may work as a promoter for this product commercially. People may just want to keep this product around them at home because of its aesthetic quality.

Two identical parts (bigger ones) of the shell will be made of ABS plastic, whereas other two parts will be made of molded silicone with a wavy texture.

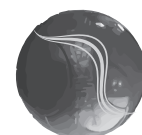
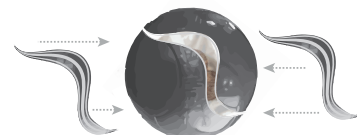
Assembling back:

While assembling it back, bigger shell pieces will be put together first. This will reveal the cavities where two wavy silicone pieces are inserted. Making the assembling process as intuitive as possible nudges user to put pieces together back smoothly. In this way, an aesthetic assembling is achieved and user does not have to figure out which piece should come where.

1.



2.



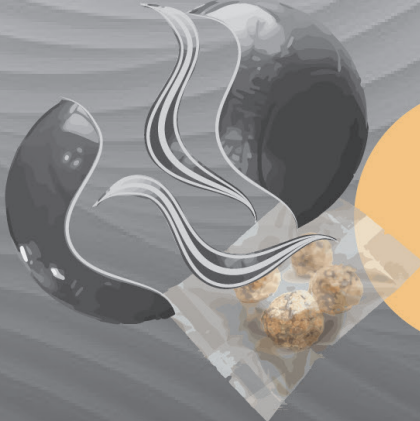


Wavy & soft texture evokes calmness

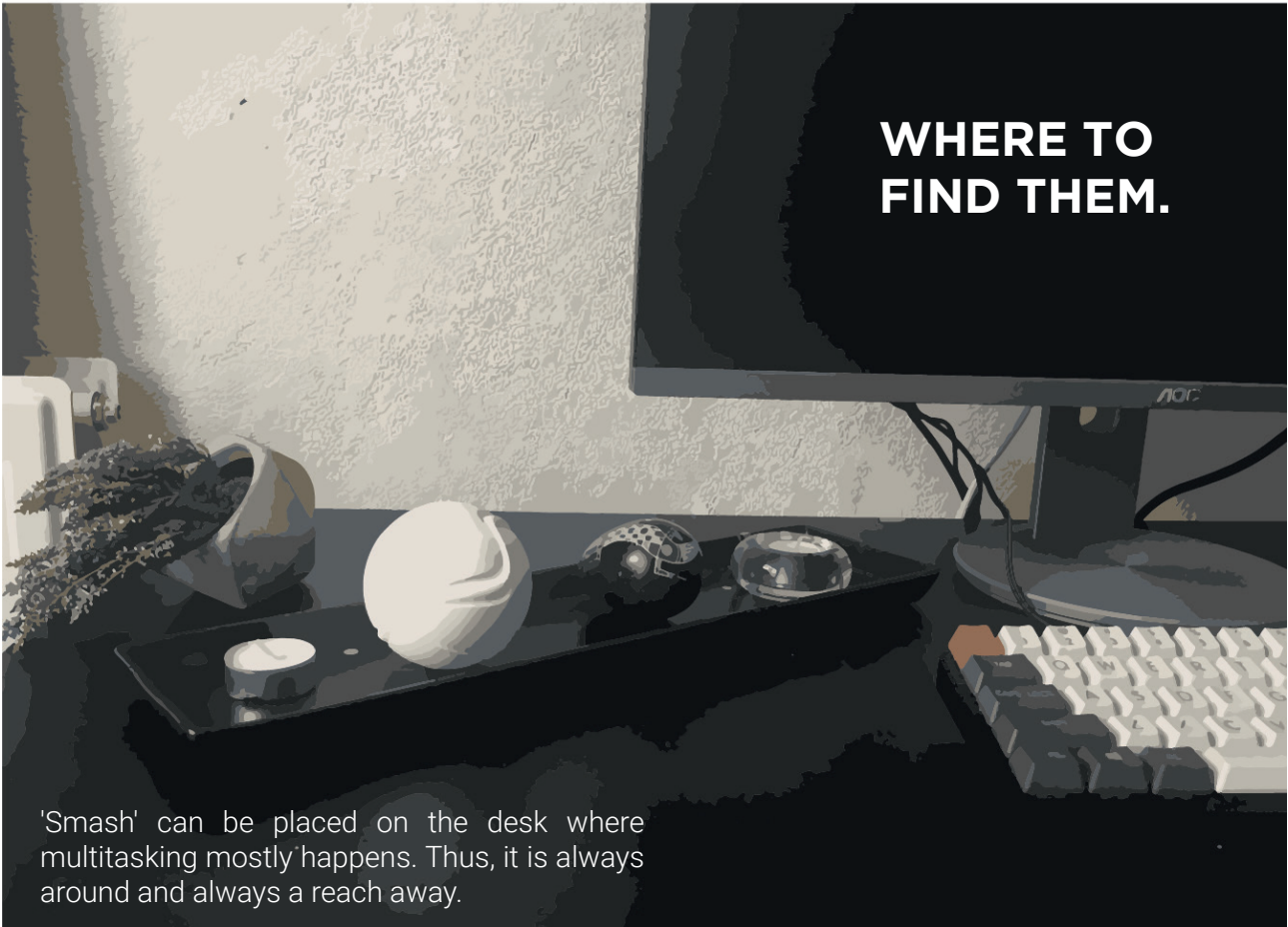
sphere shape nudges user interacting with the product in different ways (throw, play, hit, squeeze etc.)



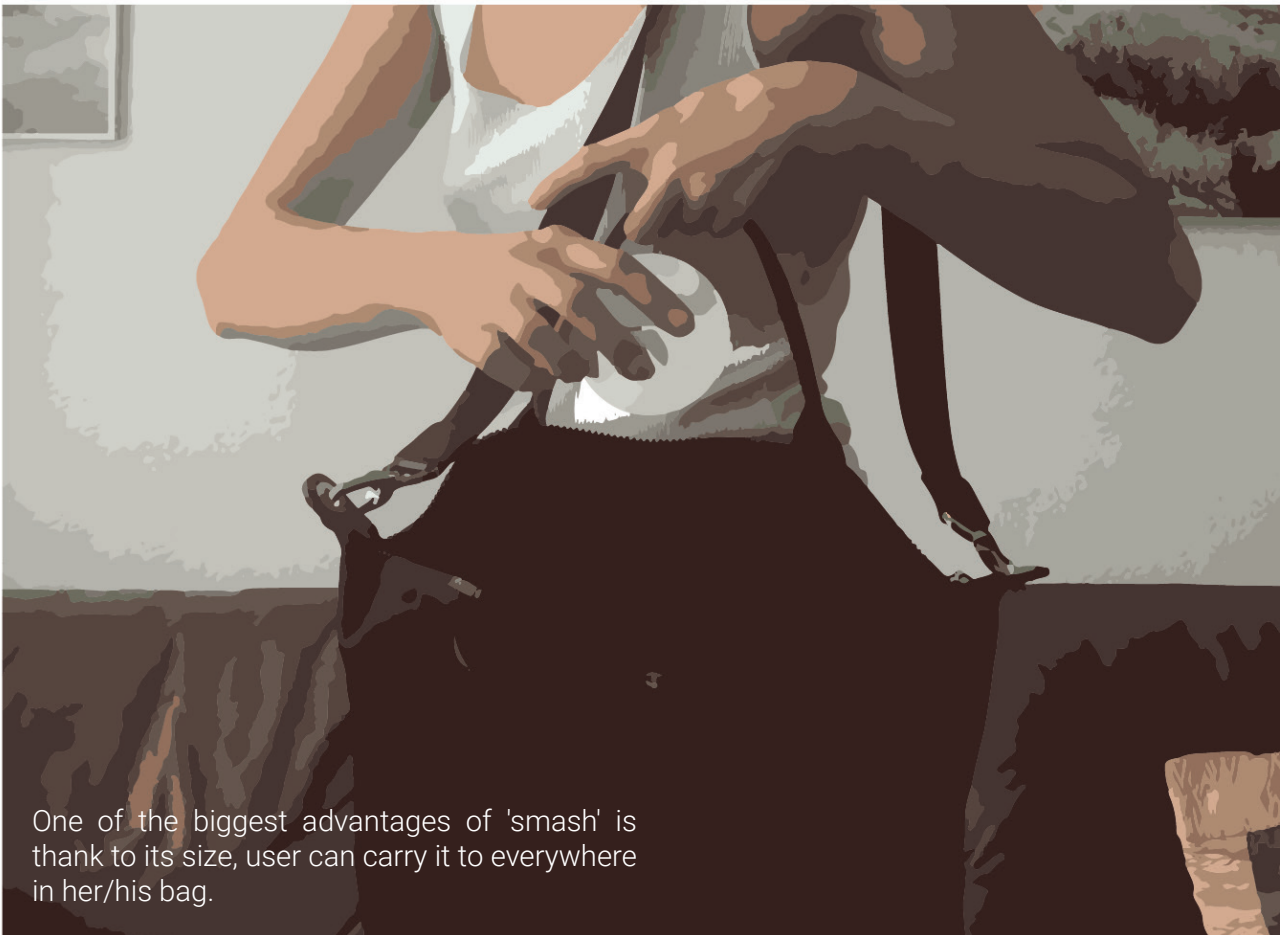
Smash and rebuild



En-Joy!



'Smash' can be placed on the desk where multitasking mostly happens. Thus, it is always around and always a reach away.



One of the biggest advantages of 'smash' is thank to its size, user can carry it to everywhere in her/his bag.



Thanks to its aesthetic quality, it blends in environment and even becomes a decoration object. User can place numerous 'smash's around where s/he mostly spends her/his time.

6.3 User storyboard | concept 1

HOW TO GET & MAINTAIN?



First encountering with the product can be via a family member/a close friend giving it **as a present** to emotional eater.

Later on, snack packs can be purchased from supermarkets and vending machines in common places like universities, co-working spaces and offices or can be ordered online.

GRAB & RUB



User keeps **snack holder** around while working under stress. This provides a sense of control and calmness, by reassuring if indulge comes there is an option to eat but a barrier is there, which meant to be an impulse absorber (a mediator between food and impulse).

WHEN TH



A way to pull away m... in body and mind du... states is expressing... tion. User is suppos...

Interaction **brings a**... reflect on her behav...

THE TIME COMES...



negative energy suppressed
bringing high arousal emotional
g it with a physical interact-
ed to smash snack holder.

pause which lets user to
and impulse.

HERE IT IS!



It enhances the feeling of reward when reach-
ing snack after destruction.

PREPARE IT FOR NEXT TIME.



User puts back another snack pack in-
side and rebuilds it to be used in another
crisis.

6.3 Material & Shape

6.3.2 Concept 2 | CRACK

Based on the feedback from intervention testing, the product should be less ambiguous and subtly prompt user to keep playing with it without the presence of annoyance. One of the ways to make this concept more plausible was making the progress in cracking more visible to user. In this sense, placing a riddle/puzzle on the surface made sense in terms of providing visual feedback.

Yet, there are some requirements for the riddle/puzzle. The riddle/puzzle should be simple and clean, yet a little bit challenging to keep solving time moderate (1-2 minutes). While providing adequate guidance to solve it, it should not overcomplicate the issue and cause even more boredom to user.

Properties of the concept:

A line puzzle was designed. Simple lines were used on the surface to prompt user to align the lines in a way to create a united longer line. However, there are many more options of lines to be aligned and user should find the right one to reach snack.

The intention behind implementing a riddle/puzzle to this product to make solving it more intuitive and bring joy and challenge to process.

Aesthetic style of the concept:

There might have been other forms to be used with this product concept, but to create a common language with the first concept (as a product family) this concept is also designed in a round shape. These two product concepts are considered to be commercially offered together.

The stick on top of the product invites user to place a snack capsule for the next time because you don't want to see the stick standing out in an aesthetically unpleasant way. Thus, user is subtly nudged to keep this product always ready to use.

Usability

Since snack pieces touch on inner walls when going through layers, product should be washable. In terms of material selection, ABS plastic can be used to produce all components except snack capsules. ABS parts (layers) can be detachable so that can be easily washed.

Snack capsules can be made of compostable or recyclable material since these will be the parts purchased on a regular basis.

Sound feedback can be enhanced by leaving the plastic layers hollow. Thanks to the empty structure inside, snack pieces going from one layer to another can create dropping sound to guide user.

Layers will be reshuffled automatically (mechanically) when a new snack capsule is placed. Thus, user cannot cheat by leaving the layers ready from the previous time.

Ownership

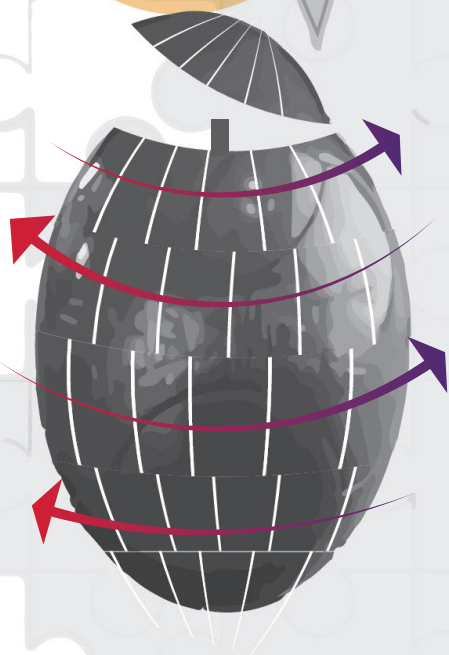
This product is meant to be for "personal use". There are two reasons behind. Firstly, a shared product may bring hygiene concerns. Secondly, there is a nice opportunity to create a bonding with the product since it is going to be used for an intimate experience.



snack capsules containing three different types, nuts, chocolate, chips



Placement of capsule unwraps the protecting cover without extra need to do it manually and layers reshuffle



En-Joy!

A still life illustration of a bedside table. On the table is a modern lamp with a white shade and a white base. Next to it is a white, egg-shaped decorative object with a grid pattern. The table is next to a bed with a dark, patterned pillow and a bouquet of yellow and white flowers. The background shows a window with sheer curtains.

**WHERE TO
FIND THEM.**

'Crack' can be placed next to bed where people mostly spend their time when bored. Thus, it is always around and always a reach away.



Or, it can be placed next to couch as a decoration object.

