

A close-up photograph of a child's hands holding a large, round donut. The donut is covered in white icing and topped with small, light-colored sprinkles. The child's face is partially visible in the background, looking down at the donut. The background is blurred, showing other children and a colorful environment.

DESIGNING FOR HEALTHY EATING BEHAVIOUR:

*A playful approach to preventing
childhood obesity*

GRADUATION PROJECT
Hannah Goss

DESIGNING FOR HEALTHY EATING BEHAVIOUR

A playful approach to preventing childhood obesity

Design for Interaction

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Delft University of Technology

Faculty of Industrial Design Engineering

A project in within the Food and Eating Design Lab

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“PLAY IS THE HIGHEST FORM OF RESEARCH”

- ALBERT EINSTEIN -



*Yup, that's 1
year old me...*





PREFACE

Before you is the thesis “Design for healthy eating behaviour: A playful approach to preventing childhood obesity”. This thesis has been written to fulfill the graduation requirements of the Design for Interaction Masters at TU Delft.

This graduation project has been an intense, at times confusing, but an overall incredible experience. The basis for this project stemmed from my passion to use design and the power of play to make the world a slightly happier and better place. This project started with the goal to design something for children that helps them to become the best versions of themselves. However, my passion is not just about finding answers to questions, but also to develop a solution that can be used and enjoyed by all.

With all the ups and downs of COVID-19, trying a new design approach, and the general roller-coaster of graduation, I could not have created a design I believe in so much and am so passionate about without the support and encouragement from my friends, family, and supervising team.

To my family, thank you for listening to my ideas, testing my concepts, and your general optimism and constructive feedback throughout this entire process. Mom, thank you for your endless involvement in this project. From being my sounding board to my Tim Horton’s partner in crime, this project would not be the same without your support. In my eyes, you deserve to be an honorary designer, I mean you know ViP just as well as me now!

Ben, you are always ready with a pen and paper to capture my wandering thoughts. Even on different continents your level head, calmness, and care helped me persevere each week.

To my friends, our weekly Sunday Skype sessions always made me feel human again. No matter whether I needed to vent, laugh, or just sit in silence, these afternoons helped me keep the momentum of graduation going. I hope I can return the favour one day.

Rick and Marise, your flexibility, patience, and knowledge has not only helped me to produce a project I believe in but also has given me (cautious) confidence in myself as a designer and researcher. Your open-mindedness continuously inspired me through this project. I hope you have also gained something from our time together, I know I have.

Finally, a big thank you to all my participants for sharing their family stories with me, opening up their homes, and at times, eating with their hands.



Hannah Goss
Delft, 2020



EXECUTIVE SUMMARY

Today more deaths are linked to obesity and weight gain than famine and malnutrition, especially with children a concerning increase in global childhood obesity has developed. Currently, many programs have been implemented in the Netherlands to address childhood obesity, however, few go beyond awareness and involve a physical experience. To address this gap this project researched and designed a product experience to support families to develop a healthier relationship with food. The primary aim of the research was to gain a better understanding of how food, play, and parent-child interactions influence eating habits and behaviours in families, especially with regard to toddlers and younger children. Through this research a design was created for the year 2025 and tested with families.

In the first phases of this project, research was conducted through a literature review and qualitative studies with domain experts as well as parents with children between the ages of 1 and 4. These research studies focused on gaining a deeper understanding of specific values, beliefs, and parental experiences within a family in order to better understand the conflicts that exist in the home food context. The insights gained through these studies were gathered and categorized based on how they contribute to what family interactions around food moments will look like in the year 2025. For example, one insight is that *parents struggle to set clear boundaries; they often sacrifice their own well-being in order to be more engaged in their children's lives. Most families are child-centred, where the children hold priority over their parent's time, energy, and attention.* When reviewing these categories, the need for flexibility was a surprising yet important concept.

Once a clear formulation of the home food context was established a series of design interventions were developed and tested. Interventions were tested by myself as well as other families in order to identify and establish which designs positively influence our relationship with food. The design interventions were inspired by the themes of rebellious play, mindful eating, and the promotion of playful exploration, guided independence, trusted relationships, and family harmony.

After testing of prototypes, a final concept was developed and tested by families with children. The final concept called Happi Hanily is a family food play experience that facilitates the reflection of family food values, supports mindful eating, and creates an atmosphere that fosters harmony among family members—all of which promote the development of healthy eating behaviour for the family over time. The design has three elements, the digital Food Finder which is an online recipe platform, the Spill Supporters which are customized napkins, and the Wacky Wavey Wheel of food which is the central serving and eating dish.

The final concept was tested with three families using the qualitative methods of observation, questionnaires, and interviews. During testing it was found that the design facilitated a harmonious dinner experience with the qualities of playful exploration, guided independence, and trusted relationships being enhanced. Due to the timeframe of the project it was difficult to measure whether families were able to develop a healthier relationship with food. However, based on parental feedback it appears that children are more engaged while eating with the Happi Hanily and that this product is something they would adopt as a ritual. The design facilitates a more relaxed and stress-free dining experience which is important when introducing new food to children and when helping them to develop a healthier relationship with food.



TABLE OF CONTENTS

PART 0 | INTRODUCTION 8

PART 1 | DECONSTRUCTING THE CURRENT CONTEXT 11

- 2 How to Change Behaviour 13
- 3 Play for Play's Sake 18
- 4 The How and What of Food 23
- 5 The Parent-Child Relationship 27
- 6 What Experts and Parents Say 32

PART 2 | CREATING THE FUTURE CONTEXT 39

- 7 Determining a Domain and Timeframe 41
- 8 The Search for Context Factors 41
- 9 Context Clustering 43
- 10 The Future Context 53

PART 3 | DESIGNING A PRODUCT EXPERIENCE 55

- 11 Future Vision 57
- 12 Ideation and Conceptualization 61
- 13 Final Concept 65
- 14 Concept Evaluation 84
- 15 Conclusion 97

PART 4 | PROJECT EVALUATION 99

- 16 Did I Achieve Academic and Personal Goals? 101
- 17 Tips for Other Students 102

REFERENCES 103

APPENDICES *see separate document*





1 INTRODUCTION

1.1 THEME INTRODUCTION

Food is arguably one of life's greatest pleasures. We enjoy looking at it, we enjoy talking about it, and we especially enjoy eating it. Beyond providing pleasure, food is vital for our survival. Throughout human history, malnutrition and food scarcity have been major threats to humanities survival, especially for children. As a result, these threats have influenced parental behaviour towards feeding practices, for instance by increasing children's food intake and promoting weight gain (Birch, Savage, & Ventura, 2018). Although many countries today have shifted from food scarcity to food excess, feeding styles have remained consistent and unchanged, causing a new threat of overconsumption, promoting unhealthy diets, accelerated weight gain, and obesity in all ages (Birch, Savage, & Ventura, 2018).

THE HEALTHY PATTERNS
DEVELOPED IN THE FIRST YEARS
OF LIFE ARE CRITICAL FOR THE
DEVELOPMENT OF A HEALTHY
FOOD RELATIONSHIP

Tremendous physical and psychological growth within the food domain is shown during the first years of life, as infants begin to become more independent and transition from an environment offering a single food intake source (breast-milk/formula), towards a freer food environment (Paroche et al, 2017). It is during these years that eating behaviours, preferences, and habits evolve and we begin to learn what, when, how, and the quantity to eat through direct experiences with food or through observing others eating (Paroche et al, 2017; Birch et al, 2018).

There are numerous ways in which children learn to accept new foods, with many scholars proposing that touching and playing with food is an essential part of this learning process (Rossholt, 2012). Through touching and playing with foods via food play, children are able to become acquainted and explore all the sensory properties of food. Experiences that will help them feel comfortable when the food is inside their mouths (Rossholt, 2012). In general, play supports values of curiosity, exploration, and relatedness, all aspects that enhance well-being, values translate to and are important within the food domain (Wilde & Altarriba Bertran, 2019). Overall, environments and habits practiced during infancy and toddlerhood play a crucial role in shaping children's eating behaviour and experiences through childhood and beyond (Birch et al, 2018).

1.2 PROJECT RELEVANCE

Childhood obesity is globally one of the most severe life concerns of the 21st century (WHO, n.d.). In 2016, the World Health Organization estimated that 41 million children under the age of 5 were overweight, with the prevalence increasing at alarming rates. Childhood obesity not only increases the risk of obesity in adulthood, but also presents numerous psychological effects for obese children, including lower self-esteem, social problems, and peer relationships, to name a few (Huffman, Kanikireddy, & Patel, 2010). With the prevalence of obesity increasing, the healthy patterns developed in the first years of life are becoming more critical.

Children prefer fat and salty foods, the taste and salivary reaction serve as gratification, which is a contributing factor to childhood obesity. What if children can experience the same gratification through playful interactions with food, interactions that promote healthy food choices and still provide the same pleasurable experience? By changing the source of the gratification towards play, a healthy food relationship can develop.

1.3 THE OBESITY EPIDEMIC

Obesity is a medical condition that results when there is a chronic mismatch between the body's energy intake and expenditure (Shloim et al, 2015). This chronic mismatch can be as related to socioeconomic status, exercise, lifestyle, sedentary behaviour, and sleep, to name a few. However, signs of obesity and overweight are not universally perceived as detrimental to one's health and this perception influences the type of feeding patterns adopted by parents (Savage, Birch, & Fisher, 2007). For example, in certain cultures mothers have identified that obese and overweight children as a sign of successful parenting and a healthy infant. It has also been found that a third of mothers with overweight children do not perceive their children as overweight or even unhealthy (Savage et al, 2007). These perceptions of childhood obesity in environments that encourage excessive consumption presents an extra challenge to adjust parental feeding attitudes and beliefs towards ones that are healthy and regulated.

TODAY MORE DEATHS ARE LINKED TO OBESITY AND WEIGHT GAIN THAN FAMINE AND MALNUTRITION

-WORLD HEALTH ORGANIZATION

1.4 OBESITY IN THE NETHERLANDS

In 2013, the municipality of Amsterdam instituted a healthy weight program. A program that implements interventions predominantly at the informative level whereby they provide counseling for families regarding healthy behaviour, implement clearer food labelling, and reduce unhealthy food advertisements for children. The few tangible initiatives include the Jump-In Certificate outlining 8 healthy goals a school can meet, the introduction of healthy birthday snacks, and requiring water and fruit snacks during break time.

In the 2019 National Prevention Agreement the Netherlands identified obesity as one of the leading concerns to tackle, as it is anticipated that in 2040, 62% of the population will be overweight (Netherlands Organization for Health, 2019) (Figure 1). This agreement, which focuses on children and youth adults, includes programs such as working with supermarkets, restaurants, and the catering industry to provide more products that are featured in the Wheel of Five; initiatives to entice customers to buy Wheel of Five foods; implementing training modules to educate employees of supermarkets and schools on healthy nutrition; installing water fountains in schools and public areas to promote water consumption, and changing the serving sizes of sugary foods like biscuits. However, the lack of interventions that move beyond awareness and explore how products or experiences can support parents and children in developing healthy food behaviour presents an opportunity for this project. Specifically exploring how design can support and enable the behaviour change, or create a symbol for progress (Pohlymeyer, 2012).