6.3 User storyboard | concept 2

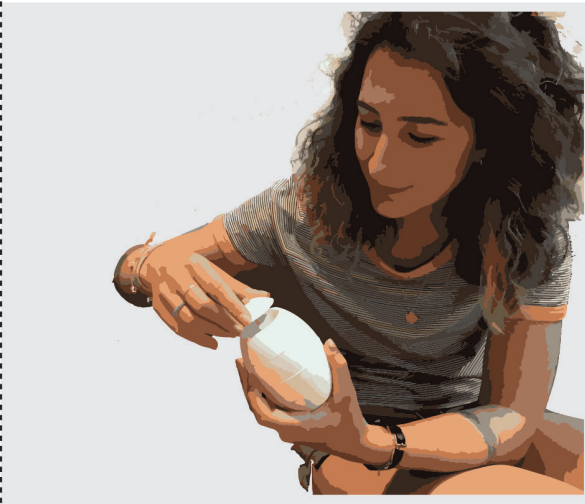
HOW TO GET & MAINTAIN?



First encountering with the product can be via a family member/a close friend who gives the product **as a gift** to emotional eater.

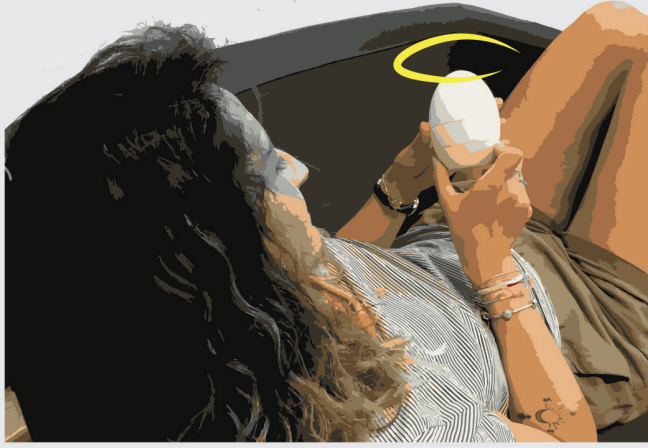
Later on, snack capsules can be purchased from supermarkets and vending machines in common places like universities, co-working spaces and offices or can be ordered online.

PLACE SNACK CAPSULES.

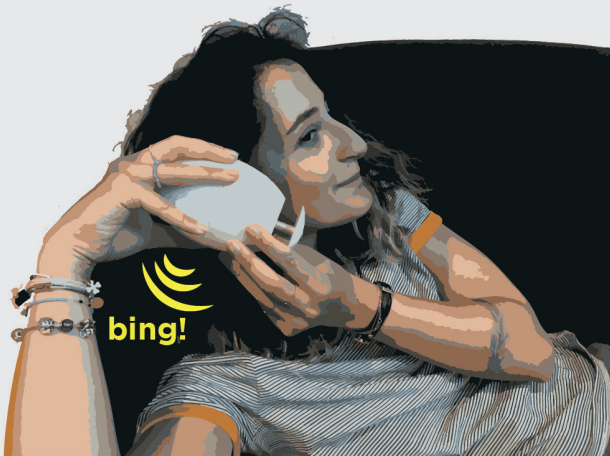


User picks a capsule containing one of the snacks that she likes and places it on top of the product. This can be done at the time of boredom or anytime when it comes to mind. Placing beforehand can also enhance the feeling of curiosity and joy when solving it afterwards due to obscurity of snack inside.

CHALLENGE ACCEPTED.



HERE YOU GO!



User decrypts by trying out different combinations of lines. Meanwhile, the sound of progress keeps her excitement alive.

Finally! Snack pieces comes out suddenly, this moment of union enhances the reward feeling. The empty snack capsule can be thrown away.

6.4 Commercial feasibility

Emotional eaters are not whiningly looking for a solution to change their behavior as long as it does not cause serious health problems affecting their overall healthiness. Thus, the way this product family goes into their life should be unobtrusive and engaging.

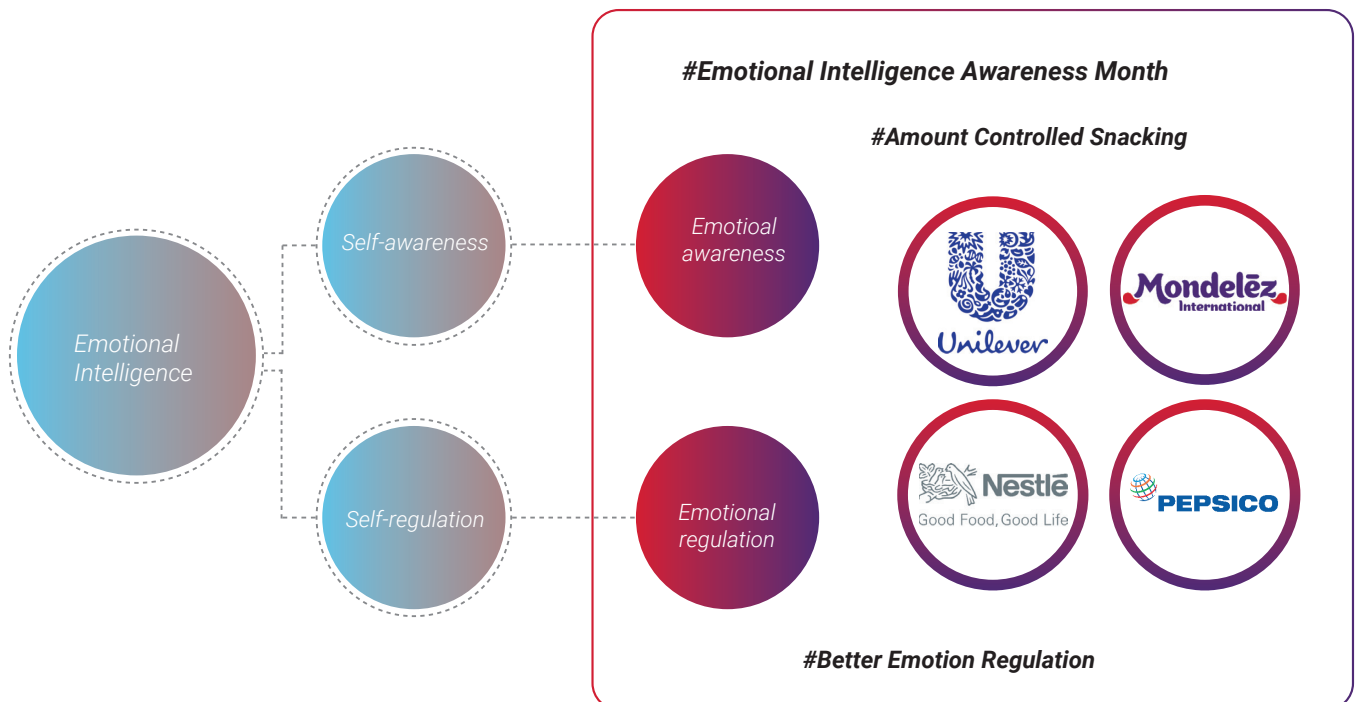
Unilever or Nestle sort of brands can promote amount controlled snacking like a social responsibility project (i.e. "Join the pipe" initiative and their wattle bottles) against obesity and eating disorders by collaborating with NGO's working on topics like emotional awareness.

These two products can be giveaways of those food and beverages companies which are specially prepared for the "Emotional intelligence awareness month". This product family might be launched as a tool/mediator to bring/reflect on "emotional awareness".

Emotional intelligence awareness month is a duration. This month-long campaign provides an opportunity to discuss the helpful and harmful reactions to emotions and other related topics. Emotional intelligence is a self-governing initiative to make healthy assessments about how our minds influence quality behavior. Such assessments help us to better understand our minds and reduce emotions' harmful, yet natural effect on our thoughts and behavior.

Well-known food and beverages companies can join the campaign and place their own logos on products (Figure 28: See Join the pipe example). This can be a way to attract more attention in the market and reach even more people.

These products can be dispatched with regular snacks for the first time and maybe all other brands can produce snack packs and capsules in same dimensions to be used with this product family. Thus, the life span of products can be extended.



Further potential and opportunities

This product family can target any person having some sort of problems with food. They do not have to have a chronic eating disorder. There is a wider opportunity in this sense in targeting a wider population than just emotional eaters, since everybody does emotional eating to some extent in their everyday life. Everybody connects some sort of emotions with what they eat. And even people who loves to try out new products to improve their habits may want to try it out.

Keeping the interest alive

If products are offered in different colors etc. in the future, people may want to collect to complete the whole series.

In addition, throughout the project I focused on two negative emotional states prompting people to eat yet, there are some positive states work in a similar way on eating behavior. In the following years, product family can be extended with upcoming interventions designed for these positive states. Therefore, continuity of the campaign can be achieved.



Figure 28: 'Join the pipe' initiative's stand in a supermarket

The vibe of the campaign

This product family can be placed next to "healthy eating" shelves in supermarkets so that mind automatically associates these products with a healthier lifestyle. Although it was not an intention in this project to redirect people towards eating healthier, may be in the future the usage scenarios can be specialized by only offering healthier snack options to be used with intervention concepts.

Implementation to real life

Although the product launching scenario sounds promising it requires some sort of confirmation from the food and beverages brands proposed. The willingness of brands in collaboration for a month-long campaign will be validated by contacting to responsible employees from marketing/snack departments.

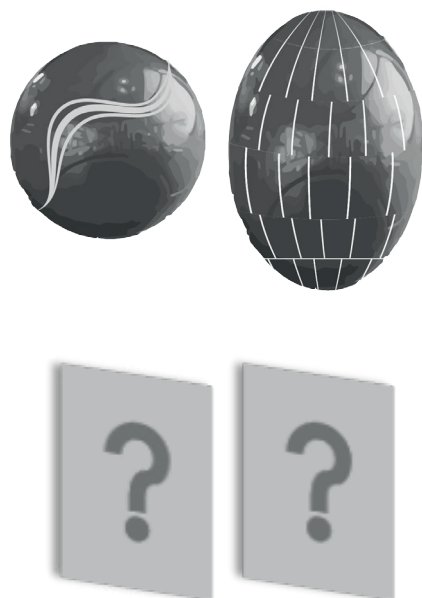
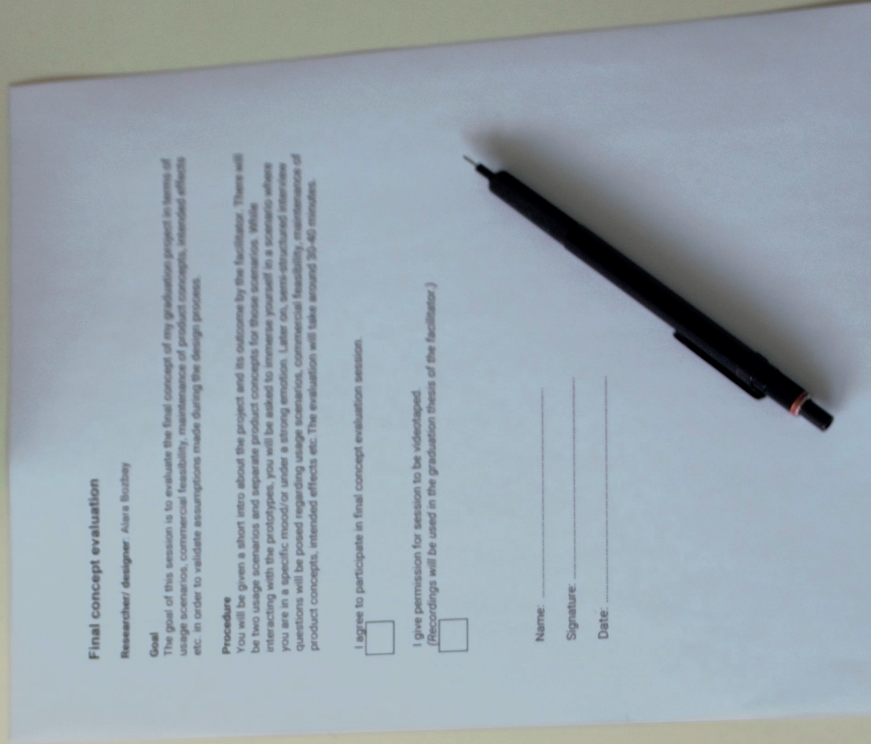


Figure 29: Collectible product family

Figure 30: Evaluation session materials

Concept 2 | CRACK

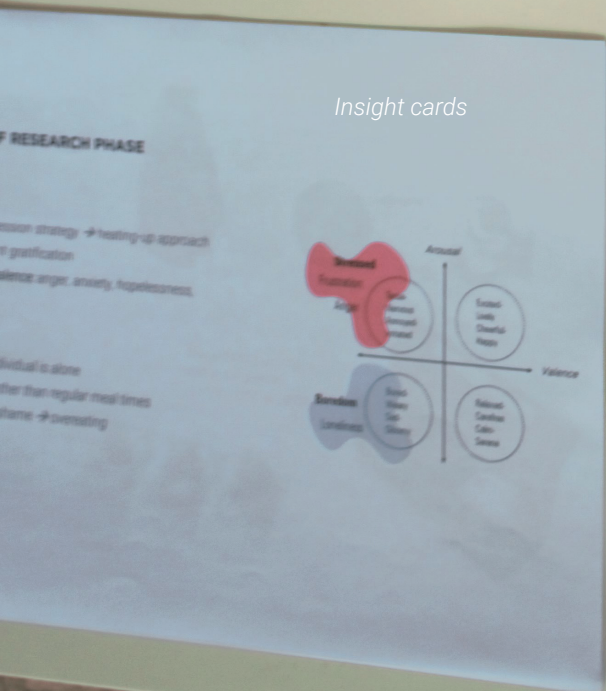


Consent form & storyboards

Concept 1 | SMASH



Insight cards



Chapter 7

EVALUATION

In this chapter, final evaluation of the interventions will be shared. Conclusions, reflections and recommendations for further development of the concepts will be discussed. Reflection to theories mentioned earlier in the project can be found in this chapter as well.

7.1 PURPOSE

of the study

Since the intended effects of interventions was validated in an earlier testing session (see Chapter 6), the aim of this evaluation study was to assess appropriateness, feasibility, viability and usage scenarios of interventions with final users and proposed food and beverages companies.

Several research & interview questions were formulated.

R.Q 1: How would those interventions influence their eating behavior/ self-awareness/ self regulation?

R.Q 2: *How engaging are these products in terms of creating a channel to express emotional distress?*

Would you use this product instead of grabbing a bag of chips? Why ? Why not?

R.Q 3: *Would you put time and effort to maintain these products? (putting time and effort to prepare them etc.)*

R.Q 4: *Would you prefer these products to be given to you as a gift from someone you love? or would you prefer purchasing it yourself?*

Where would you place it in your home? Why?

R.Q 5: *What do you think about the product launch scenario? (brands, emotional intelligence awareness month etc.)*

Would you like to collect "coming" products of the campaign in following years?

Test set-up

Evaluation session was held, in Comfort Room in Industrial Design Engineering Faculty & participant's home. The intention of choosing these locations was to test the final concept in a context which most likely resembles home environment where emotional eating mostly occurs. A camera was video recording participants while they are testing the prototypes and evaluating the usage scenarios. Additional voice-recording was done to be able to transcribe follow-up interviews. Each testing session lasted for 30-40 minutes.

Materials

A consent form, 2 product concepts (smash & crack), user storyboards, and main research insights were prepared on the table (see figure 30). A 5-point-Likert-scale was provided to evaluate concepts in terms of usage scenarios, commercial feasibility, maintenance of product concepts and intended effects.

Participant selection

Seven participants (see Figure 31) joined the final concept evaluation session. While five of the participants were familiar with the project due to being part of contextual research and/or intervention testing sessions, two participants were introduced to project first time.

Five of the participants were confirmed as being emotional eaters based on the EEQ filled at the beginning of the project. Other two participants who scored as "low-emotional eater" were included in testing in order to test the effect of interventions in normal eating population.

Procedure

First of all, participants were asked to read and sign the informed consent forms. (See Appendix E) Later on, participants were introduced to the aim of the project and main research outcomes. Two product concepts were explained one after each other including how to get them in market, use and maintain them. As well as possible product launch scenario and further opportunities.

While researcher was introducing concepts, participants were asked to interact with the products simultaneously. Semi-structured interview questions were posed to participants after interaction phase was done. At the end of the session, participants were asked to fill an online questionnaire including 10 questions in the form of 5-point Likert scales to assess both concepts in certain aspects, results of assessments can be seen on figure 33/34.

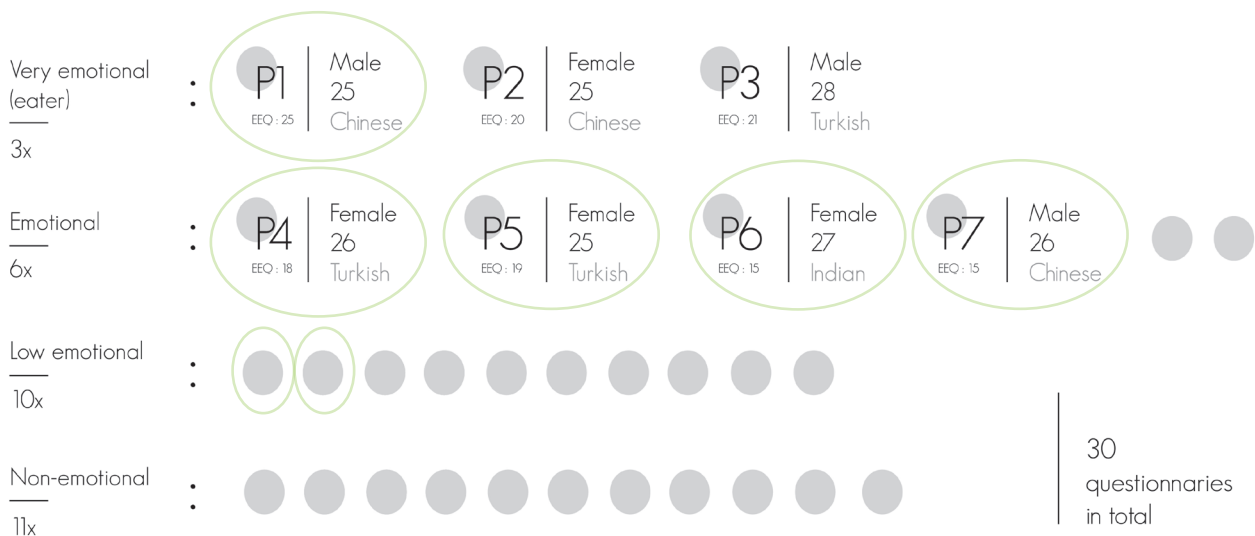


Figure 31 : Evaluation session participants in circles

7.2 Concept review

Engagement in expressing emotional distress

Concept 1 | SMASH

All participants found the physical interaction of rubbing and smashing quite appropriate during high arousal states. Although the intention was not to compare two concepts, there was a common belief that SMASH is way more engaging and appealing to wider users and usage scenarios than CRACK.

Some participants saw an opportunity for SMASH to be used during boredom scenarios as well, thanks to experience it brings about.

*"Smash is bringing **a continuous interaction** with the silicone part.. "*

" Breaking it open and fixing it back is also something to be used in boredom scenario. "

Concept 2 | CRACK

The experience that CRACK provides was found more of a replacement negative emotional state (boredom) with a positive one (joy, excitement) rather than expressing boredom. Yet still , interacting with it achieves alleviating current emotional state and responds to underlying intention.

It is also mentioned that even without snacks CRACK is playful enough to play with it when bored. Besides that snack enhances experience as a 'treat' for patience and dedication. Yet, since it is quite a personal preference some participants did not want to solve puzzles when bored. Same participants mentioned using SMASH during those scenarios as an alternative.

*"It would really respond to boredom because **it creates fun** playing with it.."*

"... crack is already playful even if there is no food in it. It boosts motivation to use it "

Effort and time to maintain

Concept 1 | SMASH

All participants appreciated having just 4 pieces to rebuild because it eliminates the hassle. Yet, the way SMASH is rebuilt was found less intuitive according to a participant and he wanted even more simpler way.

Hygiene and usability wise SMASH was found quite appropriate thanks to using packed snacks. In general SMASH was found creating a big impact with a little effort.

"If I would use it in office, I would try to keep maintaining it because I think it is a nice office gift."

*"SMASH requires **less effort but provides better feedback** which makes it more engaging. It is opposite in CRACK, you have to give your all focus and patience."*

Concept 2 | CRACK

Snack capsules were found quite convenient thanks to little effort needed to place them. Yet, size-wise CRACK was seen as more suitable for home usage rather than carrying it everywhere. The biggest disadvantage of CRACK was actually its main feature; being challenging. Although visual and sound feedback are provided while solving, some participants (x2) gave up in cracking it open.

For a participant, Crack seemed like an extra product which needs to be taken care of because it requires washing after certain usage.

*"I liked how you put snack capsules **it is so easy and intuitive.**"*

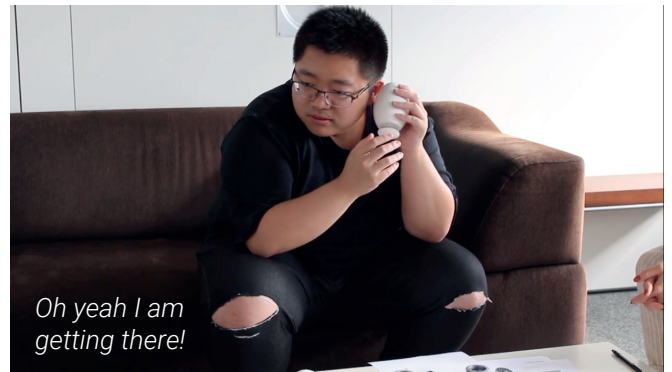


Figure 32: Participants interacting with prototypes

Influence on eating behavior

Delay in eating

As mentioned earlier in intervention testing conclusions (see Chapter 6), all participants agreed on the effect of physical interactions creating a delay in eating. This delay turns into a 'stop & think' moment for users to reflect on their current status and upcoming eating behavior.

*"SMASH would delay my eating time, if I use this thing, I can't eat it like eating from package of chips which mostly happens in an autopilot mode. It is kind of **intuitive to slow down my pace of eating.**"*

A mindful moment

Both interventions were experienced as agents of mindfulness before and while eating. Bridging impulsiveness and food through physical interaction brought more focus and attention to current experiences. Thus, via designed interactions impulsiveness is transformed into mindfulness.

*" It (eating) turns into more mindful behavior/moment, even when you decide to smash it, **you become really focused on it.** The moment of breaking.. the sound of breaking those are enhancing the experience "*

Amount controlled snacking

There was positive feedback regarding the snack portions offered with interventions. Some participants mentioned it might challenge them at the beginning during adaptation period to such a small amount. Yet, they liked the challenge of trying to eat just that amount and get accustomed to that. The cooperation between interventions and user was found essential to let interventions do their job which means there needs to be an initial intention of participants to some extent to control emotional eating behavior.

" ... It makes me think that I shouldn't eat that much. Yet, I don't think I am controlled by the product. .. it would help me decrease eating. "

Interventions VS. grabbing other snacks

When asked how likely participants would use these interventions rather than grabbing other snacks, a certain level of initial awareness on this eating behavior was required for these interventions to be used more effectively. Participants thought the target group should be willing to make a change then, these products would be indeed helpful.

*" I would use these products if I already have **certain awareness and intention to control my behavior** because I know they are doing something good for me. "*

*" I am a person who is trying to deal with this behavior, at least I am trying to regulate it, thus I would **prefer eating snack with these mediums** "*

Gift VS. buy for own

All participants except one stated they would be glad to receive it as a gift from someone they are close (i.e best friend) because of its underlying meaning which is "I care for you". Also, receiving it as a gift would prompt users to use it more often and with more intention. A participant, who was formerly obese, mentioned she might be felt offended if she is gifted these products thus, buying for own is always a choice besides gifting. These products also found to be favoured by people who voluntarily wants to have new habits (i.e amount controlled snacking).

*" Because they can be used over and over again, it wouldn't be like gifting someone food but it is **really smart** with the intention behind them. "*

" Because of the message of gift namely, 'they care for me', I would try to use it more often, I would put effort."

Launch scenario

Since there is not such a product in the market for the same purposes, participants mentioned they would not go and look particularly for these products at the first place. Thus, the idea of encountering interventions as a give-away with regular snacks packages was preferred by them. They really liked the idea of a month-long campaign in collaboration with well-known brands as a social responsibility initiative to launch interventions in the market and to draw attention to emotional regulation and awareness. Yet, a participant doubted if those brands would be willing to join their forces.

" It would be a good initiative for those brands to get reputation."

" It makes it more reliable when you offer products with brands during emotional awareness month. It reassures that there is research behind it. "

" It is promising for me, now we have lifestyle of eating healthy. These products can improve the brand value and can build a strong branding image. What we offer you is a healthier life "

Collectible

There were opposing opinions regarding offering interventions as a part of a product family whose following products to be launched in later years. While some of the participants (x4) liked the idea of completing 'the series', others (x3) said they would not be interested in much. But yet, collectible idea was found breeding an opportunity for launching customized products for special occasions which prompts users to collect.

" I liked the collectible idea, it is more like selling a lifestyle, it can create an expectation for next products. "

" I am not sure about coming products but if those are offered in different colors, then I would make a collection of different colors "

Usage span

Although the intention of questions was not to compare two interventions, there was a common opinion that SMASH would be used on a regular basis compared to CRACK. One of the reasons mentioned was CRACK might turn out to be the same thing after getting accustomed to solving it.

" I would use SMASH regularly, but CRACK may become same after a while. I can see myself using CRACK for 2-3 times then putting it aside "

Long term effect on eating behavior

The awareness raised by interventions was there regardless of the usage period because having those products was mentioned to be a powerful reminder itself.

" I would not use these products for long time but when they raised the awareness it becomes something valuable in the longer term. Even if I do not use it, just seeing it on the table would remind me I may eat because of stress and let me reflect on my behavior"

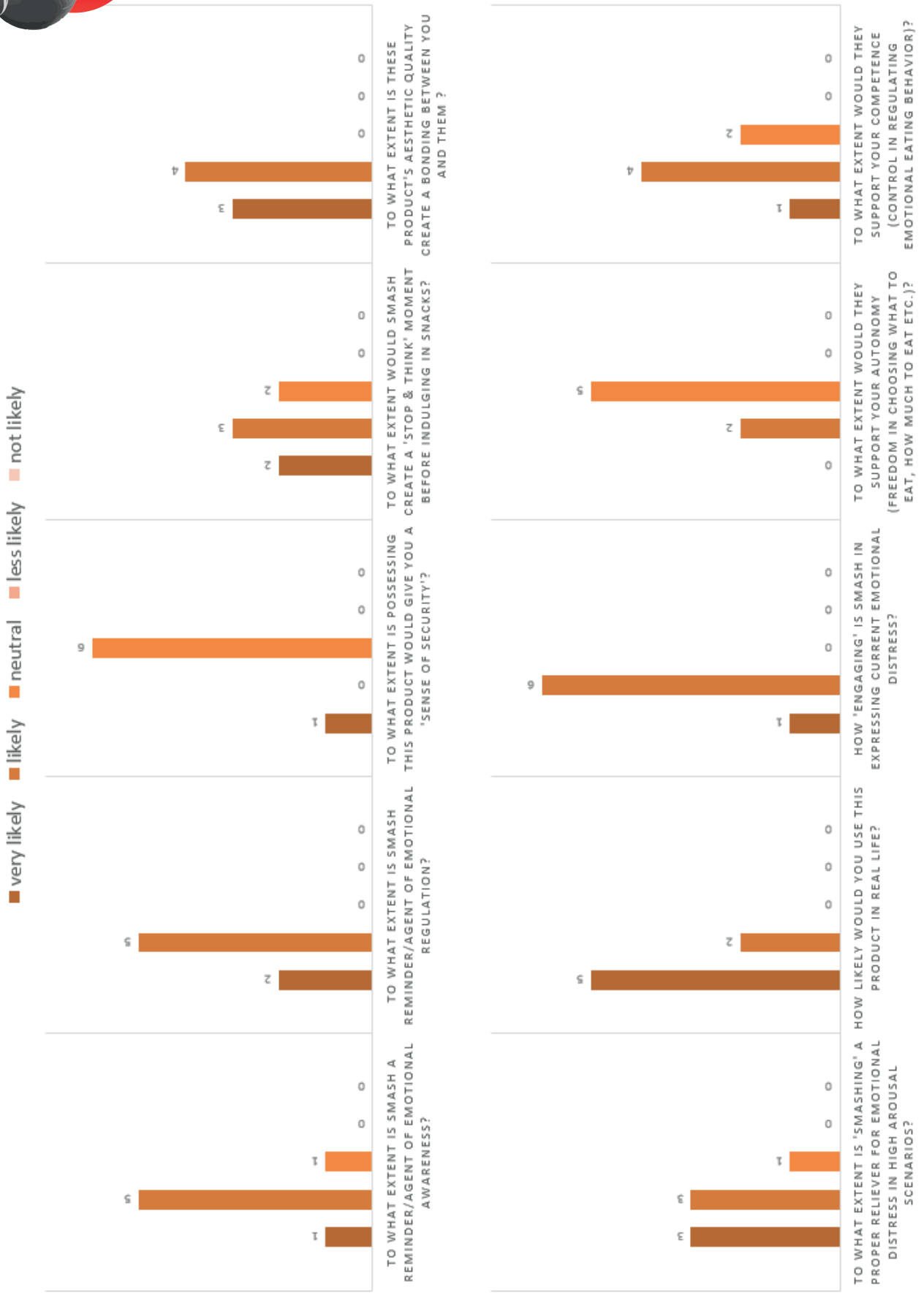
Aesthetic appearance

Since both interventions do not resemble snack packages, even though they carry snacks inside, having them on a visible place (i.e office desk) found quite convenient and a smart way of eliminating judgmental looks from around.