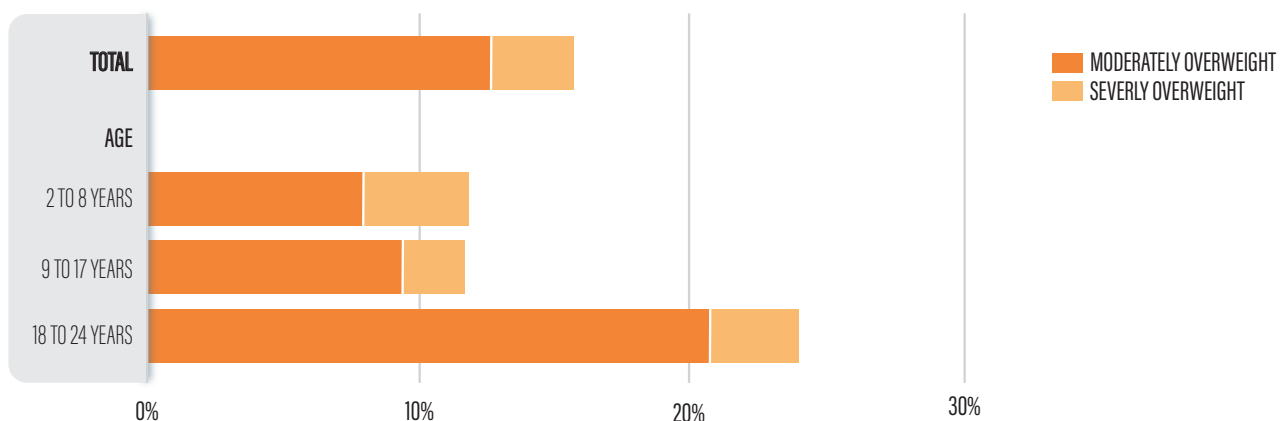


Figure 1 | In 2018, 16 percent of all children and young people in the Netherlands aged 2 to 24 years were overweight (CBS Statistics Netherlands, 2019).

1.5 PROJECT APPROACH AND PROCESS

The aim of this project is to develop a product or experience that enables families with toddlers to develop healthy food and eating behaviour by focusing on play (see Appendix A for design brief). This aim is positioned to aid in the prevention of obesity later in life through the increase of healthy food intake. To design for prevention, I employed the Vision in Product Design method (ViP), as it is context and interaction driven, focusing on the meaning and value experienced during a product interaction, rather than the specific qualities of the product itself. Through ViP, I am guided to determine what impact and meaning I want to provide families and determine a concrete solution for how I will achieve it (Hekkert & van Dijk, 2011).

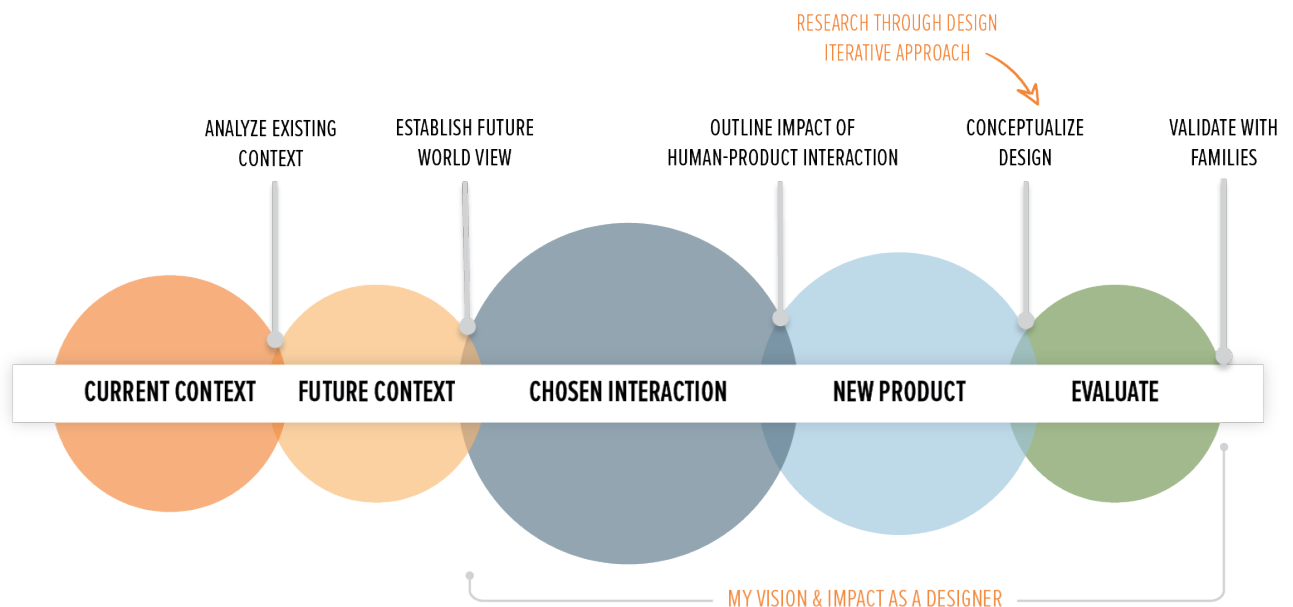


Figure 2 | General approach taken during this project.

PART ONE

MAKING SENSE OF THE CURRENT SITUATION











DECONSTRUCTING THE CURRENT CONTEXT

CHAPTERS 2 TO 6

This project focuses on developing healthy eating habits for families with toddlers, by focusing on playful interactions. In order to design for the future of this context, a thorough exploration and understanding of the parent-child relationship around food and play is essential. To gain this understanding several sources were explored including scientific literature, discussions with experts, interviews with parents, and video observations.

Food, play, and socialization are core activities in our daily lives. Food sustains us, play helps us experience the world, and socialization acquaints us with social norms that support social acceptance. However, when experienced together, these three pillars are often dismissed or opposed. For example, even though it has been shown to improve child development (Kuzemchak, 2019), playing with food remains unacceptable or ‘taboo’ in many Western households, due to social norms, and the ideology as to where and when play can occur. When it comes to healthy eating, it is challenging to change our own behaviour due to the complex relationship we have foods, such as the tendency to over-consume in social settings, or the preference for fat and salty foods. These three pillars served as the starting point for this project, and led me to the following questions;

-  *Where and how do we start when we want to instill healthy food and eating behaviour on others, especially in children?*
-  *How do the developmental stages of children influence their food and eating behaviour, preferences, and experiences?*
-  *What aspects of our innate instincts can be exploited to influence our behaviour?*
-  *What roles do parents and children have when it comes to changing eating patterns and behaviour?*
-  *What are the advantages of playing with your food, and how do social norms influence this perception?*
-  *Does play influence food moments for children, if so, how?*

These initial questions served as a starting point for the deconstruction of the current context. To structure my exploration, I focused on 5 broad subjects; behaviour change, play, food, the parent-child relationship, and happiness. Using insights gathered from the literature review, I conducted discussions with experts and interviewed parents of toddlers to gain further insight and inspiration. Each of these topics represents a chapter within this section. The final chapter will summarise the insights from the research, leading to my domain and context factors.

CHAPTER 2: INFLUENCES FOR BEHAVIOUR CHANGE
CHAPTER 3: THE ROLE OF FOOD
CHAPTER 4: PLAY FOR PLAY'S SAKE

CHAPTER 5: THE PARENT-CHILD RELATIONSHIP
CHAPTER 6: INTERVIEWS WITH PARENTS & EXPERTS

2 HOW TO CHANGE BEHAVIOUR

I am certain you have heard or even uttered the idiom; history repeats itself. Maybe after the economic depression, a night of binge eating, your child spilling their milk three nights in a row—I certainly have. Understanding human behaviour in the past is beneficial when designing for behavioural influence, is as it provides insights into how we will behave in present and future.

Children 3 years old are most receptive to new foods and parents play a crucial role in modelling healthy eating behaviour, and creating a safe environment for development. Due to the intricacies of the parent-child relationship, one could posit that in order to influence the eating behaviour of toddlers, understanding how to influence parental behaviour is equally, if not more, important. Through design, this project aims to create behavioural change and prevent childhood obesity. In order to achieve this, persuasive and experience design states, that the design intervention needs to be developed with a specific aim in mind, and that ensures motivation, ability, and the correct trigger are present (Vermeeren, 2019). Design interventions that develop and support food learning and healthy behaviour change for children are most successful when both children and parents involved (Yavuz, van Ijzendoorn, Mesman, & van der Veek, 2014).

In this chapter, I explore how behaviours are developed, how they are shaped by artefacts, influenced through salience and force, and can be achieved with a playful state of mind.

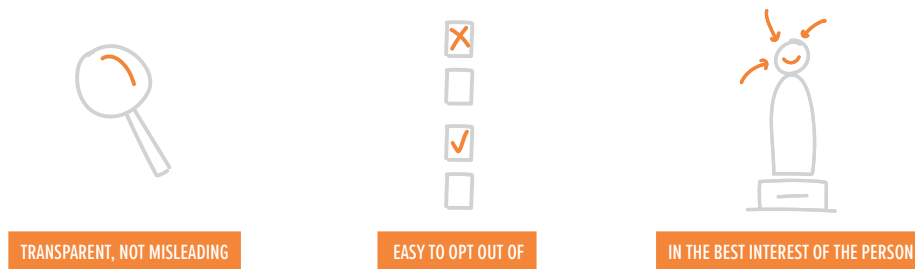


2.1 CHANGE THROUGH BEHAVIOUR, HABITS, AND NUDGES

Human behaviour describes the way one conducts themselves and acts towards others (Oxford Dictionary, n.d.). It is often irrational and only occurs when the motivation, ability, and trigger to act are present (Vermeeren, 2019). Vermeeren explains that our motivations are often competing and that the trade-offs made between our motivation and ability influences whether a behaviour is achieved or ignored. For example, within the food domain, long term health and well-being is often challenged by people's short-term desire for immediate gratification. Additionally, in order for a behaviour to be set into motion, there needs to be a trigger that aligns with our abilities and motivations. When our motivation, abilities, and triggers are aligned, our behaviour can be influenced (Vermeeren, 2019).

In contrast to behaviour, which involves a deliberate decision to act, Vermeeren describes that habits are repeated subconscious responses that become routine over time. For habits to become routine it involves repeatedly moving through the stages of cue, craving, response, and reward. All habits are motivated by rewards—the cue helps us notice the reward, the craving makes us want the reward, and the response delivers the reward. While cues previously signalled essential rewards like food and water, now rewards focus on things like status, personal satisfaction, and praise, to name a few. The cues that trigger our actions can be linked to a location, a time, an action, or an emotional response. Without one of these cues there is no corresponding behaviour, therefore is it beneficial to expose yourself to cues that trigger good habits and avoid triggers for bad habits. The second stage, craving, is not focused on the habit itself, but the motivational force behind the reward and the change the habit delivers. For this reason, cravings differ between people and for a habit to become routine the correct cue and craving needs to be identified, for a reward itself cannot solely drive a habit.