Placement

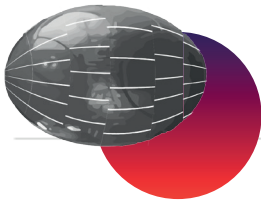
Working desks and beds were mentioned to be places to keep products. Two participants were working in offices thus, they would keep SMASH at the office. Thanks to Smash's handy size and shape, carrying it to everywhere was found convenient.

" It is an advantage that it doesn't look like a snack package.. I would not place a bag of chips to my desk but I would put this (SMASH). "

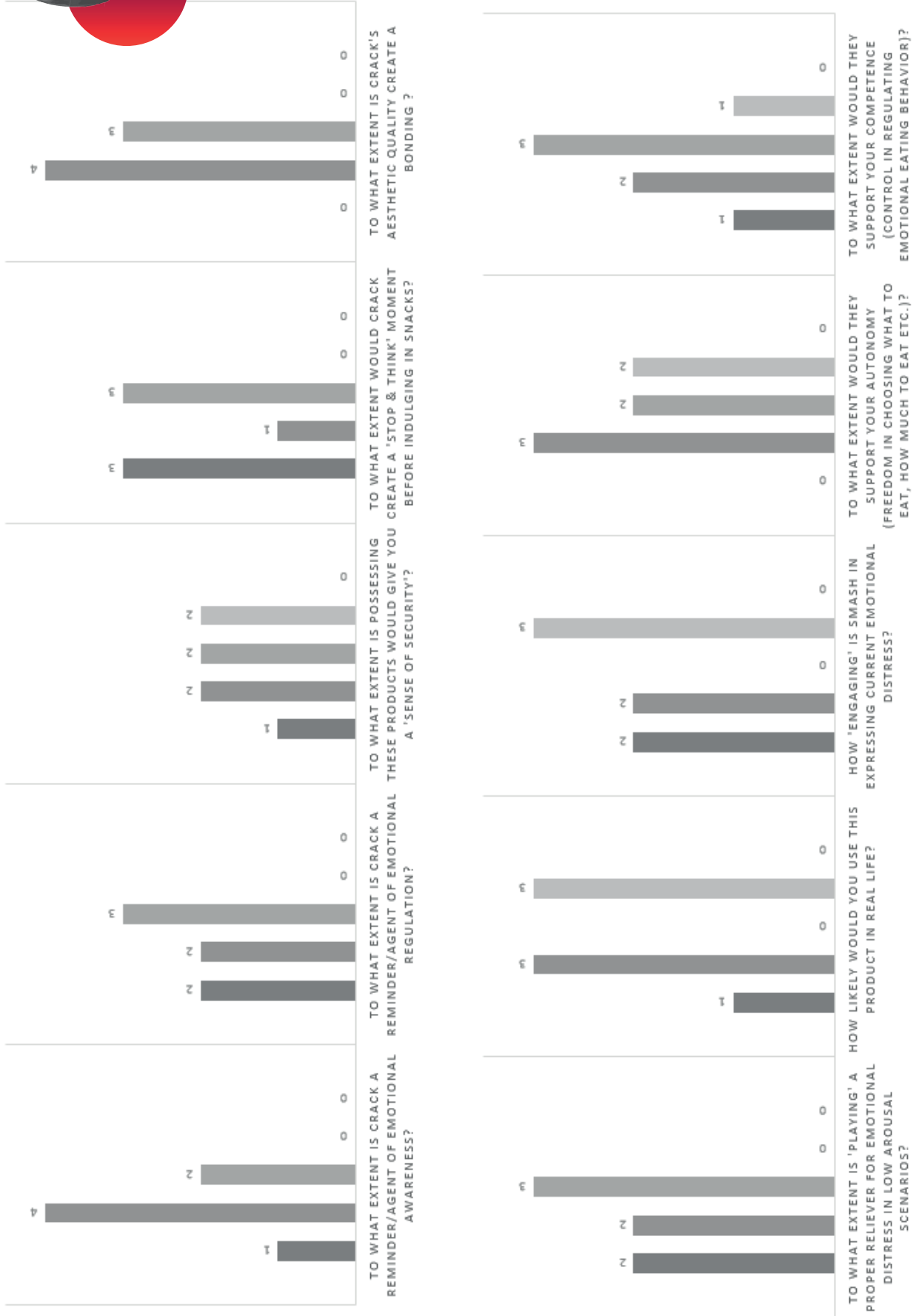


*Numbers on top of the columns represent the number of people voted.

Figure 33: Assessment of 'SMASH' based on the Likert scale results



■ very likely ■ likely ■ neutral ■ less likely ■ not likely



* Numbers on top of the columns represent the number of people voted.

Figure 34: Assessment of 'CRACK' based on the Likert scale results

7.3 CONCLUSIONS

Both interventions were found proper for particular emotional states in terms of physical interactions they provide to alleviate current emotional distress. Thus, it was confirmed that interventions are creating a channel for people to express their emotions and alleviate them rather than suppressing them with eating.

Shifted focus to physical interaction instead of food worked as an **'absorber of impulsiveness'** before reaching food. And, this created **'more focus and attention'** given to the immediate environment which was mostly missing in existing emotional eating periods.

An objective of this project was to come up with a design solution which will work as an agent of emotional awareness and regulation. The reason of that intention was underlying reasons of emotional eating is not as simple as enjoying the taste, odor of food but more complex with psychological mechanisms people deploy to regulate their responses to emotional stimulus. Interventions nudged people to critical thinking without applying superiority on their eating behavior.

As a designer, I wanted to keep the connection with food in whatever design solution I propose, because, through research, I realised that emotional eating notion is interwoven with emotional management and eating practice and only handling one aspect would remain deficient.

Based on the feedback (figure 33/34) from all participants, the likeliness of using these interventions in real life was quite satisfying. Especially SMASH was found quite engaging and some participants even wanted to have one immediately. Specific to CRACK, the feedback was divided into two. Half of the participants found CRACK fun to play with but also mentioned it would not be their first choice to do when they are bored. Meanwhile, other half really enjoyed the challenge it brings and mentioned they would play with it even without food.

Although the surprising effect CRACK is bringing was found fun, there need to be more considerations regarding achieving this effect with a puzzle because not all of the participants were fans of riddles during boredom scenarios. Achieving the same effect with different interactions could have been possible but requires further research.

Aesthetic quality made those products non-judgemental. Rather than being products reminding people habits they are not comfortable with, interventions' aesthetic quality achieved to create something people would like to see around without any negative feelings.

Based on the Likert scale results, contrary to what was expected, both interventions fell short in meeting expectations in creating a **'sense of security'** on eating behavior. Though, participants declared opinions with similar meanings such as **"... I know they (interventions) are doing something good for me..."** Thus, we cannot say interventions were completely ineffective in this sense.

Interventions' support in autonomy and competence could not be related immediately. I ascribe these outcomes to the novelty of products and controlled testing set-up. There was no chance to test interventions in-situ (i.e participant's real-life set-up for a longer period of time) due to time limitations. Thus, participants had to imagine they used those products for a certain time to be able to answer some interview questions. I speculate that answers could differ if we were able to test interventions in the real environment for a longer period of time.

7.4 RECOMMENDATIONS

There are certain aspects of both interventions which need further considerations based on user feedbacks and my observations during final testing.

Shape and pattern considerations

For CRACK, in order to create richness in experience and to extend usage life, different patterns can be offered so, users may build their own patterns by mix & match. It also eliminates becoming boring after a while.

For SMASH, although the intended experience and usage scenarios were validated, conducting a test session with a 'completely' working prototype would be better to gain more insights on rebuilding experience. This part is in need of further exploration.

Color palette

There needs to be separate extensive research regarding how colors affect emotions. Then, it is more healthier to give color recommendations to be used with interventions based on scientific knowledge. Due to time limitations of the project, I could not offer any color choices.

Diversity in stores

If one day these interventions would launch, some stores selling gift-like products (e.g. Flying Tiger) could be a possible place to get them besides supermarkets and vending machines. In the market, they can be placed next to *casas* as 'Grab and go' products to attract attention.

Target group

During project, I conducted the study with a small sample group. Even in this small group there were considerable diversities in terms of culture, habits, food choices, emotion regulation strategies and emotional stimulus prompting them to eat. More tests needs to be done and more diverse user groups has to be involved in sessions to further develop this research.

7.5 Validation of commercial proposal

The plausibility of a collaboration for a month-long campaign with food & beverages companies was validated by contacting an employee from **Unilever**, the Netherlands. Her position was 'researcher' at R&D department in Unilever. A document (see Appendix E) containing highlights of research, its outcomes, and the commercial proposal has been prepared and sent out to her. Later on, an online interview was conducted for 20 minutes to receive feedback. She provided feedback from both R&D (Research and development) and marketing perspectives.

In general the project was found 'super interesting' considering such a big impact the brands have on people's diet.

Topics in the agenda of brands

These days brands mostly focus on cost reduction, sustainability and increasing nutritional values. Addressing eating disorders are not in the agenda of brands yet. However, it was claimed that emotional eating can be one of the topics in the future.

It was declared that with all extremely demanding environment around us and with the increase in concerns about wellbeing, brands will eventually start realising the need of addressing eating behaviors and disorders. This topic is thought to be definitely in the agenda of brands in coming years.

Brands becoming more human

Marketing departments try to make the brand more 'human'. They try to show they care for their customers to make them loyal. It is mentioned that festivals to make people more active is arranged these days, therefore launching a month long campaign found proper and convenient.

Importance of economic benefit

Besides all, profit concerns were mentioned. Since these interventions eventually bring eating less than regular, it was found as a challenge but not an unsolvable one. Some possible ways were mentioned getting over profit concerns. Herewith, campaigning for just a-month long was found efficient from the brand perspective.

7.6 Reflection on theories

1. Self-Determination Theory

When designing for behavior change, self-determination theory (SDT), also known as motivation theory, is seen one of the back bones. During the final evaluation session, I had a chance to evaluate to what extent three components of SDT supported by intervention concepts.

Autonomy & Competence

Based on the Likert scale results (figure 33/34), interventions fell short in explicitly supporting autonomy and competence. Yet, this does not mean that they work against those two needs. On the contrary, they do their job subtly.

Relatedness

Receiving these products as a gift from someone from the social environment of the user supports the need for relatedness. Based on contextual research findings users tend to hide emotional eating behavior from people they love, but a well-thought & non-judgemental product can create a channel to reverse existing attitude into a more supportive one. This is what we are trying to achieve by involving the social environment of emotional eaters into 'context'.

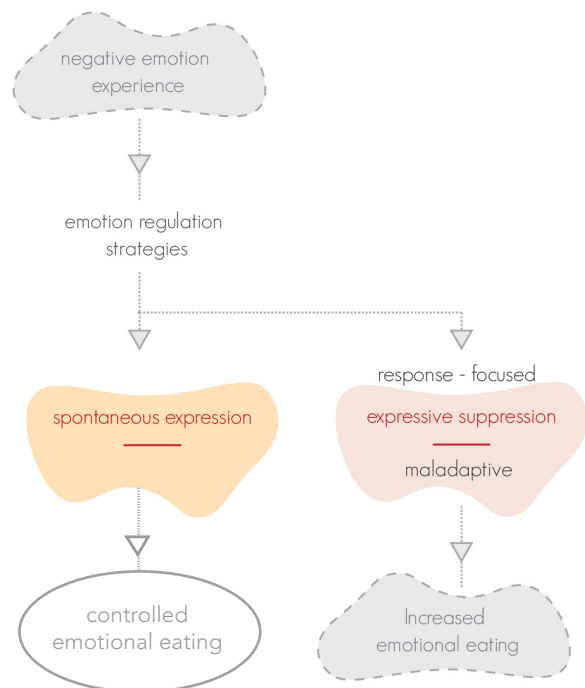
In general, the connection remained relatively weak with the motivation theory yet, interventions achieved intended interaction effects on eating behavior. Further research is needed to strengthen intervention concepts in terms of autonomy and competence.

2. Designing for Dilemmas

As mentioned earlier in this thesis (see Chapter 2), designing for dilemmas is an opportunity to inspire fruitful user-centered design activities. I made use of this approach during ideation phase to explore possible solution directions in design space by producing initial ideas on resolving, moderating and triggering personal dilemmas (see Appendix E). In the end, final intervention concepts make conflicting personal concerns more visible to user thus, they prompt user to reflect on decisions before eating.

3. Emotion regulation strategies

From the literature research, we learned that emotional eating behavior is an emotion regulation strategy deemed as 'expressive suppression' where people distract themselves with eating in order to cope with emotional distress. My research findings proved the benefit of using 'spontaneous expression' as a emotion regulation strategy to better* control impulsive eating behavior. Though further research is needed to be able to claim it is a 'healthier' strategy.



* being aware of the current behavior and acting mindfully

7.7 General reflection

Outcome reflection

Designing for behavior change is quite challenging because of habits' complicated nature. My interventions aimed to create behavioral and attitudinal change on emotional eaters and people who want to gain a more controlled eating habit. Based on the final evaluation, interventions can be regarded as a first step in raising self-awareness and a spark to bring greater change in emotional management and eating behavior.

In the scope of this project, I have designed interventions for emotional eaters but there are other parties who are in need of awareness and critical thinking in the prevention of this behavior; parents, food & beverages brands, and advertisement companies.

Since this behavior's foundation is (mostly) laid during childhood, it is important to raise awareness among parents while setting up their children's eating routines. 'Reward indulgences' or 'compensation indulgences' given to children after achievements could turn into a habit in further ages when they become adults.

Another constituent is advertisement companies and food & beverages brands who need to act more responsibly while showcasing food products. If we look at how food products are presented in ads, we usually see a background story conveying certain messages regarding emotions and food. In terms of designing interventions for prevention, there is still much to do, I have focused only a tiny part of a greater problem.

As a designer, I focused mostly on delivering the intended experience for those people who want to feel more in control over their eating behavior while going through an emotionally intense period. Also, I intended those interventions to help people build a better relationship between emotions and food in the longer term by making their emotional responses and corresponding choices more visible through interactions.