Most of the decisions we make daily are driven by a subconscious, rather than rationally conscious mindset. By understanding the pattern of our subconscious behaviour people can be nudged to make certain decisions and act in predetermined ways (Lieren, 2020). Since designers can positively or negatively stimulate the subconscious mind through interventions, three principals have been outlined when designing nudges;



2.2 CHANGE THROUGH ARTEFACTS

Built upon the social sciences, the Activity Theory (AT) proposes consciousness, activity, and context are not independent but intricately intertwined, in that we are what we do (McAvinia, 2016). Each day humans interact with the world through tools that facilitate our external activities. Tools, which carry cultural knowledge and social experience, have mediated our relationship with the world for decades, allowing us to carry out goals and drive our motivations to engage in the activity (McAvinia, 2016).

I (the subject), use the knife (the tool), to make a sandwich because I am hungry and want to become satiated (the objective). When viewed with another activity, objects can be shared between systems, activities, or people (McAvinia, 2016). When trying to understand the way humans behave, understanding the goal and motivation is crucial because it is the driver of the activity. However, it is important to remember that activities are not fixed and can be influenced by the social environment, the subject, or changing goals. When viewed using the Activity Theory one can view food moments as activities that both parents and

children engage in at the same time, however, differences may occur when looking at their motivations to engage. Therefore, understanding how objects facilitate the activity and the relational qualities to the activity as a whole is paramount.

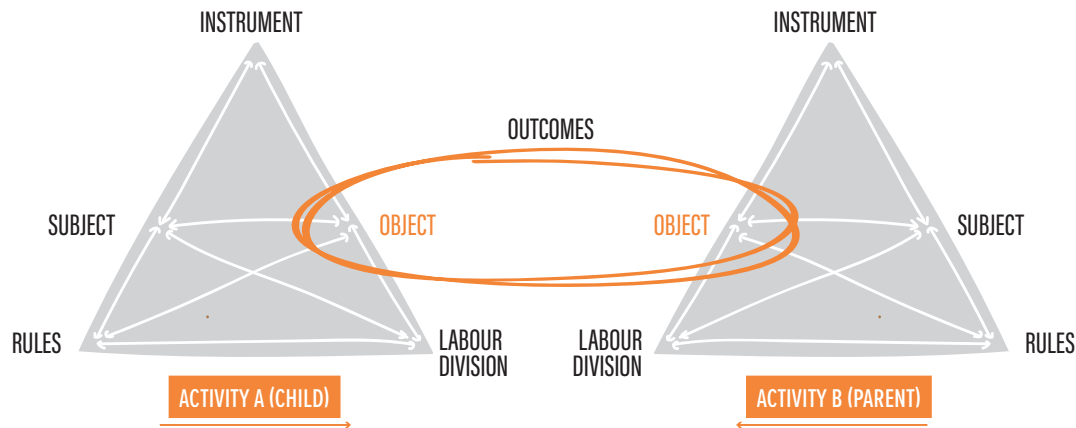


Figure 3 | Adaptation of the Activity Theory Model illustrating objects being shared between activities.

2.3 CHANGE THROUGH INFLUENCES

Designing with a clear aim in mind is crucial when trying to change behaviour because while products mediate our behaviour in our environment they do not determine the resulting effects of the design. Therefore, understanding the relationship between the product, human behaviour, and the implication of the design is essential. Varying along the dimensions of salience and force, Tromp, Hekkert, and Veerbeek (2011), have outlined that design can influence behaviour through coercion, persuasion, seduction, or decisiveness (Figure 4). In order to understand the type of influence to design for, understanding the degree to which the individual views the behaviour as beneficial and how their concerns align with societal concerns is needed. For example, when designing for better eating behaviour the collective concern to reduce obesity often aligns with individual concerns, however, the trigger (e.g. smaller plates) to achieve this change differs for individuals. Therefore, products can either encourage or discourage behaviour once the individual concerns have been identified and the appropriate trigger has been determined.

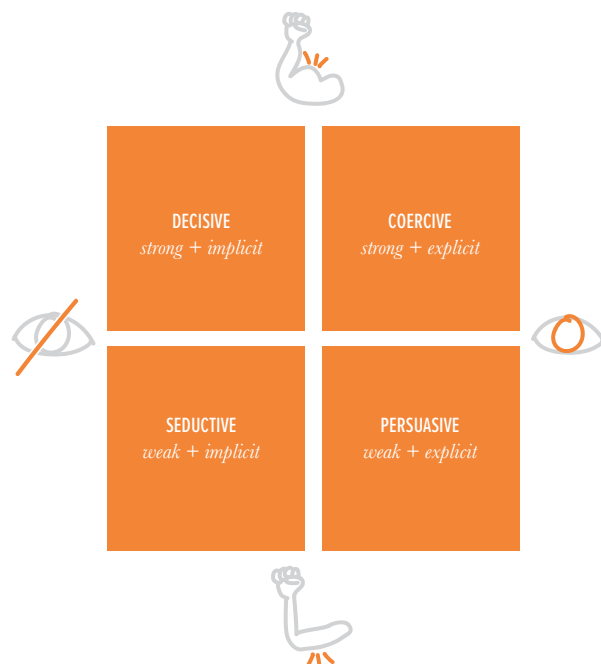


Figure 4 | Four types of product influence based on strength and visibility of influences (Tromp et al., 2016).

2.4 CHANGE THROUGH PLAYFULNESS

Changing behaviour through play has recently become a more accepted design approach, with campaigns such as the Piano Stairs by Volkswagen exemplify this approach (Figure 5) (Goodvertising, 2019). Central to designing for playfulness is the ability to create objects that elicit enjoyable experiences and that promotes a playful approach, even during mundane tasks, such as daily feedings (Lucero & Arrasvuori, 2013). When researchers began to explore why people play and the experiences, pleasures, emotions, and elements of play that occur, they found that there are 22 experiences elicited when interacting with products in a playful manner (Figure 6). However, it was indicated that not all of the experiences are positive or pleasurable (Lucero & Arrasvuori, 2013). When people play, they adopt a possibility driven mindset, because moments of play have different rules from normal life. The hierarchy begins to diminish, people lose their fear of doing things wrong, and they are open to discovering things in new ways. This includes peoples willingness to engage in new behaviour, or activities that challenge the status quo.

WHILE PEOPLE MAY HAVE DIFFERENT GOALS AND WISHES, OUR FUNDAMENTAL NEEDS ARE UNIVERSAL. WITHIN OUR NEED FOR STIMULATION IS A SUB NEED FOR FUN (DESMET & FOKKINGA, 2018).



Figure 5 | The Piano Stairs Intervention by Volkswagen. Photo Credit: The Oval Office, 2013.



Figure 6 | 22 playful categories, also known as the PLEX Cards developed by Lucero & Arrasvuori (2013).

3 PLAY FOR PLAYS SAKE

The purpose of play is for the sake of play itself (Besio et al, 2016). While often seen as useless or a waste of time, play is extremely important and supports values that are essential to well-being (Wilde & Altarriba Bertran, 2019). It empowers individuals to learn through exploration, curiosity and reflection (Wilde & Altarriba Bertran, 2019). It helps them to make sense of the world around them.

“Play sets the perfect scenario for individual development, encouraging people to learn through experimentation. It sparks curiosity, positivizes risk, and makes exploration attractive. It makes people curious to learn and to adopt a proactive role in whatever they are doing. It helps people to be optimistic about their capacities—even in the face of failure: playful failure only makes a person more eager to explore and try things out” (Wilde & Altarriba Bertran, 2019).

Play, especially sensory play, is universal. It begins at birth and continues throughout adulthood. However, as adults, we have begun to modify our definition of play and may not recognize when we engage in sensory play during our day, such as by twirling our hair, taking a longer shower, or engaging in a yoga class. These are all activities that stimulate the senses in a pleasurable and playful way. Towards the end of the second year, the joy of movement starts to become more inherent and prominent during play activities, as well as the increase of socialization and fostering peer relationships (Ann and Robert H. Lurie, Children’s Hospital of Chicago, n.d.). This suggests that when designing a playful experience for a toddler, engaging parents and others in the play stimulates the child and promotes a safe environment.

This chapter explores the role of play in both children and adults, how it translates to the food domain, and why we should support children in playing with their food.



3.1 THE 9 ELEMENTS OF PLAY

Aside from pure enjoyment, play has been proven to contribute to a child's cognitive, social, and cultural development. Cognitively, play supports divergent thinking and improves the receiving and exchanging of information; socially it fosters emotional and empathic understanding and social interactions; and culturally it introduces social roles and values (Benson & Haith, 2009). Additionally, studies have shown that through play children are able to develop the necessary social, emotional and intellectual skills that would otherwise be unachievable. Even with this knowledge parents continue to fill their children's time with activities that reduce their ability for free play. Interestingly, the skills associated with self-initiated play, such as curiosity and imagination, can be lost if not used or developed (Elkind, 2008). Therefore, even as adults, it is still important to continue to explore the world through play and playful experiences.

When reviewing key pioneers in psychology, such as Freud and Piaget, it becomes clear that they consider “love and working” or “playing and working”, respectively, as critical factors for healthy growth and development (Elkind, 2008). When combining these schools of thought Elkind shows that love, play, and work are the three pillars that drive our thoughts and actions, and are subsequently essential for a full, happy, and productive life. He describes that play adapts over time and helps us experience the world around us; love is our need to express our desires, feeling and emotions; and work is our ability to adapt to the physical and social environment influenced by external demands.

While play is often ambiguous, over the years play scholars have that the identified 9 elements that characterize play are (Gielen, 2019);



IT IS A SPONTANEOUS ACTIVITY



OCCURS IN VARIOUS WAYS



UNDER CERTAIN CIRCUMSTANCES



INVOLVES SOMEONE OR SOMETHING



IT IS FOCUSED ON THE PROCESS



AT ONE'S OWN WILL



MEETS A PERSON'S WISHES
AND NEEDS (COGNITIVE/
PHYSICAL/EMOTIONAL)



FULFILLS FUNCTIONS OF
RELAXATION, PROCESSING, AND
PRACTICING



OCCURS IN A PLAY FRAME
(PSEUDO REALITY)

While many parents feel there should be a distinction between playtime and mealtime, overlap inherently exists. For example, one of the 9 elements of play, meeting wishes and needs, includes that of safety. However, if a child feels pressured to eat, they do not feel safe and will likely refuse the activity. Therefore, drawing inspiration between food and play can serve as a starting point for creating healthy food moments.