I believe I delivered an outcome which is supported by evidence from behavioral sciences and interwoven with user-centered design decisions which makes them a well-thought-through scientific research & design outcomes.

Yet, I am also aware that to be able to launch those interventions in the market, there needs to be some further considerations and requirements. Not just in terms of the development of interventions, but a shift in the mindset of food and beverages companies is needed to prioritize people's overall health. I hope in the following years more attention will be given to interventions addressing 'prevention' rather than 'treatment'.

Personal reflection

I have experienced so many new approaches throughout this 5-month-long experience. There were so many ups & downs. I believe that going through them in this period of my life will flourish my (designer) personality and help me widen my view while handling similar situations in the future.

With regards to conducting a self-initiated research & design project, this helped me discover my weaknesses and strengths. One of the most valuable learnings was to create a time for breath when mind and body needs. This pause moment puts you back in flow rather than pushing you away.

REFERENCES

- Bennett, J., Greene, G., & Schwartz-Barcott, D. (2013). Perceptions of emotional eating behavior. A qualitative study of college students. *Appetite*, 60, 187-192.
- Brewer, J. A., Ruf, A., Beccia, A. L., Essien, G. I., Finn, L. M., Lutterveld, R. V., & Mason, A. E. (2018). Can mindfulness address maladaptive eating behaviors? Why traditional diet plans fail and how new mechanistic insights may lead to novel interventions. *Frontiers in psychology*, 9, 1418.
- Brockman, R., Ciarrochi, J., Parker, P., & Kashdan, T. (2017). Emotion regulation strategies in daily life: mindfulness, cognitive reappraisal and emotion suppression. *Cognitive Behaviour Therapy*, 46(2), 91-113.
- Cochrane, C. E., Brewerton, T. D., Wilson, D. B., & Hodges, E. L. (1993). Alexithymia in the eating disorders. *International Journal of Eating Disorders*, 14(2), 219-222.
- Desmet, P. M. (2015). Design for mood: Twenty activity-based opportunities to design for mood regulation. *International Journal of Design*, 9 (2), 2015.
- Evers, C., Marijn Stok, F., & de Ridder, D. T. (2010). Feeding your feelings: Emotion regulation strategies and emotional eating. *Personality and Social Psychology Bulletin*, 36(6), 792-804.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational behavior*, 26(4), 331-362.
- Garaulet, M., Canteras, M., Morales, E., López-Guimerà, G., Sánchez-Carracedo, D., & Corbalán-Tutau, M. D. (2012). Validation of a questionnaire on emotional eating for use in cases of obesity; the Emotional Eater Questionnaire (EEQ). *Nutrición hospitalaria*, 27(2), 645-651.
- Geliebter, A., & Aversa, A. (2003). Emotional eating in overweight, normal weight, and underweight individuals. *Eating behaviors*, 3(4), 341-347.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, 85(2), 348.
- Jordan, C. H., Wang, W., Donatoni, L., & Meier, B. P. (2014). Mindful eating: Trait and state mindfulness predict healthier eating behavior. *Personality and Individual differences*, 68, 107-111.
- Kandiah, J., Yake, M., Jones, J., & Meyer, M. (2006). Stress influences appetite and comfort food preferences in college women. *Nutrition Research*, 26(3), 118-123.
- Kaplan, H. I., & Kaplan, H. S. (1957). The psychosomatic concept of obesity. *Journal of Nervous and Mental Disease*.
- Köster, E. P., & Mojet, J. (2015). From mood to food and from food to mood: A psychological perspective on the measurement of food-related emotions in consumer research. *Food Research International*, 76, 180-191.

- Lazarevich, I., Camacho, M. E. I., del Consuelo Velázquez-Alva, M., & Zepeda, M. Z. (2016). Relationship among obesity, depression, and emotional eating in young adults. *Appetite*, 107, 639-644.
- Macht, M. (2008). How emotions affect eating: a five-way model. *Appetite*, 50(1), 1-11.
- Ozkaramanli, D., Desmet, P. M., & Özcan, E. (2016). Beyond resolving dilemmas: Three design directions for addressing intrapersonal concern conflicts. *Design Issues*, 32(3), 78-91.
- Renner, B., Sproesser, G., Strohbach, S., & Schupp, H. T. (2012). Why we eat what we eat. *The Eating Motivation Survey (TEMS)*. *Appetite*, 59(1), 117-128.
- Robison, J. I., Wolfe, K., & Edwards, L. (2004). Holistic nutrition: nourishing the body, mind, and spirit. *Complementary health practice review*, 9(1), 11-20.
- Romm, C. (2015). Why comfort food comforts. *The Atlantic*, April, 3.
- Russell, James (1980). "A circumplex model of affect". *Journal of Personality and Social Psychology*. 39 (6): 1161–1178.
- Sanders, E. B. N., & Stappers, P. J. (2012). *Convivial design toolbox*.
- Spence, C. (2017). Comfort food: a review. *International Journal of Gastronomy and Food Science*, 9, 105-109.
- Tan, C. C., & Chow, C. M. (2014). Stress and emotional eating: The mediating role of eating dysregulation. *Personality and Individual Differences*, 66, 1-4.
- Van Strien, T., Cebolla, A., Etchemendy, E., Gutierrez-Maldonado, J., Ferrer-Garcia, M., Botella, C., & Baños, R. (2013). Emotional eating and food intake after sadness and joy. *Appetite*, 66, 20-25.
- Van Strien, T., & Ouwens, M. A. (2007). Effects of distress, alexithymia and impulsivity on eating. *Eating Behaviors*, 8(2), 251-257.
- Vohs, K. D., & Heatherton, T. F. (2000). Self-regulatory failure: A resource-depletion approach. *Psychological science*, 11(3), 249-254.
- Wiser, S., & Telch, C. F. (1999). Dialectical behavior therapy for binge-eating disorder. *Journal of clinical psychology*, 55(6), 755-768.

APPENDIX

Appendix 0	<i>Project Brief</i>
Appendix A	<i>Literature Research</i>
Appendix B	<i>Contextual Research</i>
Appendix C	<i>Conceptualisation</i>
Appendix D	<i>Finalisation</i>
Appendix E	<i>Evaluation</i>

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !



family name Bozbay
 initials A.B. given name Alara
 student number 4725115
 street & no. Hugo de Grootstraat 302
 zipcode & city 2613VC DELFT
 country the Netherlands
 phone +31 620837960
 email A.Bozbay@student.tudelft.nl

Your master programme (only select the options that apply to you):

IDE master(s): IPD Dfl SPD

2nd non-IDE master: _____

individual programme: _____ (give date of approval)

honours programme: Honours Programme Master

specialisation / annotation: Medesign

Tech. in Sustainable Design

Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair Natalia Romero Herrera dept. / section: ID/DCC

** mentor Rick Schifferstein dept. / section: ID/DA

2nd mentor _____

organisation: _____

city: _____ country: _____

comments
(optional)

⋮

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v.



Second mentor only applies in case the assignment is hosted by an external organisation.



Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Natalia Romero Herrera

date 18.04.2019

signature 

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 30 EC
 Of which, taking the conditional requirements into account, can be part of the exam programme 30 EC

YES all 1st year master courses passed

NO missing 1st year master courses are:

List of electives obtained before the third semester without approval of the BoE

name D. Heanster

date 1.5.19

signature 

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name A. Huijzen

date 14.5.2019

signature 

Re-framing emotional eaters' food relations via design interventions project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 08 - 04 - 2019 23 - 08 - 2019 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Every human being eats food but not with same motives behind. We may eat a snack to quickly mute our belly and keep working, we may give a feast to cherish our loved ones in a dinner, or we may use food as a mean to replace annoying feelings with pleasurable ones. As we see, food does not only fulfill a person's physiological needs, like the amount of calorie needed to stay alive, but it is used to meet social and psychological needs (figure 1) as well. The relationship a person establishes with the food is directly affected by these three interrelated needs of a person.

Many of us learn that food can bring comfort, at least in the short-term. As a result, people often turn to food to heal emotional problems. The term 'emotional eating' has been defined as eating in response to emotional cues, often as a coping response to negative emotions like stress, boredom, loneliness, chronic anger and anxiety, frustration etc. (Kandiah, Yake, Jones, & Meyer, 2006)

During emotional eating periods (figure 2), people choose to eat what they define as unhealthy foods (aka. comfort foods). They usually overeat comfort foods which contains high levels of sugar, fat and/or carbohydrate, namely, high in calorie. Although the comfort food creates a temporary gratification while eating, people fall back to their initial negative state after eating stops. This is because, food does not cut off the underlying reason of negative emotions, instead it works as a temporary distraction. Besides, people usually feel guilty after gaining unnecessary calories and staying with unsuppressed negative emotions. This situation creates a short circuit of positive and negative emotions triggered and influenced by eating practice.

There are additional contextual and personal factors contributing to emotional eating like unawareness of the amount being consumed, feeling lack of control over their eating practice, seeing food as the only pleasure, body hate, inability to tolerate difficult feelings.

When people routinize emotional eating behavior, greater health problems may occur such as obesity, problems with weight loss and even food addiction. In the obesity prevention, emotional eating behavior must be addressed attentively. There are therapy techniques used in psychology field to treat this unhealthy eating behavior which mainly focus on changing the way person thinks and behaves but these techniques only rely on a person's cognitive abilities.

I believe design can bring a new perspective in the handling of emotional eating behavior by focusing on the overall interactions in the context of emotional eaters and redesigning contextual interactions.

References:

Kandiah, J., Yake, M., Jones, J., & Meyer, M. (2006). Stress influences appetite and comfort food preferences in college women. *Nutrition Research*, 26(3), 118-123.

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introduction (continued): space for images

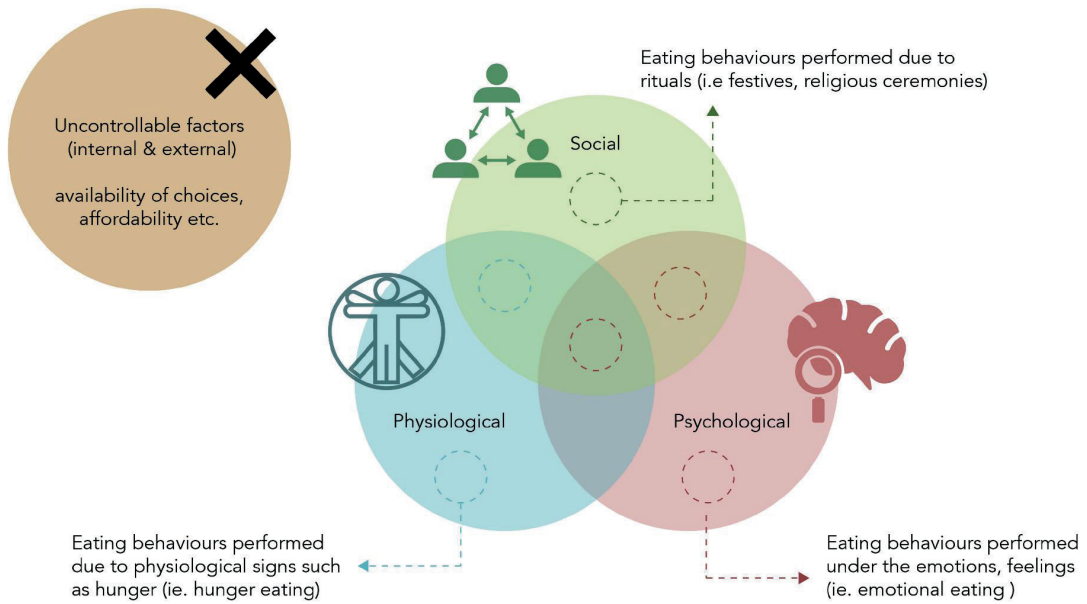


image / figure 1: Interrelated components influencing overall eating practice

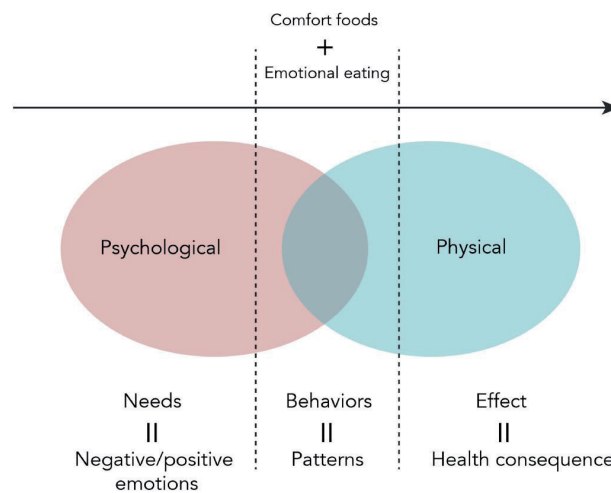


image / figure 2: Visualization of emotional eating occurrence

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

It is obvious that emotional eating behavior affects overall healthiness of a person in both shorter and longer term yet, people cannot stop engaging in it. In this sense, understanding the relationship people establish with food is essential. Examining food-person relationship requires deeply valuing and identifying the needs associated with eating choices and showing interest in the underlying needs, emotions and values/cultural beliefs.

Aforementioned contextual and personal problems contributing to emotional eating, like unawareness of the amount being consumed, feeling lack of control over the eating practice, seeing food as the only pleasure, body hate, inability to tolerate difficult feelings, can be addressed only after understanding the interactions in the context.

One of the ways of tackling emotional eating behavior can be through assisting emotional eaters to manage their emotional eating periods via design interventions which facilitate new interaction scenarios. The aim is to enable new interaction scenarios and, in the long-term, new experiences that will invite for re-framing relations with food, by reshaping their unhealthy practices via design interventions.

Research questions:

How can design help people to manage their driving emotions behind emotional eating patterns through new interaction scenarios?

How can design interventions promote attitudinal and behavioral change on emotional eaters?

How can design interventions enable new practices and contextual interactions around eating behavior?

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Developing new interaction scenarios through design interventions to assist re-framing emotional eaters' relationship with their comfort foods during emotional eating periods

I will research what are the context factors influencing emotional eater's current eating experience (i.e the amount of food consumed, frequency of eating, choosing certain type of comfort foods, feelings behind choices). I will ask emotional eaters to provide photos from the context they are consuming the food item and how they feel before, during and after. After collecting information on how different contexts operate, I will analyze why current person-food interactions are built in this way.

Analyzing the abilities, concerns, feelings and practices of emotional eaters, within their specified situation and context will help me to come up with new interaction scenarios for them.