3.2 MESSY PLAY IS BENEFICIAL

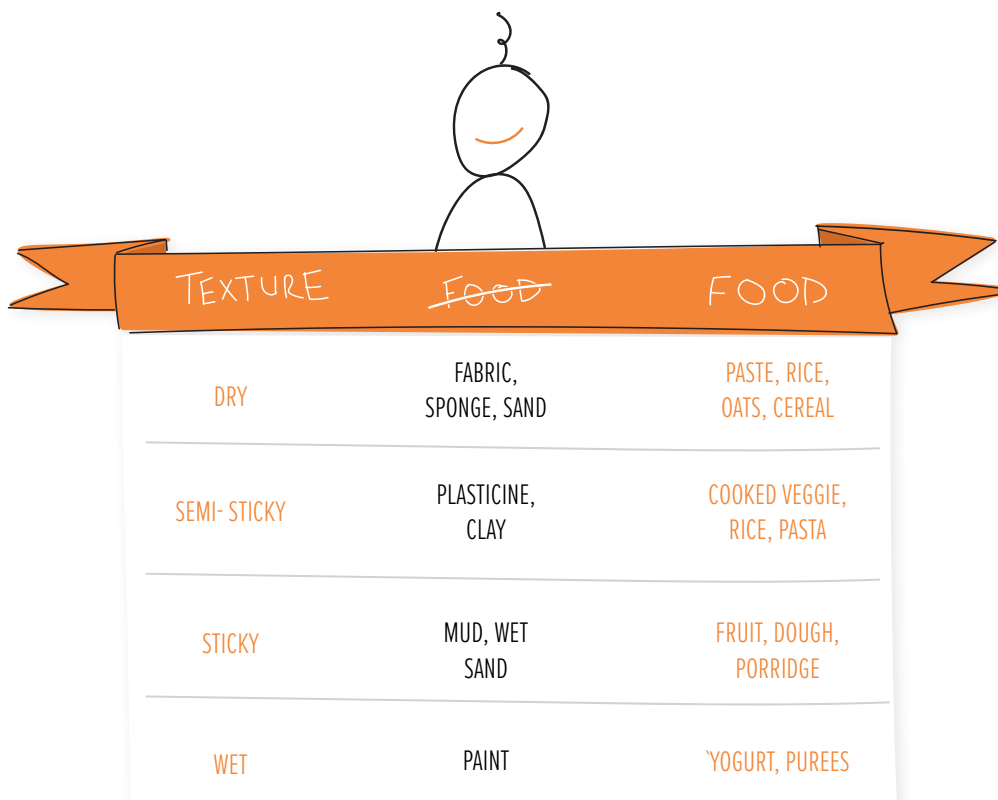
Child: *Mommy, can I paint?*

Parent: *Yes, but don't make a mess.*

The word mess often has negative connotations and it is seen as something that is unpleasant and that should be avoided. However, messy play, also known as sensory play, is a highly undervalued activity because at its core it emphasizes the active exploration of materials and their properties, and allows children to explore, manipulate materials, and focus on the process rather than the outcome (Duffy, 2004). Messy play is any experience that stimulates the senses and allows children to squish, splash, bang, scoop, shake, spin, smear, toss, or ooze; all qualities that can be explored within the food domain. However, parental disapproval of messy play may be attributed to the hate of mess, or the concern of what other people might think if they see their child engaging in these sorts of activities (Duffy, 2004). Much like other areas of parenting, messy play becomes even more effective when there is a parent-child interaction, in that the parent uses open-ended questions and models the behaviour for their child.

MESSY PLAY IS MORE EFFECTIVE WHEN THERE IS AN ADULT-CHILD INTERACTION.

Touching and playing with food is an essential part of the process of accepting new foods (Wilde & Altarriba Bertran, 2019). Within the domain of food, play has shown to positively impact the dining experience, however, it remains relatively limited and unexplored (Wilde & Altarriba Bertran, 2019). Studies conducted in Finland have explored sensory-based food education programs in preschools that encourage activities like preparing salads, growing vegetables, and sensory food sessions, all of which have found to increase fruit and vegetable acceptance and consumption (Kuzemchak, 2019). Through food sensory play toddlers are able to familiarize themselves with the sensorial properties of the food around them. Often sensory play is focused on touch sensations and allowing children to overcome their reluctance with unfamiliar textures, such as with finger painting or plasticine. When the principles of sensory play are successfully applied with food and eating, children can challenge their reluctance to interact with the new textures and smells they are being presented. Some examples of how you can translate sensory play to the food domain include;



TEXTURE	FOOD	FOOD
DRY	FABRIC, SPONGE, SAND	PASTE, RICE, OATS, CEREAL
SEMI- STICKY	PLASTICINE, CLAY	COOKED VEGGIE, RICE, PASTA
STICKY	MUD, WET SAND	FRUIT, DOUGH, PORRIDGE
WET	PAINT	YOGURT, PUREES

Figure 7 | Example of how sensory play can be translated from non food material to food materials. Adapted from Infant and Toddler Forum, 2014.

3.4 PLAYING WITH YOUR FOOD. YAY OR NAH?

If food, play, and socialization are core activities in our daily lives, and playing with food is shown to improve childhood development, such as learning new food-related words and increasing diet variation (Kuzemchak, 2019), why does it remain unacceptable or taboo in many households? Why do some people say yay but many nah?

Taboos are social or religious customs that restrict and prohibit a certain practice, behaviour, or association between particular persons, places, or things (Dictionary.com, n.d.). They represent unwritten social rules that aim to regulate the behaviour of a society or group and are often associated with customs, cultures, behaviours, or specific life events (Meyer-Rochow, 2009). Eating with your hands and playing with your food is driven by social norms, however, these norms are not universally supported (Figure 8). Some countries and cultures, such as in India, view eating with your hands as a way to feed the body, the mind, and the spirit, as each finger represents one of the five elements — space, air, fire, water and earth (Festa, 2016). Whereas in countries like the Netherlands, eating with your hands is considered unhygienic, rude, and a distraction to the rest of the diners (Netherlands Dining Etiquette, n.d.). Nonetheless, the taboo of not playing with or touching your food is beginning to be challenged in a variety of domains, from child specialists to high-end restaurant owners. Additionally, while often viewed as a health detriment, eating with the hands prepares the stomach for digestion by sending nerve signals; it enables us to be more mindful of what we eat; heightens our sense of taste; and aids digestion (Festa, 2016).

Similar to messy play, when challenging this social norm, parents might have anxiety about letting their children play with their food due to potential mess, or judgment from others. Food is squishable, lick-able, and manipulatable, children want to explore it as they do any other toy. When trying to overcome social norms regarding playing with food, it is important to shift the parental perception to one that is more accepting and encouraging of this behaviour.



Figure 8 | Overview of eating etiquette from 10 countries. The countries with the hand indicate that they do not find eating with your hands unacceptable but promote that way of eating.



4 THE HOW AND WHAT OF FOOD

Feeding can be seen as a developmental task which children have to successfully master in the first years of life, as they progress from a restricted and controlled food environment (strictly breastmilk/formula) to a varied and free food environment (Verhagea et al, 2018). This food transition can be supported or hindered by parenting practices. Parent-child food and eating behaviours are bi-directional, meaning that parents and children influence each other's feeding habits and behaviours. Parents by making food choices for the family and acting as models for dietary choices, and children influencing the parental choices by their temperament, eating traits, learned behaviours, physical characteristics (age, weight etc.) (Verhagea, Gillebaarth, van der Veek, & Vereijkena, 2018). The experience of feeding a toddler, whether positive or negative, is an emotional experience for both the toddler and the parent. Parents are often concerned that their child is not eating correctly and that their child's reluctance to try new foods is not normal (Infant and Toddler Forum, 2014). For children, they are constantly being introduced to weird-smelling, looking, and coloured things that their parents want them to put in their mouth. As early as 4 months, infants become aware of the feeding patterns enforced by their parents and begin to sense the atmosphere around mealtimes, such as if parents are stressed or relaxed. This is a skill that enhances as children age (Infant and Toddler Forum, 2014).

Children learning through imitation is not limited to imitating their parents, but they also modify and adapt their behaviour to match those of other children around them. Taste, texture, and food preferences gradually increase between the ages of 2 and 8, and imitation remains a key way children learn to develop these preferences (Infant and Toddler Forum, 2014). By the end of the first year, toddlers begin to recognize, name, and point at the food they want and are able to visually group food into categories using local processing such as colour (Infant and Toddler Forum, 2014). As they enter their second year, they start applying global processing to categorize food, for example, they begin to understand that a new, differently shaped biscuit might taste like a biscuit they have had before.

IMITATING AND MODELLING
BEHAVIOUR ARE KEY WAYS WE
LEARN AND DEVELOP OUR FOOD
HABITS.

As they reach their third year, toddlers become excited about food presented during mealtimes and their appetite and consumption regulation is easily influenced, often resulting in overconsumption if provided large portion sizes (Infant and Toddler Forum, 2014). Numerous studies have shown that parental modelling, both verbal and behavioural, during mealtimes influences a child's responsiveness to food, food preferences, as well as overall enjoyment with food (Shloim et al., 2015). In general, children between the ages of 1 and 3 eat an excess of energy-dense rich foods and far too little fruit and vegetables (van der Veek, et al., 2019). This imbalance of food results in the majority of preschoolers not reaching daily recommendations of vegetable intake. In the Netherlands, 40% to 80% of preschoolers fit into this category (van der Veek, et al., 2019), a trend not reserved to the Netherlands alone. Therefore, as a parent, it is key to be aware of their feeding patterns and ensure they model the correct behaviour.

In this chapter, I explore how children learn about food, what methods and products currently exist to support parents in feeding, and how the context of food is changing.

4.1 HOW TO INTRODUCE FOODS

Children as early as 18 months begin to seek more autonomy and control over their food preferences and diet, creating a challenge for parents to balance their child's newfound autonomy while ensuring they are eating appropriate portions and consuming healthy foods (van der Veek et al., 2019). Van der Veek and colleagues described in a study that in order "to promote healthy food preferences, parents need to stimulate their child to eat vegetables in a non-pressuring way that is sensitive to the child's autonomy-related needs and behaviors. This requires more than just responsiveness to hunger and satiety cues, but also sensitive discipline strategies to challenge child behaviour (e.g. when a child throws their food on the ground) and sensitive responses to distracting behavior (e.g. when a child is more interested in what is happening around them than in its plate of food)". Through sensitive discipline

parents can develop positive encouragement strategies that grant appropriate autonomy, allows for children to adapt to the new food experience, and brings internal motivation to the forefront of food self-regulation (van der Veek et al, 2019). However, the enjoyment of food for toddlers should be monitored because too much enjoyment may result in the negative relationship of overconsumption (Verhagea et al., 2018).

Children learn about food and eating in four primary ways; through familiarization, associative learning, observational learning, and categorization (Figure 9) (Paroche et al., 2017).

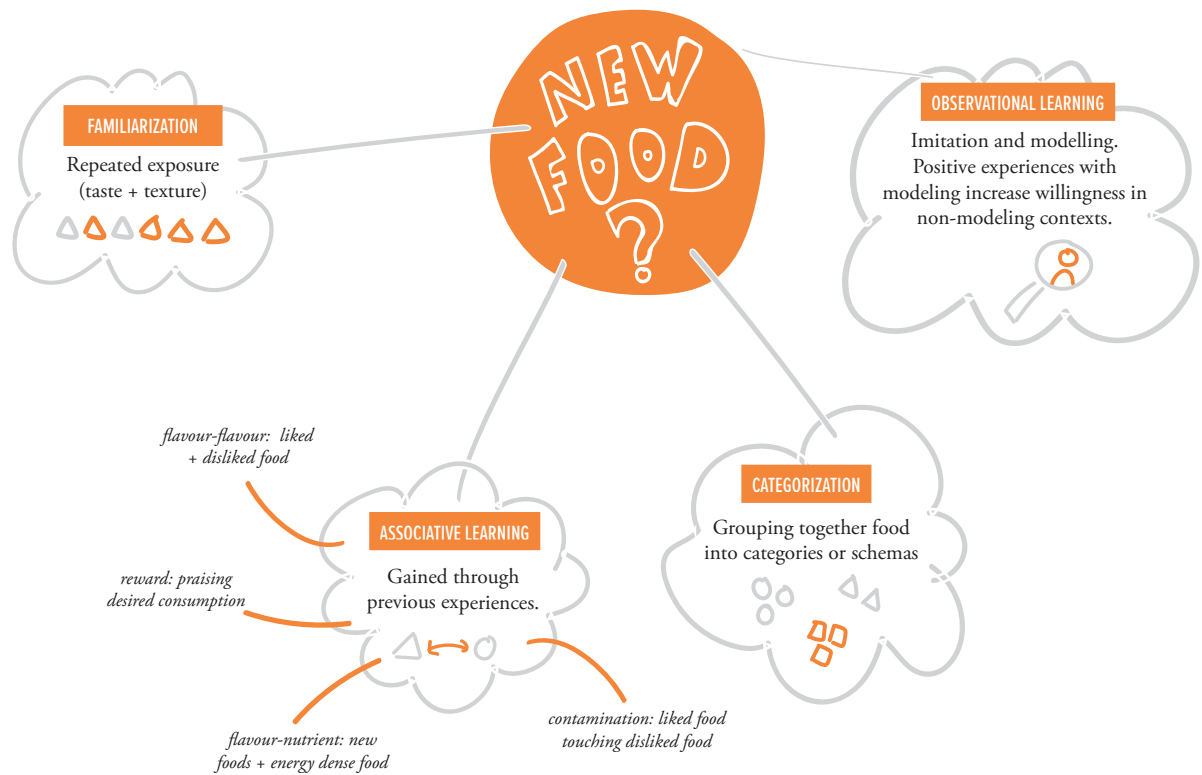


Figure 9 | The primary way children learn about food is through familiarization, observational learning, associative learning and categorization.

The family meal, as well as meal preparation and cooking, presents an opportunity to utilize these different ways of becoming acquainted with food in a family ritual and family social moment (Verhagea et al., 2018).

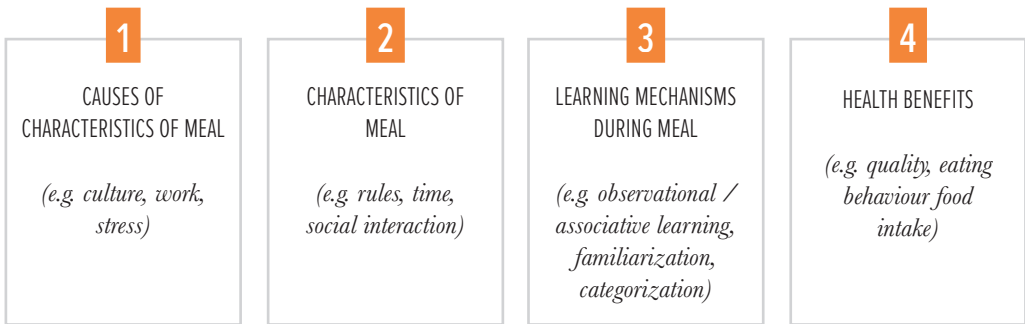


Figure 10 | Factors involved with a family meal.

4.2 NEW WAYS OF BUYING FOOD

With changes in lifestyles and advances in technology, our daily and weekly food moments are beginning to change, including when and how children are exposed to food. Home grocery delivery, the increase of prepared food, ingredient boxes, and complete meals is becoming a larger part of our lives as a way to do groceries increasing parental free time but reducing context immersion and exposure for children. This becomes even more limited with the implications of COVID-19, as grocery stores are limiting persons allowed in stores at once. Similar to changes in shopping strategies, consumers increasingly care about sustainability and how animals are treated in the production of food. They want to know what's in their food, how it was made, and where it's from. To respond to this rise of e-commerce and shifting values, retailers and grocery stores are adopting an omnichannel experience, through changes to the physical store, developing a more personalized digital experience, increasing transparency with products and creating click and collect options (Springer, 2018).

ADVANCEMENTS IN TECHNOLOGY
AND THE RISE OF E-COMMERCE
HAS CHANGED OUR DAILY AND
WEEKLY FOOD MOMENTS

4.4 CURRENT FOOD AND EATING PRODUCTS

A key aspect of this project is understanding how the food domain and the play domain can cross over and positively influence each other. When looking at products for toddlers, there are products and suggested behaviour that utilizes our innate nature of play to support food behaviour. However, products that currently support a playful eating experience often involve tricking the child to eat (e.g. airplane), distract the child while eating (e.g. board game style plates), or try to change the meaning of the food (e.g. face plates). The play in these products is not focused on the joy of play but rather support a goal-oriented mindset of food entering the child's mouth by whatever means necessary. While parental concerns for healthy growth is understandable, these products have short term success because a child quickly realizes after a few bites that they are being tricked and the repeated exposure stops. Thus, the playful experience hinders the healthy development. Additionally, these products support either a parent-led feeding strategy or child-led, with few shared interactions. This provides an opportunity to create an intervention that allows the child and parent to play together in a meaningful way rather than promoting trickery or temporary success.



Figure 11 | Breakdown of the type of products within the domains of food and eating, and play for young children and toddlers.



5 THE PARENT-CHILD RELATIONSHIP

Parents want what is best for their children and actively try not to pass their own shortcomings down. As a result, they adjust their parenting behaviour based on their own childhood experiences and upbringing. The current feeding patterns that promote overconsumption were in response to the malnutrition and food scarcity that plagued the world for many centuries. In order to change parenting practices towards ones that reduce obesity parents need to depart from traditional feeding towards a new, more responsive, approach (Savage et al., 2007). Through the exploration of parental typologies, a better understanding of how parents might approach their children and shape their behaviour, personalities, and preferences in general and with regards to food, can be established. This can serve as a starting point for designing a solution that enables healthy consumption and hinders overconsumption based on parental ideologies and approaches. Therefore, in order to influence the eating behaviour of a child, there needs to be a level of willingness from parents to change their own behaviour. This chapter explores how our parental roles have changed and been influenced by our ancestors, as well as identifies the four parental typologies and role parental attitudes have on child upbringing.

5.1 UNDERSTANDING OUR ANCESTRAL BRAINS

Our evolutionary brains want mothers and fathers to be good parents and for families to thrive. Through vertical transmission, parents are able to impart knowledge about the world to increase the likelihood of offspring success and flourishing (Giphart & van Vugt, 2016). When referencing evolutionary models of parental involvement, the major forces that determine family dynamics are those related to social factors (Moller et al., 2013). These social factors are anything that influences and affect someone's lifestyle, including parental investment. Robert Trivers, an evolutionary biologist and sociobiologist, defines parental investment as any investment that increases a child's chance of success at the cost of something else, or investment in another child. Ultimately, investment decisions are taken subconsciously but require parents to make choices about where and how to allocate their time and focus (Trivers, 1972).

BIOLOGICALLY WE WANT TO BE GOOD PARENTS AND FOR OUR FAMILY TO THRIVE.

A significant difference between our ancestors and our current lifestyles are the challenges of work-life balance. Our ancestors worked only 15 to 20 hours a week and used the remaining time for social interaction and engagement (Giphart & van Vugt, 2016), whereas today the average person works between 36 to 40 hours. Additionally, living in tribes means that members collectively managed child care, and overconsumption and indulgence were non-existent. Enough was enough, and within food behaviour the bliss point, which is a combination of salt, sugar, and fat which stuns our brains and we carry on eating unthinkingly, was a non-issue because the food ingested had no artificial additives (Giphart & van Vugt, 2016).

Many of these traits such as family orientation, imitation, and preference for sensory cues can be advantageous when designing for healthy eating and present no concerns. However, our tendency to favour short term success and doing better than others raise concerns for developing healthy eating behaviour. For example, when seeking instant gratification of sugar versus long term health. These mismatches will appear throughout this report to varying degrees.

The five ancestral traits of our brains that remain influential today include (Giphart & van Vugt, 2016, p.256-257);

1. *Putting ourselves and our families first*
2. *A focus on short term success*
3. *The obsession to do better than others*
4. *Copying and imitating those around us*
5. *Immediate reaction toward sensory cues, especially visual cues*

5.2 PARENTAL TYPOLOGIES

In most families the mother have the primary responsibility for feeding children, however, as more mothers are entering and re-entering the workforce, they have less time to devote to feeding activities, causing changes to the family structure and gradually shifting parental perceptions of gender roles (Savage et al., 2007). The consequences of these changes mean that young children are more frequently fed by someone other than a parent, that families spend less time eating meals together, and that an increased amount of meals and money is spent on food away from home, meals often with larger portions and energy-dense food (Savage et al., 2007). Feeding practices have a powerful influence on children's food preferences, intake patterns, diet quality, growth and weight (Savage et al., 2007). Therefore, while changes in family structure appear unavoidable, changes need to be implemented if new behaviour patterns will be established.

Parenting practices and parenting styles, whilst sometimes used interchanging, are different in that;

Parenting practices are specific parental behaviours, rules, or guidelines put forth by parents, such as spanking, or controlling when their child eats (van de Horst & Sleddens, 2017).

Parenting styles combine several elements that communicate parental attitudes about their children, such as body language, temperament, quality of attention, and emotional display (van de Horst & Sleddens, 2017). It is believed that parenting styles should remain constant, whereas parenting practices should adjust depending on situation or child (van de Horst & Sleddens, 2017).

Parenting styles are general behavioural constructions which set the context in which parent and children interact (van de Horst & Sleddens, 2017). The four styles that have been identified are authoritative, authoritarian, permission, and neglectful are based on the dimensions of responsiveness (parental control), and responsiveness (warmth and acceptance of children's needs) are shown in Figure 12 (Shloim, Edelson, Martin, & Hetherington, 2015).

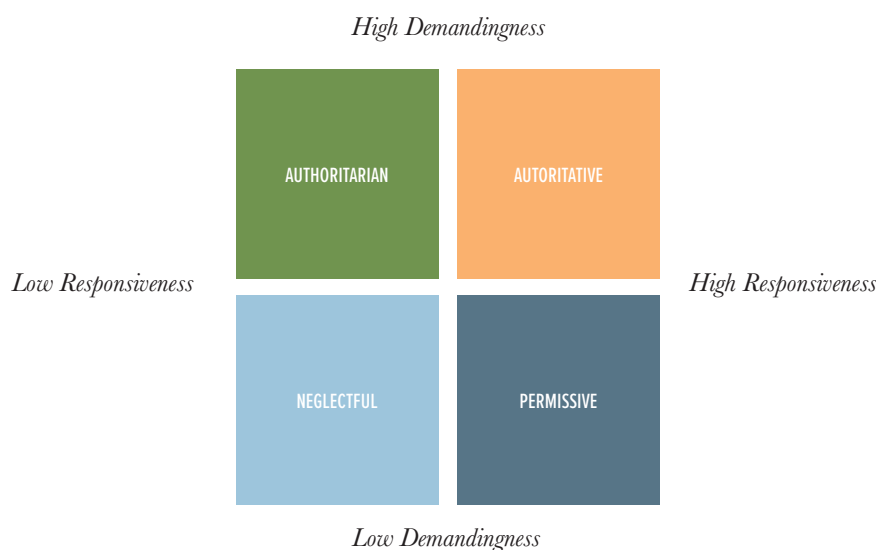


Figure 12 | The classic parental typologies.