I will come up with new interaction scenario(s) for emotional eaters and their emotional eating periods, exemplified through design interventions. Design interventions may differ based on the characteristics of target group and the context they are designed for.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 8 - 4 - 2019

23 - 8 - 2019 end date

Calendar week	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Project week	W1-Kickoff	W2	W3	W4	W5	W6	W7	W8	W9	W10-Midterm	W11	W12	W13	W14	W15	W16-Greenlight	W17	W18	W19	W20	Final Presentation	
	Apr 8	Apr 15	Apr 22	Apr 29	May 6	May 13	May 20	May 27	Jun 3	Jun 10	Jun 17	Jun 24	Jul 1	Jul 8	Jul 15	Jul 22	Jul 29	Aug 5	Aug 12	Aug 19	Aug 26	Aug 30
DISCOVERY																						
Literature research																						
Target group research																						
Analysis																						
DEVELOP																						
Ideation (Brainstorming- creative sessions)																						
Intervention development																						
Initial interventions testing																						
Concepts selection																						
EVALUATION - DELIVER																						
Intervention concepts detailing																						
Concepts evaluation & analysis																						
Finishing the thesis/report																						
Final presentation																						

Phase 1: Week 1-2: Literature review will be conducted to explore the theoretical background of emotional eating and food relations. Sampling of emotional eaters will be done with standardized emotional eating questionnaire. Week 3-4-5-6: Sensitizing booklets will be given to prepare people to talk about their eating practices and, interview sessions will follow to understand the context of emotional eating practice. Findings from research will be analyzed to draw useful insights regarding users' practices and drivers. This will open up the opportunity areas which can be designed for in phase 2. Conclusion of phase 1 will lead to formulating design goal and direction for interventions.

Phase 2: Week 7-12: The ideation phase is where conceptualization takes place. The methods to be used in this phase are, brainstorming and creative sessions with participants. I am planning to show initial design directions in the midterm evaluation meeting which is in Week 10. The outcome of this phase will be selected intervention ideas to further develop in phase 3.

Phase 3: Week 13-17 : The final phase is where the concept detailing of interventions and finalization take place. Activities to be held are concepts' evaluation and testing with participants. Week 18-20 doing refinements and concluding the deliverables of the project. This phase will end with the public presentation of the outcome. I estimate to finish my project on the calendar week 35.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

In Exploring Interactions course, I learned how to analyze current interactions, formulate a design goal, develop an interaction vision, generate starting points for innovative designs, develop and test new concepts and evaluate the final concept. Although I had a good grade with the final outcome of my EI project, I see points to be improved in research phase. With this project, I aim to improve my research skills by learning how to formulate good research questions to draw useful insights afterwards.

I took Experience and Persuasion elective where I learned about practical models and tools on persuasion and experience, about the psychology of persuasive design. This graduation project aims at influencing people's behavior, practices, habits and attitudes thus, knowledge I gained from this elective will help me during the ideation phase.

During 3rd semester I worked at Mobgen | Accenture Interactive as a design intern where I involved in workshops, design sprints and creative sessions. I want to make use of what I practiced in creative sessions while facilitating participatory ideation sessions during my project. I haven't facilitate a session by myself yet. In this project there is an opportunity to practice creative facilitation skills.

Until formulating this project, I have never paid attention to relationships people establish with food besides seeing it as a energy source for human body. I assume diving into analyzing human behavior with the help of psychology theories will help me to interpret underlying reasons of behaviors. This will be an additional skill in my designer toolbox.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

APPENDIX A

Emotional eater questionnaire used while participant screening.

Table IIa
Emotional Eater Questionnaire (EEQ) Garaulet

1. Do the weight scales have a great power over you? Can they change your mood?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
2. Do you crave specific foods?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
3. Is it difficult for you to stop eating sweet things, especially chocolate?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
4. Do you have problems controlling the amount of certain types of food you eat?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
5. Do you eat when you are stressed, angry or bored?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
6. Do you eat more of your favourite food and with less control when you are alone?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
7. Do you feel guilty when eat “forbidden” foods, like sweets or snacks?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
8. Do you feel less control over your diet when you are tired after work at night?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
9. When you overeat while on a diet, do you give up and start eating without control, particularly food that you think is fattening?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always
10. How often do you feel that food controls you, rather than you controlling food?			
<input type="checkbox"/> Never	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Generally	<input type="checkbox"/> Always

Scores: Value “0” = Never; Value “1” = Sometimes; Value “2” = Generally; Value “3” = Always.

For the clinical Practice:

Score between 0-5: You are a *non-emotional eater*. Your emotions have little or nothing to do in your eating behavior. You are a person with great stability with respect to your feeding behaviour. You eat when you feel hungry, regardless of external factors or emotions.

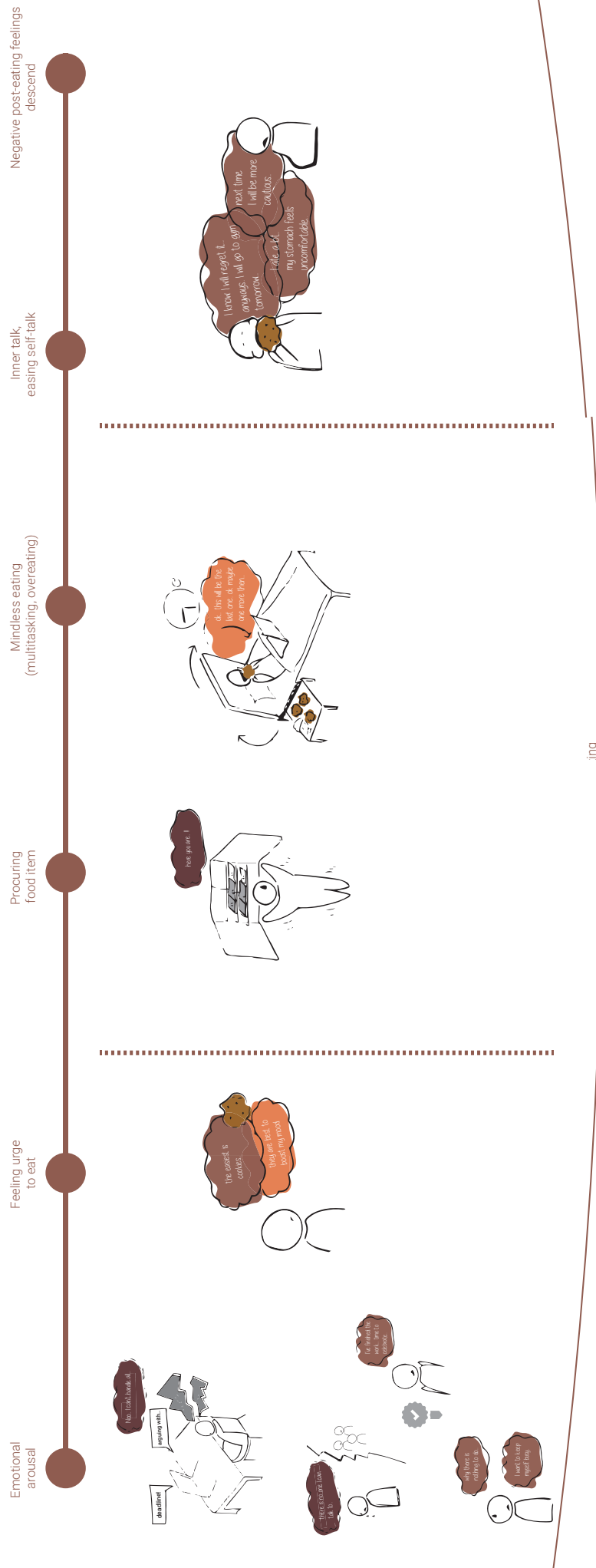
Score between 6-10: You are a *low emotional eater*. It is rare that you solve your problems with food. However, you feel that certain foods affect your will.

Score between 11-20: You are an *emotional eater*. Your responses indicate that to some extent your emotions influence your diet. Feelings and mood in some moments of your life determine how much and how you eat.

Score between 21-30: You are a *very emotional eater*. If you’re not careful, food will control your life. Your feelings and emotions constantly rotate around your food.

APPENDIX B

Emotional eating journey with stages I found out during contextual research.





Hello! I am Alara, I am working on my graduation project.

In the scope of this project, I am interested in your eating behaviour. :)

With the help of activities in this booklet, you will start thinking about your eating behaviours and relationship with food. This booklet aims to make you more aware of what is going on behind your eating behaviour, hopefully :)

Your booklet has 7 activities in total. You can fill them day by day. At the end of one week, I will collect the booklet and have an interview session to go deeper in what is mentioned in the activities.

TELL ME ABOUT YOURSELF.

Name:

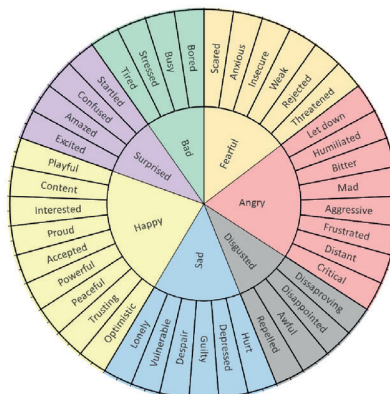
Occupation:

Age:

“ I feel incomplete,
if I can't eat
..... ”

1. Connection of 'feelings and food'

Let's find out which positive/negative feeling(s) trigger you to eat !
In other words, under which feeling do you crave for a (specific) food.



You can mark the ones relevant for your eating practice.

Sensitizing booklet used during contextual re-search activities.

5. If I feel negative (bad/sad/angry etc), I do ...

Now, I wonder what are the activities you do and/or products you interact with when you feel negative emotions.

What are you doing with them? What do they do for you?

Activity 1



Activity 2



Activity 3



6. 'In my ideal world, I am coping with food cravings triggered by an emotion'

Now, let's imagine your ideal world. What would be **'the ideal strategies'** to cope with your food cravings in your ideal world? How does your ideal world and strategies look like?

The world is

.....

Others around me

.....

The interactions around me.....

.....

Ideal strategies

.....

The context is like.....

.....

7. What is your mind saying while eating?

Now, I wonder what kind of thoughts come to your mind while eating under negative emotions. You can write quotes.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Where are you at?

What time is it? 00:00

What are you consuming?

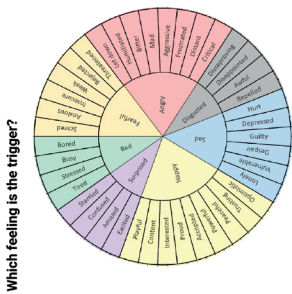
How often do you experience it?

Before (eating) During (eating) After (eating)

What is happening?

High Moderate Almost none High Moderate Almost none

Awareness Control



2. Your food choices based on how you feel

Now, let's talk about your food choices when you are feeling positive and negative. Why do you prefer this specific food? What is the role of food in these two situations?

When I feel POSITIVE...

I usually eat

because.....

Food serves as

in these moments.

When I feel NEGATIVE...

I usually eat

because.....

Food serves as

in these moments.

3. Your relationship with the food

Now, let's dive deeper about your relationship with the food that **'has an influence on how you feel'**. How would you talk to that food, what would you say to it? Imagine a dialogue between the food and you.

YOU

FOOD

YOU

FOOD

This is the food I am talking to...

4. Personal strategies to avoid eating foods you crave

Have you ever tried to regulate your cravings for a specific food? What was the food? What have you done? What worked, what didn't work?

Once, I was craving

I tried it worked/ didn't work because.....

Strategy 1

Strategy 2

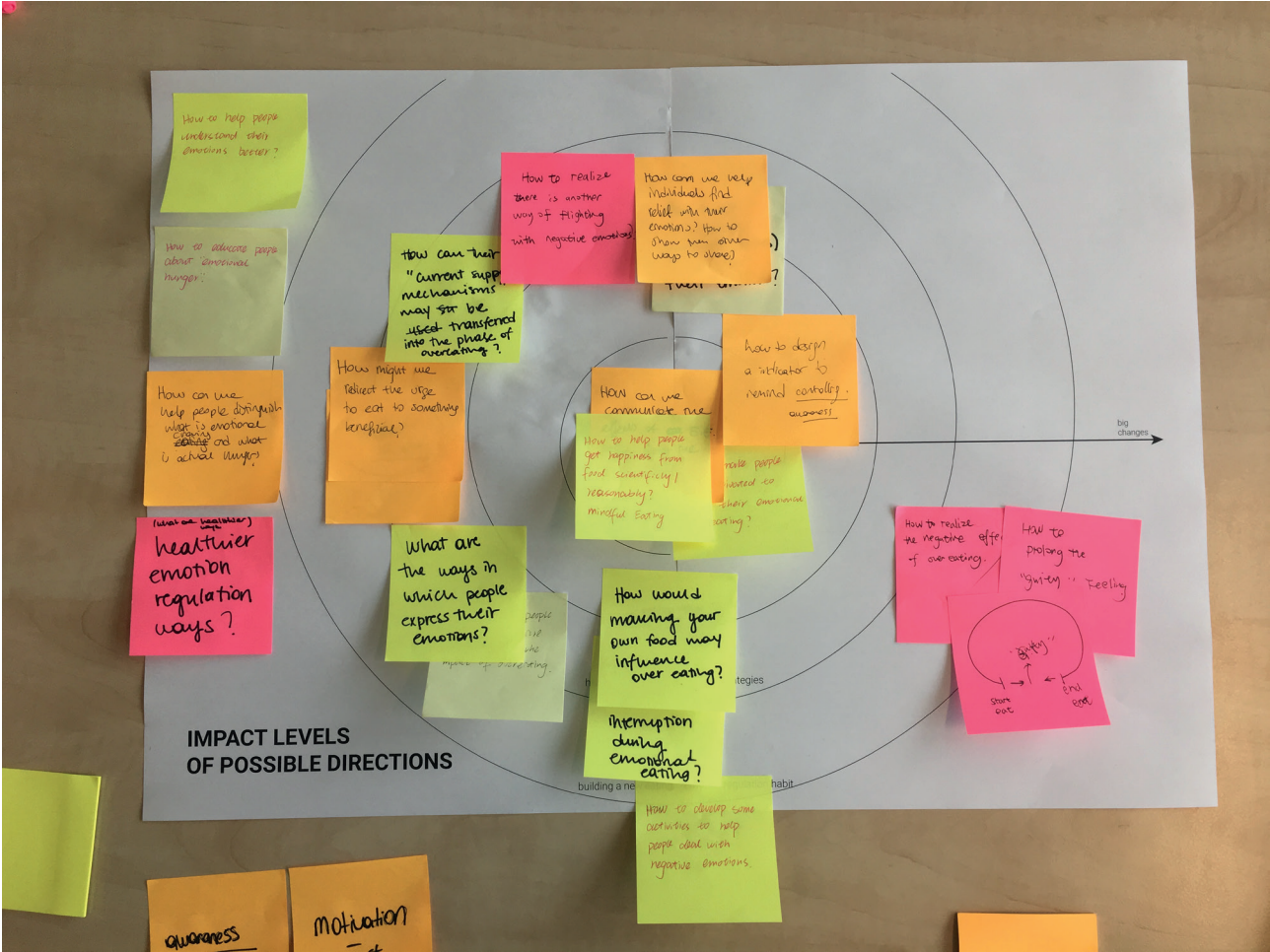
I tried it worked/ didn't work because.....