PARENTING STYLES REMAIN CONSTANT, BUT PARENTING PRACTICES CHANGE BASED ON THE CIRCUMSTANCES

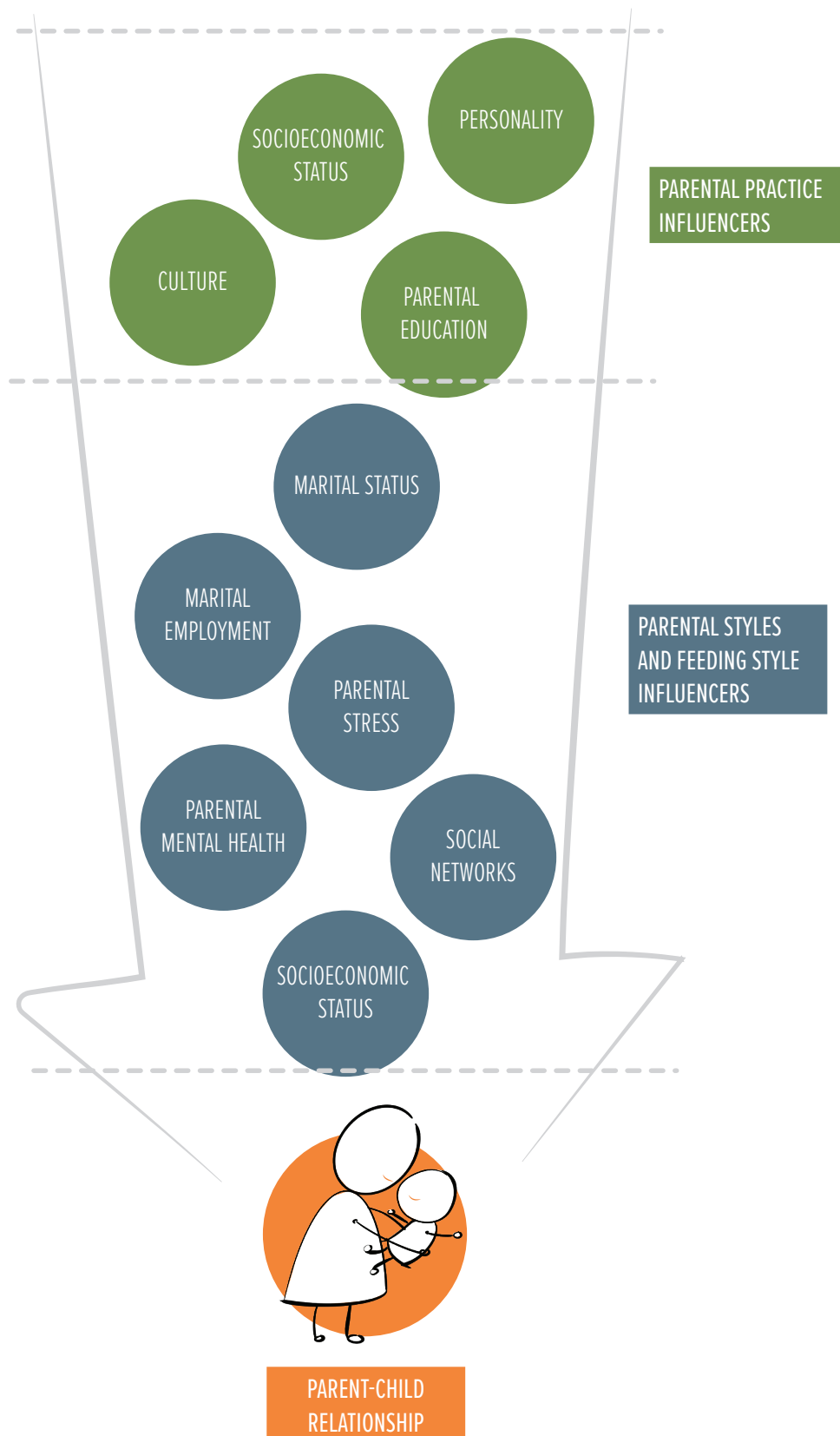


Figure 13 | Factors that influence the parent-child relationship.

Parenting practices and styles are not universal but rather are often influenced by numerous external factors such as cultural, social contexts, and socioeconomic status (SES), to name a few. Culture has a predominantly influential role in the early years of infancy with regards to how the parent cares for their child, the extent of freedom and exploration permitted, the degree of nurturance or restrictiveness, as well as socialization patterns (Benson & Haith, 2009). For example, corporal punishment of children is upheld in certain cultures, while overtly objected in others. This is also seen within the food domain when childhood obesity not always being seen as a sign of unhealthy behaviour or poor parenting.

Therefore, while authoritative parenting is favoured within European American families, this may not be the case within ethnic minority backgrounds or low socioeconomic (Low SES) families. In these families, exerting more restrictive parenting practices can provide a high level of supervision and support (Benson & Haith, 2009). Additionally, the definitions and qualities of the parenting types are not transferable to all cultures and ethnic groups. Although cultural differences need to be considered, research has indicated that most middle and high SES families are child centered, accepting and warm, whereas low SES families tend to be parent centred and ordered (Benson & Haith, 2009).

**AUTHORITATIVE PARENTING
IS FAVOURED IN EUROPEAN
AMERICAN SOCIETY**

5.3 PARENTAL INFLUENCE ON EATING BEHAVIOUR

As discussed previously, parenting styles are a general function of a parent's attitudes in which specific parenting practices are implemented across domains and situations. Therefore, feeding styles reflect parental goals for their children's health and eating (Savage et al., 2007) and can be evaluated along the same dimensions of demandingness and responsiveness (Figure 15) (Benson & Haith, 2009). Demandingness being the amount of encouragement children receive with food intake ("eat your vegetables" vs "hurry and finish already"), and responsiveness referring to encouragement centred on the child's needs, such as arranging the food in an interesting way (Benson & Haith, 2009). Overall, restrictive feeding practices are associated with overeating and poor self-regulation in young children.



PARENTING STYLES



AUTHORITARIAN

Stress compliance, parental control, respect for authority, maintaining order

Low nurturance, structure, behavioural control, communication

Favour harsher forms of punishment

Discourages autonomy



AUTHORITATIVE

High nurturance, structure, behavioural control

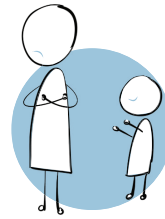
Low coercive control and overprotection

Decisions integrate child point

Encourages autonomy, individuality, independence

Show warmth, love, acceptance

Reciprocal dialogue



NEGLECTFUL

Not dedicated to parenting roles and is disinterested in fostering child development

Limits times and energy dedicated to child

Not guidelines or rules

Parent centred lifestyle



PERMISSIVE

Low levels of control, parental monitoring, maturity demands

High levels of nurturance and clarity of communication

Child determines schedule

Encourages autonomy

Lacks rules

Friend rather than authority
Figure

Figure 14 | Parenting styles based on parental typologies (van de Horst & Sleddens, 2017; Benson & Haith, 2009).

FEEDING STYLES



AUTHORITARIAN

Restrictive food, food as reward practices

Controlling food intake and pressure to eat

Food to regulate child emotional state

Low fruit/vegetable availability

Rule based food demands and expectations regardless of child preferences

Punish food related misbehaviours



AUTHORITATIVE

Monitoring food intake of unhealthy food

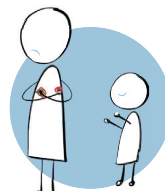
Modeling healthy eating behaviours

Promoting well balanced food intake, including the consumption of varied and healthy foods

Healthy foods available at the home

Low pressure to eat

Negotiate with children to eat well using social praise



NEGLECTFUL

Few demands on their child to eat

Demands are made they are unsupportive

Unlikely to discipline food related misbehaviour

Few meal routines

Disorganized with food related activities



PERMISSIVE

Food leniency and food as provide rewards practices

Lack of food modeling negatively

Eating encouragement with few requests

Food requests are non directive and supportive

Children have freedom of food choices, and mealtimes

Figure 15 | Feeding styles based on parental typologies (Podlesak et al., 2017; van de Horst & Sleddens, 2017).

6 WHAT EXPERTS AND PARENTS SAY

After reflecting on the insights from the literature review, I realized that I needed to gain a further understanding of specific personal values, beliefs, and parental experiences within the family in order to better understand the conflicts that exist in this context. To gain these insights, I conducted a qualitative study by conducting expert interviews as well as interviews with parents with toddlers. To frame my research, I developed a set of research questions separated into three categories, food, play, and family interactions. These questions, shown below, framed my interview questions and interviewing material. This chapter describes the participants, methods, and insights gained through this qualitative research.

Food

What are the needs of families in the home food context?

What are the rituals and habits surrounding the home food context?

What positive and negative experiences currently exist in the home food context?

Play

What play, if any, exists in the home?

How aspects of the current home food relationships support or challenge the playing with food taboo?

How and what aspects of play currently exists in food related activities in the home?

Family Roles

What roles do family members currently have in the home food context?

What engagement do family members have with each other?

6.1 WHAT EXPERTS ARE SAYING

Method

Three experts chosen for their specialization were consulted to gain an external point of view within the early toddler parenting. Expert 1 is an assistant professor at TU Delft specializing in child's play; expert 2 is a dietitian nutritionist, certified diabetes education, and health coach, expert 3 is an assistant professor of parenting, child care, and development at Leiden University, specializing in child feeding and eating with regards to the first years of life. Each expert participated in a one-hour semi-structured interview conducted via Skype or over the phone. A transcript was made of the interview and insights identified.

Discussion

From the interviews 7 main insights were identified;

1. Repeated exposure contributes most to the acceptance of new foods. However, many parents do not persevere with disliked foods because there are so many food alternatives, and their parental concerns for healthy development trump the need for repeated exposure. Therefore, food anxiety is often treated differently than other developmental challenges, such as fear of water.
2. Food moments can presents a daily struggle for both parents and toddlers, especially when dealing with picky eaters. Neophobia, the fear of food, is a developmental challenge that occurs in 40% to 70% of children. Although the prevalence is high, many parents are unaware of this, immediately becoming concerned that their child will not eat and will not develop healthily, creating tension and concern around food and feeding.
3. Toddlers view playtime as a continuum, presenting a challenge when transitioning between playtime and mealtime. To ease this transition parents can work towards developing a daily structure, removing unnecessary distractions, and open a dialogue with their toddler explaining that food moments are for becoming satiated and having your fill of food.

4. As toddlers become older, they begin to seek more autonomy and control over their feeding moments. This presents a power struggle, especially for parents who view feeding moments as a parent- rather than child-led. To help reduce this power struggle, feeding moments should focus on being relaxed, flexible, and stress-free.

5. Food is part of the world around a child, and they should be given the freedom to explore it as they would every other aspect of their life, through experimental learning.

6. Food moments for parents are often goal orientated and they may forget how modelling playful interactions with food can increase their child's acceptance. Playful food experiences and food mess often occurs during preparation and cooking, and it is in these moments that you squish, stir, smell, peel, and splatter all sorts of things. Involving children in these activities will not ensure they will eat the food, but it can create another moment for food exposure in a less stressful and focused environment.