Strategy 3

APPENDIX C



Ideation session for direction finding during conceptualisation phase.



IMPACT LEVELS OF POSSIBLE DIRECTIONS

healthier emotion regulation ways?

What are the ways in which people express their emotions?

How would making your own food may influence over eating?

Interruption during emotional eating?

How to develop some activities to help people deal with negative emotions.

awareness

motivation

How to realize there is another way of fighting with negative emotions?

How can we help individuals find relief with their emotions? How to show them other ways to cope?

How can their "current coping mechanisms" may get be used transformed into the phase of awareness?

How might we reflect the urge to eat to something beneficial?

How can we communicate this?

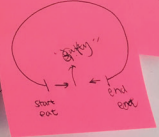
How to design a vibrator to remind control?

How to help people get happiness from food scientifically? reasonably? mindful eating?

make people excited to their emotional eating?

How to realize the negative effect of over-eating.

How to prolong the "good" feeling?



big changes

regies

building a ne

habit

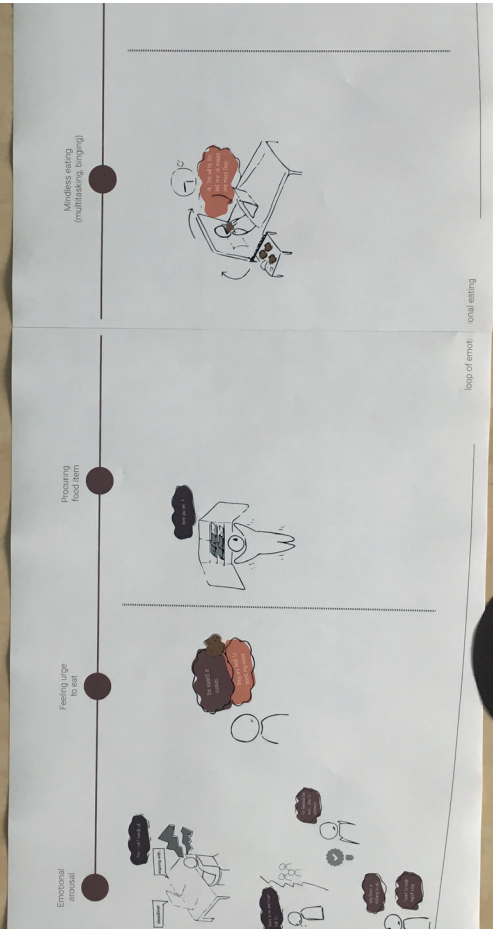
GOALS
What does the user want to achieve?

- reduce uncertainty of food consumed
- make the food item (emotional ability)
- post achievements (goal management)

MOTIVATING FACTORS

- limited cognition while reacting to emotional appeal.
- impulsiveness
- feeling unsupported.

MOTIVATION VS ABILITY



lack of awareness
Emotions have been used to consider...
Emotions have been used to consider...
Emotions have been used to consider...

lack of knowledge on behavior
Emotional states have difficulty...
Emotional states have difficulty...
Emotional states have difficulty...

lack of deeper reasoning
Emotional states are able to recognize...
Emotional states are able to recognize...
Emotional states are able to recognize...

lack of support & guidance
Emotional states that "are equipped" to...
Emotional states that "are equipped" to...
Emotional states that "are equipped" to...

Personal factors

External factors

References images: sexy

How Obso hui

User test script- 4th July Thursday - 6th Saturday

Introduction

Welcome, thank you for participating in this user test for my graduation project. The video recordings will be used in my graduation project report only if you give permission to do.

Brief introduction of project

You already know but I would like to give a short intro regarding my project. I am designing new interaction scenarios and experiences for people engaging in emotional eating behavior. (to help them alleviate their negative emotions/states without overeating.)

This session will last for 20-25 min based on our pace. There are three prototypes that you will interact with. Each prototype is designed for a different emotion-induced scenario. I will introduce you scenarios in a minute one by one.

The intention of these products to help you alleviate negative emotion/state by enabling you to express your emotions with physical interactions while trying to reach food.

Now let's have a look at three scenarios. In all scenarios, you are at home on your own.

First, does it resonate with your own experiences/memories?

Then, I want you to recall and relive the last time you ate because of boredom/ stress/ disappointment. But there is something different from the last time, there is this product contains (your favorite snack)? inside that you want to indulge in.

I want you to recall a moment you get angry with someone/something and you can't get over it. Then, urge to indulge in food comes.

And this impulse comes.. Please feel free to do whatever you want with the prototype, and do not forget there is snack inside.

Questions

1- How are they going to interact with each prototype?

How different are the interactions than what I forecasted?

2- How are you feeling while interacting with the prototype?

3- How did you feel when you reached snack?

4- To what extent would you feel more deservedness than a regular eating scenario?

1-2-3-4-5-6-7

5- To what extent would you crave for more food? or would it be enough?

1-2-3-4-5-6-7

6- To what extent do you think the physical interaction could be a proper reliever of your negative emotion in each scenario?

1-2-3-4-5-6-7

7- How does squeezing /bursting it makes you feel?

How does breaking it makes you feel?

How does playing with it makes you feel?

8- To what extent do you think you can express your emotional state with this interaction?

9- How do you see yourself using it? / how would you use it?

10- How did you reach this object? Where was it? Did someone give it to you?

11- In what kind of context do you use it? Where are you ? What are you doing?

Questions to answer in this prototype test:

What happens if an interactive /responsive mediator comes between (strong) emotions & food?

Is the physical interaction that I am designing is related to the emotions?

Is the interaction a proper reliever for that emotional state?

Intervention testing

Researcher/ designer : Alara Bozbay

Goal

The goal of this session to evaluate the interactions with three prototypes in order to improve them in terms of experiences in specific usage scenarios.

Procedure

You will interact with three prototypes which will be provided by the facilitator. While interacting, you will be asked to immerse yourself in a scenario where you are in a specific mood/ or under a strong emotion. Some questions will be asked after interacting with each prototype. The evaluation will take around 20-25 minutes.

I agree to participate in testing session.

I give permission for session to be videotaped.

Name:

Signature:

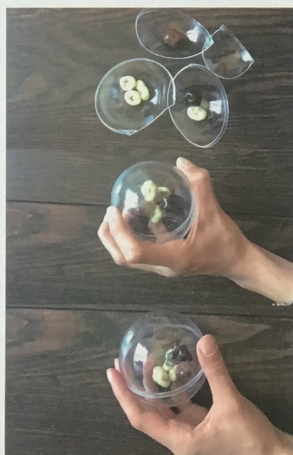
Intervention testing set-up

Scenario 2 | Food as a partner-in-crime (when angry)

Another newly researched means of expressing strong anger was becoming angry with someone or something (e.g. after an argument with a friend) or angry with someone or something at work/university. In these scenarios, food was defined as a partner-in-crime or compensation by emotional needs.

When people are angry, they tend to look for quick energy releases like punching, shouting, or hitting the wall or a wall. As a snack, one, quite the contrary, it is a destructive way. It helps people to become relaxed in the shorter term and serves the purpose.

Expressing negative emotions in a destructive way inspired me while coming up with the concept of partner-in-crime. The idea behind is to create a moment of hesitation instead of heading directly to snacks. The beautiful part of this concept is that it allows for a moment of hesitation before breaking it. This pause in impulsiveness might contribute to avoid overeating.



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Anger & Frustration

The feeling when someone did something bad that you don't like.
The feeling when you want to achieve something, but find your action blocked. Nevertheless, you keep trying.



Scenario 1 | Food as a distraction (when stressed)

Feeling stressed was one of the mostly mentioned emotional states leading people to indulge in snacks. When stressed, people are more likely to eat. This is because of the well-known symptoms of stress: an unresponsive body reactions (e.g. shaking legs and tensed muscles). As we recall from the conventional research in the field of stress management, stress management techniques which made them pay less attention to their mood help and they end up in overeating.

Stress balls are products promoting user to squeeze and release, which aims to take user feeling less tension than they started. The idea behind is releasing some kind of energy with physical interaction. In this idea, small snacks or chocolate are packaged in emotionally neutral, stress balls. The idea is to create a moment of hesitation before reaching for food. However, if user really wants to indulge, s/he needs to take the ball.

The moment of burst creates a moment of mixed emotions like fear of burst, excitement of reaching snack.



75

Anxiety & Worry

The feeling when you think about the things that you don't know what the threat is.
You are on guard because you don't know what the threat is.

The feeling when something happened that could mean something bad will happen to you or someone else. You cannot stop thinking about this.



Scenario 3 | Food as a time-filler (when bored)

The first scenario refers to eating when there is simply nothing to do. It is the time when all other activities seem to require too much effort and willingness to engage in. In this low arousal emotional state, people tend to eat. This is because of the well-known symptoms of boredom: a lack of interest in the activities, a sense of time passing slowly, and a tendency to eat. Most of the time there is no food preference but a general tendency to eat.

With food items being paired by the user, the idea behind is to create a moment of hesitation before reaching for food. However, if user really wants to indulge, s/he needs to take the ball. The idea behind is releasing some kind of energy with physical interaction. In this idea, small snacks or chocolate are packaged in emotionally neutral, stress balls. The idea is to create a moment of hesitation before reaching for food. However, if user really wants to indulge, s/he needs to take the ball.



77

Boredom

The feeling when there is nothing interesting or engaging for you to do.



Signed consent forms of participants of intervention testing.

Intervention testing

Researcher/ designer : Alara Bozbay

Goal

The goal of this session to evaluate the interactions with three prototypes in order to improve them in terms of experiences in specific usage scenarios.

Procedure

You will interact with three prototypes which will be provided by the facilitator. While interacting, you will be asked to immerse yourself in a scenario where you are in a specific mood/ or under a strong emotion. Some questions will be asked after interacting with each prototype. The evaluation will take around 20-25 minutes.

I agree to participate in testing session.

I give permission for session to be videotaped.

Name: *Vysali Somanchi*

Signature: *Vysali S.P.*

Intervention testing

Researcher/ designer : Alara Bozbay

Goal

The goal of this session to evaluate the interactions with three prototypes in order to improve them in terms of experiences in specific usage scenarios.

Procedure

You will interact with three prototypes which will be provided by the facilitator. While interacting, you will be asked to immerse yourself in a scenario where you are in a specific mood/ or under a strong emotion. Some questions will be asked after interacting with each prototype. The evaluation will take around 20-25 minutes.

I agree to participate in testing session.

I give permission for session to be videotaped.

Name: *Devi Senth*

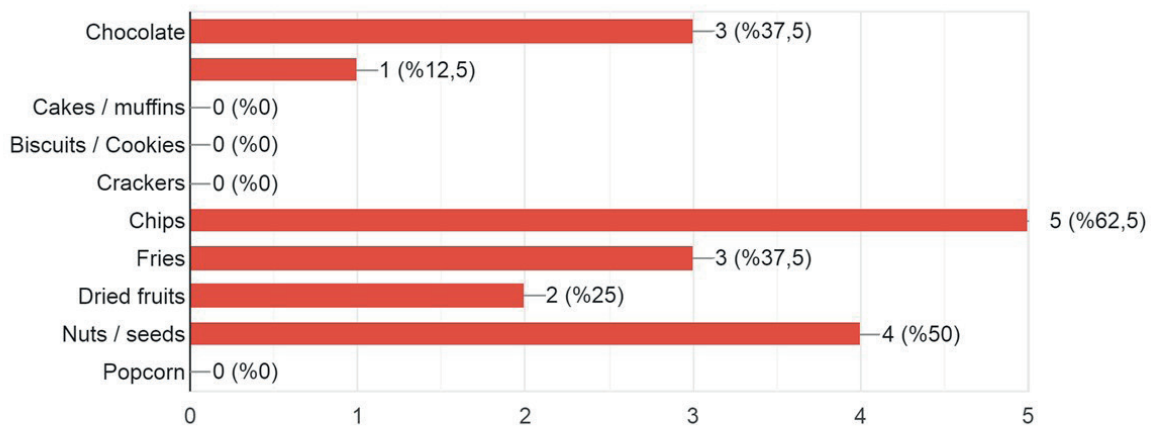
Signature: *Devi Senth*

APPENDIX D

Full answers of online questionnaire used to categorise snack types consumed during low and high arousal emotional states.

Please mark the snack types you mostly indulge in or crave during low arousal emotional state i.e. bored, lonely etc.

8 yanıt



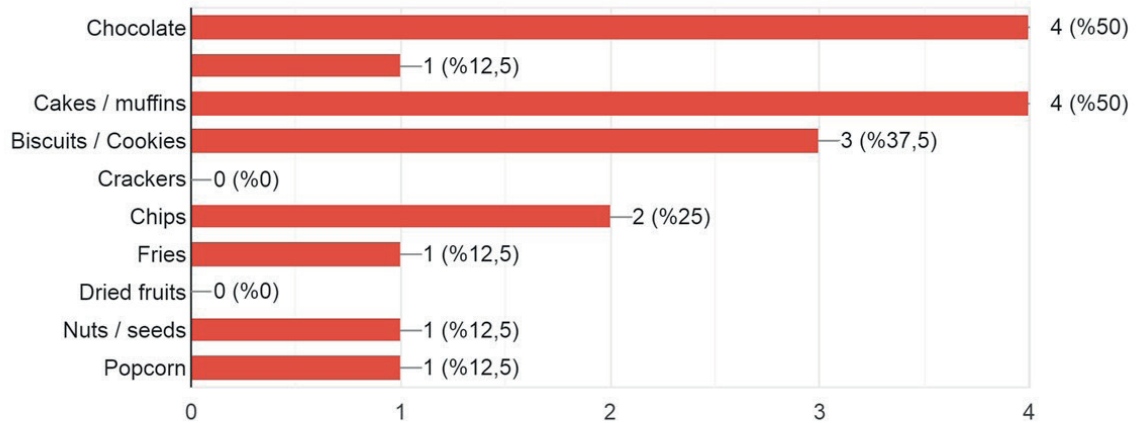
Can you give examples of brands and features of snacks that you marked above (e.g. chocolate: Milka bite size / crackers: Tuc original)

8 yanıt

- Haribo jelly tots, no brand preference for fries
- lays baharatlı ve caramio birer paket
- For chips, I like big packaged Lays. It feels good to eat with big packages while watching a video. For nuts, I like to buy them in box. It's not easy to reach them if they are packed in a bag.
- Lindt dark chocolate, any walnut, hazelnut and almond.
- Milka-toblerone etc.
- Lays, nachos
- lays
- Tony's

Please mark the type of snacks you mostly indulge in or crave during high arousal emotional state i.e. stressed, frustrated, angry etc.