7. Generally speaking, parents have moved beyond the classic experiences associated with play towards a more elevated experience making it more difficult to identify. Additionally, they often have different expectations for the behaviour of their children than themselves especially with regards to food. For example, you do not see parental partners feeding each other using the 'airplane' feeding method, so why do they expect these tricks to work with their toddlers? Involving parents in playful food interactions, such as squishing a lemon and having the juice drip down their hand, can model the play for their children, reducing tension at the table, creating a moment of togetherness for the family, providing a safe and open eating environment, and/or helping their toddler feel more comfortable to food



Figure 16 | Quotes from the expert interviews.

6.2 WHAT PARENTS ARE SAYING

To gain insights from the parental point of view I contacted 6 families with toddlers. 4 of the parents participated in the context mapping structure, which involved completing the sensitizing material followed by a one-hour semi-structured Skype video discussion. 1 participant did not complete the sensitizing booklet but participated in a semi-structured interview via Skype, and the final participant did not complete an interview but sent videos of their toddler in various play and food moments throughout their day with descriptions of contextual information. Parents were selected based on their child's age (between 1 and 4), and their interest in the topic.

The sensitizing booklet consisted of 6 daily exercises that focused on the themes of play, food, and family interactions. Some of the exercises, to name a few, include a reflection of their parental experiences, a photo series of a single day focusing on food and playful moments, and a daily reflection of their child's eating for that day. The exercises sensitized the participants for the topics that would be discussed in the interview. The booklet focused more on what currently is happening in their home in relation to food and play moments, whereas the interview also involved going deeper into the context to reveal how the parents would like to engage with their child during these moments.

Figure 17 offers a general impression of the booklet, the full booklet and interview script can be found in Appendix B. The questions and exercises in the booklet were open-ended to support the parents in reflecting on their past and current within the themes discussed. The interview session shifted focus towards gaining a deeper understanding how the parental concerns, values, and roles influence the eating behaviour of the children. An example of a fully completed booklet can be seen in Appendix B. Several insights were gained from the interviews and discussions with my participants, quotes from the interviews are shown in Figure 18. The overall insights gained from the interviews are summarized with supporting examples from the participants on page 35.

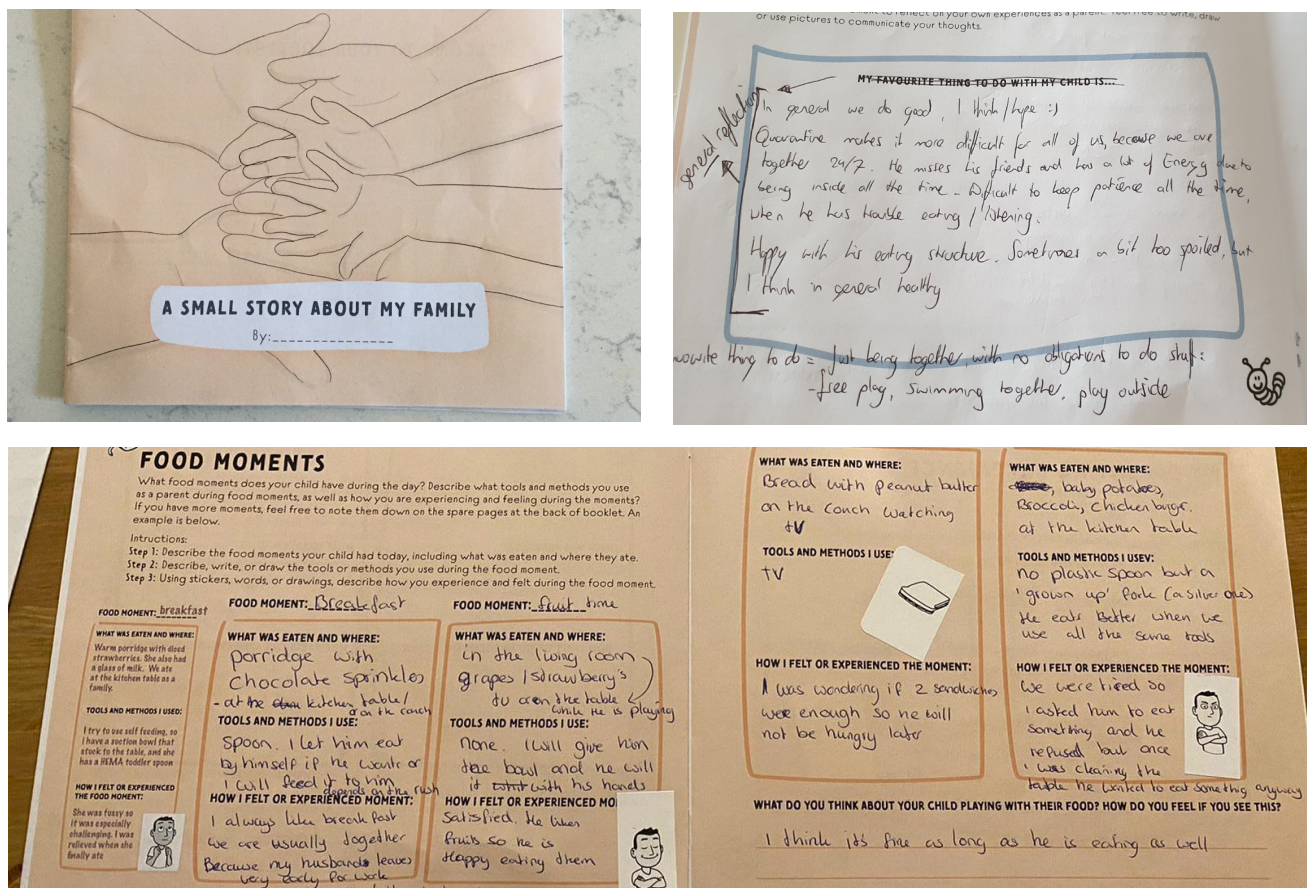


Figure 17 | Example pages from a sensitizing booklet filled in by a participant.

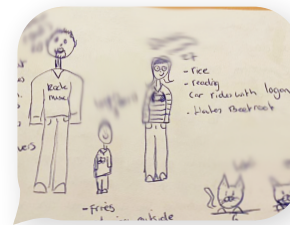
“I need to pay more attention when he helps cook. So if it's easier meals he can help but if a lot of things are happening, then I won't allow him in the kitchen. It needs to be safe”

“I enjoy him being curious, because I find it important that he wants to know that much, so if he has a question I will happily answer any question”

“He helps me with cooking, if it isn't too many pans and an easy meal. I think when he helps me cook, he eats better”

“Today she went to the kitchen and Made herself a sandwich. I was amazed and proud she can do this! She also learns how to make sandwiches from her friends in daycare”

“Normally breakfast is stressful as she isn't the fastest in the morning, so I can begin to feel frustrated”



“In the beginning we would make him a different meal if he didn't like our food. But now we said that we're not going to make something different for You anymore. You're just Going to eat what we are eating, if you don't like it, then you don't eat that much”

“She doesn't like a lot of vegetables. So she eats a few but not a lot of them. We usually get a mixed bag of Vegetable and do stir-fry”

“We're back home together for dinner, so that's always a nice period of the day”

“We use tools like hiding the vegetable on the fork behind something else”

“We have a ritual to always call his grandparents during dinner”

“With new food, I like say you have to take at least one bite. If she really doesn't want to eat and then she wants to spit it out, and I'm like, okay, it's a bit disgusting but spit it out because she's not gonna eat it”

“She prefers to eat with her hands, and I'm fine with it because she discovers food by playing with it and tasting it”



“He wants to be involved in the cooking. Also because he wants to get involved with us and if we do other things then he wants to see what's happening”

“We just pretend it's similar to a food he likes. We says [a bean] is a green fry. Just try to trick him a bit into eating”

“Sometimes we eat with the TV but then he will eat very slow or doesn't pay attention to his food”

“I really like to share knowledge with her”

“I like to explain what we're doing and why and how much she needs to measure and stuff and things like that. So yeah, it's nice to do something together”

“He did go through the period of feeding himself. Was he mainly using his hands to feed himself”



Figure 18 | Quotes from participants.

1. Feeding and caring for one's child is fundamental to parenting.

2. **Structure versus nurture.** Parents will overlook their values and beliefs of structure if their child requires nurturing. This often means that parents become more flexible with their values depending on the situation.

Participant 3 expressed strongly that they want to leave their child in their highchair during mealtimes because of the reduced distractions and promotion of structure. However, they also expressed in one booklet activity that their child was crying during dinner, so they put them on their lap and fed them with books and toys nearby. Similar stories to the parent acting against their preference to soothe their child was common amongst all participants.

3. Dinnertime is family time

All participants were working parents with either full time or part-time jobs. They expressed that because of their limited time they view dinnertime as a moment to connect as a family and they will do everything they can to make dinnertime a pleasant experience.

4. **Family activities, routines, and meaningful rituals offer joy** for both the parents and children.

Participant 2 spoke about a weekend breakfast ritual that is enjoyable for themselves and their partner because it is very relaxed and they can spend time as a family. For their children, they expressed that this ritual offers routine, an expected repetition, and a moment of excitement.

Participant 1 expressed that they try to ensure they shares moments with their child when they can focus on one another and remove external distractions, such as baking, or going to a museum.

5. **Parents have the need for impact and acknowledgment.** They want to do right by their children and feel it is their responsibility to ensure their children have enough caloric intake, prioritizing this over the quality of food provided and structure.

All participants struggled to set boundaries, or more importantly stick to the boundaries they set for their children. Participant 2 and 4 sometimes struggle to know if they should give their child more food or if their child has eaten enough, leading to a sense of parental doubt.

Participant 3 expressed that although they really dislike doing so because of the precedent it sets, if their child does not eat the family meal, they will make a special meal just for them to ensure they eat something before bed.

Participant 4 expressed that they try to make clear that dinner time is when you need to eat and become satiated. However, they struggle to enforce this rule if their child wants food 20 minutes after dinner, often comprising and offering milk or another filling drink.

All participants were accepting of their child eating with their hands or playing with their food as long as it helps them to eat.

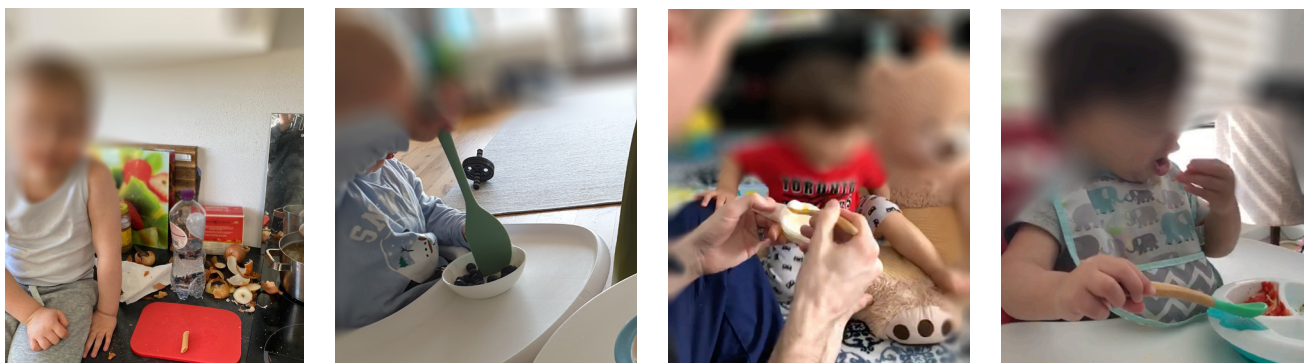


Figure 19 | Images of the participant's children from the contextmapping exercises.