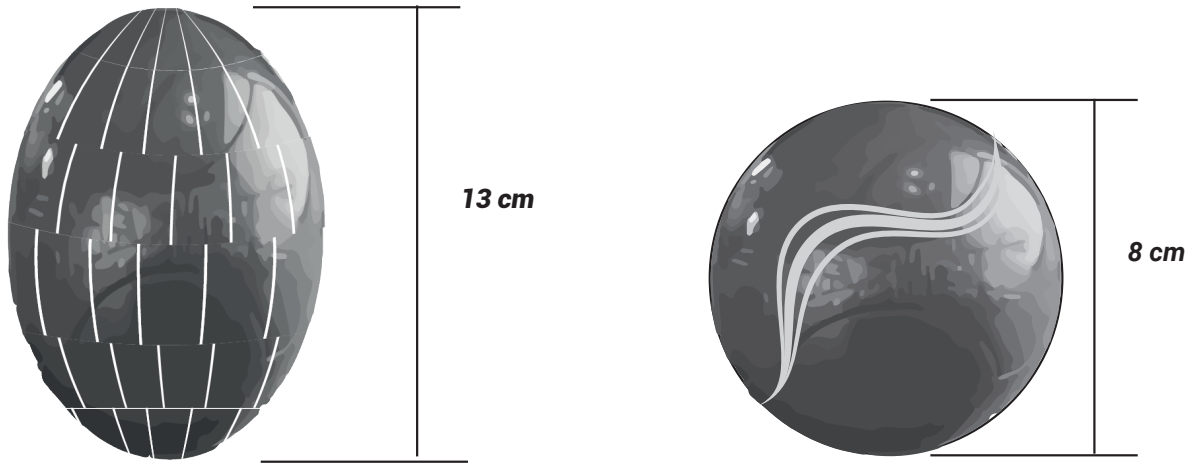
8 yanıt



Can you give examples of brands and features of snacks that you marked above (e.g. chocolate: Milka bite size / crackers: Tuc original)

8 yanıt

- Doritos chips, no brand preference for popcorn
- Lays baharatlı ve caramio birer paket
- Jelly drops, the flavour I like are cola or sour sweet. And I like to buy them in small packages so I can take them with me easily.
- Lindt dark chocolate, any walnut, hazelnut and almond. AH chocolate muffin or AH oatmeal cookie.
- Pick up - oreo - pan au chocolat <3
- Milka or chocolate nuts, kitkats, any muffins
- usually from abert hijn but cannot remember the brand
- Jumbo's original brand



** Dimensions of products.*



** Renderings of how snack packages would look like in the market shelves.*



** Renderings of how snack packages for SMASH.*



** Example size of chips can be used with snack capsules.*

APPENDIX E

be two usage scenarios and separate product concepts for those scenarios. Interacting with the prototypes, you will be asked to immerse yourself in a scenario you are in a specific mood/or under a strong emotion. Later on, semi-structured questions will be posed regarding usage scenarios, commercial feasibility, main product concepts, intended effects etc. The evaluation will take around 30-40 minutes.

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Egi Axel

Signature: Egi Axel

Date: 05.08.19

be two usage scenarios and separate product concepts for those scenarios. Interacting with the prototypes, you will be asked to immerse yourself in a scenario you are in a specific mood/or under a strong emotion. Later on, semi-structured questions will be posed regarding usage scenarios, commercial feasibility, main product concepts, intended effects etc. The evaluation will take around 30-40 minutes.

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Xinyu Yang

Signature: Xinyu Yang

Date: August 5th, 2019

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Burak Yildirim

Signature: Burak

Date: 05.08.2019

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Dilay Lara

Signature: Dilay Lara

Date: 06.08.2019

Interacting with the prototypes, you will be asked to immerse yourself in a scenario you are in a specific mood/or under a strong emotion. Later on, semi-structured questions will be posed regarding usage scenarios, commercial feasibility, main product concepts, intended effects etc. The evaluation will take around 30-40 minutes.

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Vipak Somanchi

Signature: Vipak S.H.

Date: 5/8/19

Interacting with the prototypes, you will be asked to immerse yourself in a scenario you are in a specific mood/or under a strong emotion. Later on, semi-structured questions will be posed regarding usage scenarios, commercial feasibility, main product concepts, intended effects etc. The evaluation will take around 30-40 minutes.

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Else Tselik

Signature: Else Tselik

Date: 05.08.2019

Interacting with the prototypes, you will be asked to immerse yourself in a scenario you are in a specific mood/or under a strong emotion. Later on, semi-structured questions will be posed regarding usage scenarios, commercial feasibility, main product concepts, intended effects etc. The evaluation will take around 30-40 minutes.

I agree to participate in final concept evaluation session.

I give permission for session to be videotaped.
(Recordings will be used in the graduation thesis of the facilitator.)

Name: Zhe Duan

Signature: Zhe Duan

Date: 5/8/2019

Signed consent forms of participants of final concept testing.

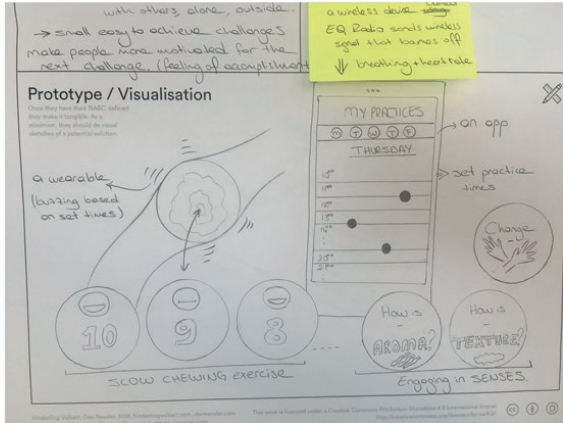
Initial concepts

Ideation was done based on 'designing for dilemmas' approach.

Resolving dilemmas

Mindful eating assistance

GET PLEASURE WHILE NOT OVEREATING



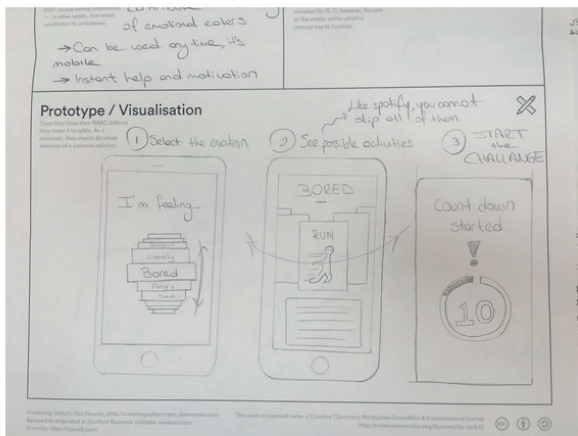
Even though user ignores the first vibration which is a call to action, it still creates a "stop & think" moment. And, it facilitates concern prioritization to be more visible than having it just in thoughts.

It triggers a dilemma between the concern for health and the concern for enjoyment. It may either resolve or emphasize this dilemma at the same time.

Moderating Dilemmas

See the other possibilities

A REDIRECTION TOOL

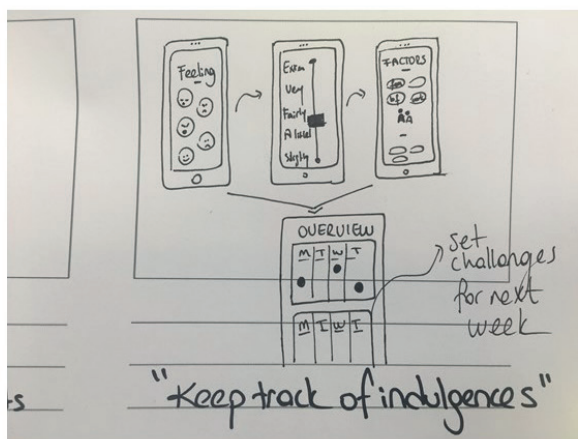


It helps prioritizing distant concerns (staying healthy) instead of indulging immediate concern (deriving pleasure from food) by showing healthier ways of dealing with emotional arousal.

Triggering Dilemmas

Keep track of indulgences

A REFLECTION TOOL



Log the emotions, intensity, influential factors, food choice and hunger rate which composes an emotional eating period.

See weekly/monthly overviews of your indulgences. It is a tracking tool to make emotional eaters more aware about their triggers.

*** Document to get feedback from UNILEVER & NESTLE regarding commercial feasibility of campaign/collaboration proposal**

I must validate an assumption that I am proposing in my graduation project regarding "a possible collaboration with food and beverages companies for amount-controlled snacking and emotional awareness /regulation".

During my self-initiated graduation project, I researched the notion of 'emotional eating' and came up with insights about this (unhealthy) eating behaviour based on literature and contextual studies. To be able to make sense of project outcomes, it is important to cover some highlights of research outcomes:

**Emotional (over)eating behaviour is deemed as a coping response to mostly negative emotional cues like stress, boredom, anger, loneliness.*

**Emotional eating behaviour is an expressive suppression strategy that people deploy to distract attention from current emotional distress.*

**This behaviour mostly happens while snacking and when individual is alone.*

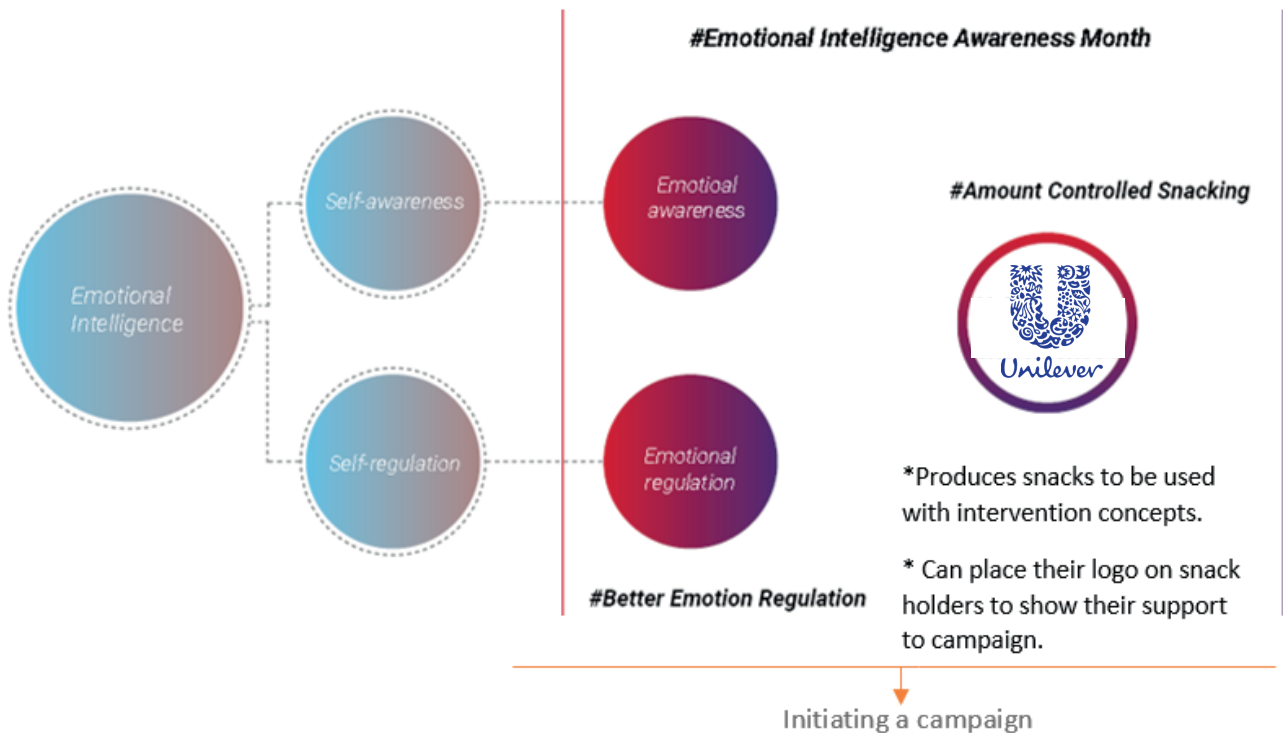
**It is an impulsive behaviour thus; feelings of guiltiness and shame comes along with overeating.*

After finding out the problem is not experiencing emotions but, the way people deal with them, I determined my aim in this project as "designing interventions for emotional eaters to engage in behavioural expressions of emotional distress". In parallel with these insights, I designed two interventions (for stress and boredom eating scenarios). Interventions are special snack holders requiring particular physical interactions (smashing the snack holder- for stress and cracking snack holder- for boredom) to be able to reach snack. Both snack holders are refillable and reusable thus, sustainable.

Proposed physical interactions transform the current impulsive behaviour into 'a mindful indulging moment' by supporting amount-controlled snacking and creating a channel to alleviate emotional distress (stress and boredom) before eating happens.

I have tested these concepts with 7 people (their emotional eating behaviour is validated with a screening questionnaire) and responses were quite positive in terms of usability and the positive feelings (joy, relief, excitement) interventions bring.

In order to make a further step in the development of these intervention concepts, I have thought of a commercial feasibility plan.



Unilever can promote amount-controlled snacking as a social responsibility project (i.e “Join the pipe” initiative and their wattle bottles) against obesity and eating disorders by collaborating with NGO’s working on topics like emotional awareness and regulation. These two interventions can be giveaways of Unilever’s snacks which are specially prepared for the “Emotional intelligence awareness month (every year October)”. This product family might be launched as a mediator to bring/reflect on “emotional awareness, regulation and their connection to eating behaviour”.

In this matter, I would like to receive your (or a person from Unilever who is responsible of running campaigns with associations, NGO’s etc.) feedback regarding Unilever’s approach, possibility of collaboration for such a campaign, alignment of Unilever’s leading principles versus what these interventions aim to achieve.

I will add the company feedback to my master thesis which I will submit this Friday (23th of August), I hope we can have a chat either as a response to this e-mail or as a phone call via my Dutch number (*****) / or a Whatsapp call via (*****).

*It is not an official proposal for an actual campaign collaboration, it is just an ideal scenario of commercial feasibility of design interventions which I propose in my master’s graduation thesis. In the purpose of validating assumptions.