6. **Parents often compare their children and themselves to others.** Parents place high expectations on themselves and feel judged if their child does not meet developmental milestones, or if they or their child act in ways that are not seen as appropriate.

Participant 2 wants to teach their child proper table manners, not because they are against their child eating with their hands at home, but they are concerned with how they will behave during meals at other people's homes.

Participant 3 gave an example of their child screaming and crying one night while guests were over for dinner. To ensure their child ate and calmed down, they decided to put them in front of an iPad. The participant felt really guilty and expressed that they felt like bad parents in front of other people.

7. **Passing on knowledge and teaching one's child is fundamental to a parent's sense of purpose and morality**

All participants shared stories of engaging in activities that allow them to teach and share knowledge with their child both in food and non-food contexts. Participant 1 and 4 valued cooking and baking moments because of the shared interest between themselves and their child.

8. There is a power struggle between a **parent's need for control and a child's need for autonomy**. Parents struggle to relinquish control and allow their children a degree of autonomy with regard to self-feeding. This can be seen in the battle between parent- versus child-led behaviour.

Participant 5 always provides their child complete autonomy to self-feed during meals, whereas participant 4 struggles to provide autonomy over feeding, especially when there are signs that their child is struggling or refusing to eat.

9. Children show a preference and a **need for familiarity when it comes to food**.

In general, the toddlers were not fussy eaters, however, they all display dislike and refusal when presented a new food. To address this, all participants negotiate or employ other methods with their children to try the food before refusing to eat it. This varied from distracting their child, or tricking them by hiding food in sauce or putting the new food on a fork before something else the child likes. These strategies were ineffective after a few bites.

10. **Eating out is associated with increased freedom of food choices.**

All participants allowed leniency when eating outside the home and were less concerned with overconsumption and unhealthy food and drink choices (dessert, snacks, soda etc.) as it is not a normal setting.



Figure 20 | Images of the participant's children from the contextmapping exercises.

Valuable insights were collected through interviews and discussions with participants. Due to the requirement that the participants needed to speak English, there are limitations to the study. In order to allow for empathic interviewing all participants speak English and have at least 1 child in the toddler years. As a result of the language requirements, all participants were of middle to high socio-economic status. Additionally, out of the 7 participants, 6 are Dutch and 1 is Canadian. The societal norms between Canada and the Netherlands are comparable resulting in similar attitudes with regards to parenting styles in both countries. All participants live in urban environments reflecting the increasing urbanization occurring within both countries.



PART TWO

DEFINING THE NEW FUTURE





CREATING THE FUTURE CONTEXT

CHAPTERS 7 TO 10

Through the literature review, expert discussions, and interviews with participants a deeper understanding of the current context within the domains of food, play, and parenting was established. The Vision in Product Design (ViP) approach focuses on innovative solutions for the future, requiring the construction of a new future vision that provides guidance through the design phase to ensure that the final design is relevant and valuable for the future. The chapters in this section guide you through the process taken to transition from the current context to the envisioned future that serves as the starting point for design.

CHAPTER 7: DETERMINING THE DOMAIN AND TIMEFRAME

CHAPTER 8: THE SEARCH FOR CONTEXT FACTORS

CHAPTER 9: CONTEXT CLUSTERING, FINDING A COMMON MEANING

CHAPTER 10: FUTURE CONTEXT DESCRIPTION

COVID-19, A NOTE FROM THE DESIGNER

When I began this graduation project, COVID-19 had not reached pandemic status and our lives were more or less the same, at least in the Netherlands. When reflecting on the previous weeks and the remaining measures in place, it is clear that our lives have changed profoundly in a matter of days, weeks and months. This pandemic will have implications to society that we currently may not consider or be aware of. When I began this phase of my project it was through the lens of a non-pandemic time, however as the time passes it becomes clearer that when envisioning a future for this project, it is clear that the next month, year, and five years from now will look very different in regards to how we interact with each other and behave in society. Therefore, in this section I try to identify how our futures will look in 5 years and what opportunities design can present to help ease this transition.

7 DETERMINING A DOMAIN AND TIMEFRAME

To begin creating a future vision a clear domain needs to be determined as it provides the scope for the design context. The domain should be broad enough to allow for innovative solutions but not too broad that it is challenging to focus and find meaningful context factors. For these reasons the appropriate domain and scope for this project is;

“Parent-toddler interactions around food moments”

When designing for the future, the timeframe of the innovation can influence the societal, technological, and/or cultural pressures applicable. Therefore, this project aims to create a solution for the year 2025, as it offers an interesting starting point for the exploration into context factors, and fits within The Netherlands National Prevention Agreement of 2040.

8 THE SEARCH FOR CONTEXT FACTORS

To collect factors within the chosen domain, academic literature, trend reports, the news, online websites and blogs from a range of disciplines directly or indirectly related to the domain, such as technology, consumer shopping habits, and anthropology were reviewed with relevant information documented. When framing a new possible future and collecting context factors it is impossible to know exactly what the future will look like. Therefore, to determine which factors are taken into account for this project, their relevance, novelty, interestingness, and whether it will positively influence the future parent-toddler interaction around food was evaluated. Each factor represents a value-free assessment of reality and describes something that is changing (developments and trends) or something that remains constant (principles and states).

Using this approach 90 relevant and interesting context factors were used to cluster and create the future vision, ranging from a variety of disciplines directly related or indirectly related to the domain, such as technology, consumer shopping habits, and anthropology. Figure 21 on page 42 shows 8 of the 90 factors that are used in this project, the full list of factors can be found in Appendix D.



Figure 21 | Example of 7 (of 90) context factors that were identified and clustered in this project.

9 CONTEXT CLUSTERING, FINDING A COMMON MEANING

In order to create a concrete future context that will guide the design, valuable conclusions need to be extrapolated from the 90 factors I identified. To reveal this value the factors were clustered into the 8 meta-factors, shown in Figure 22. The groupings of the factors that define each cluster either present a common direction for the factors or tension between the factors. All 8 clusters describe elements that are relevant to parent-toddler interactions around food moments in the future. Figure 23 shows an overview of the 8 meta-clusters identified. Detailed descriptions of each can be found on pages 45 to 52.

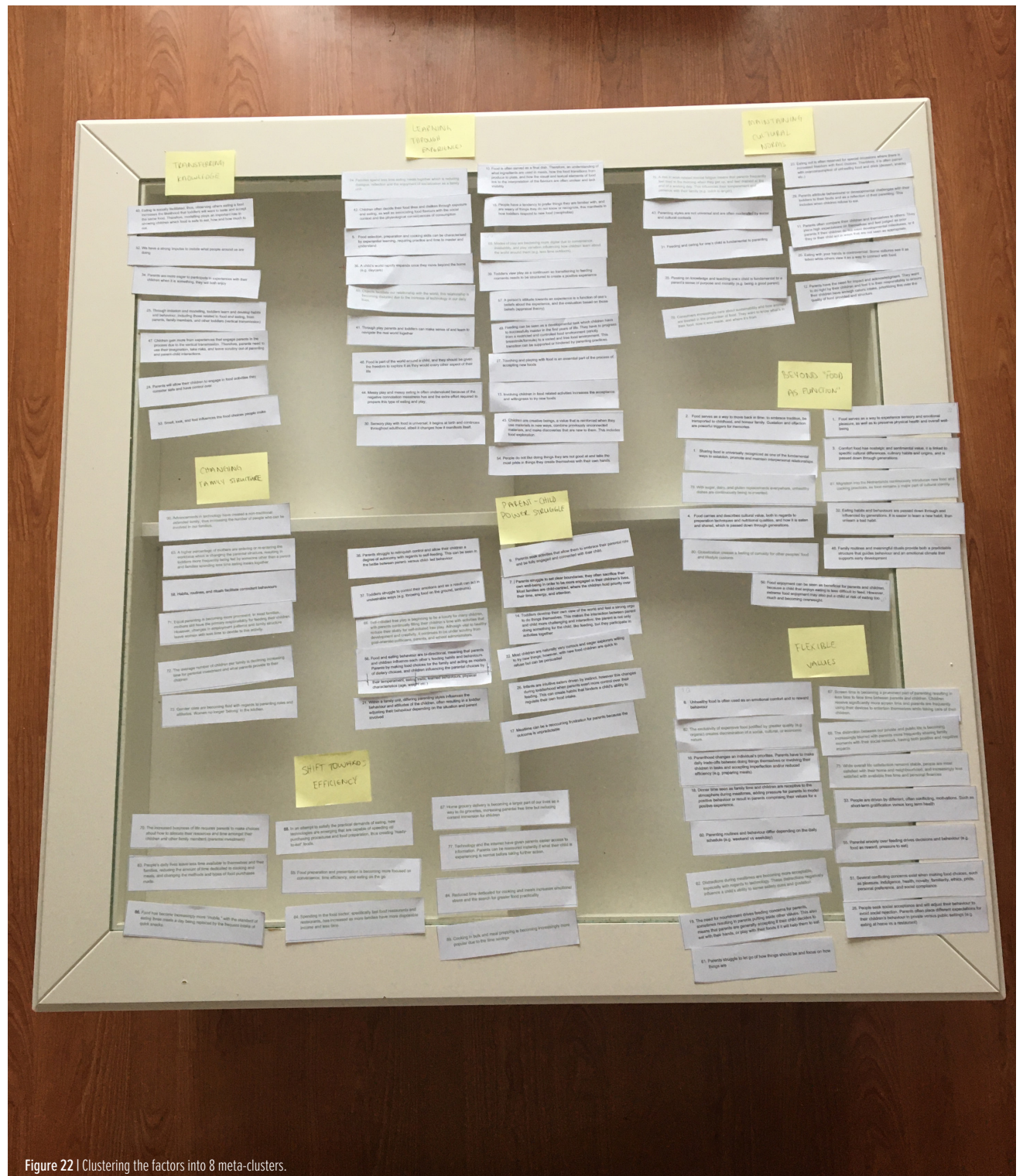
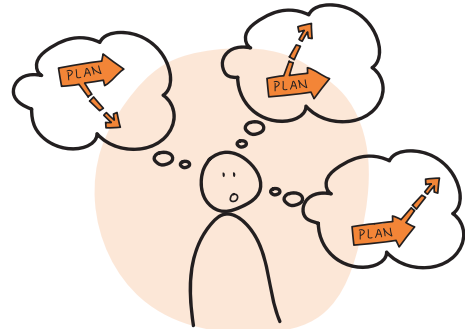


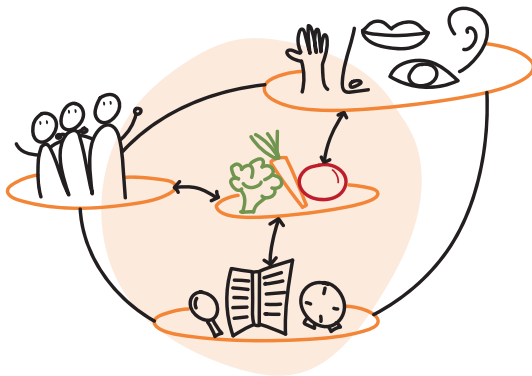
Figure 22 | Clustering the factors into 8 meta-clusters.



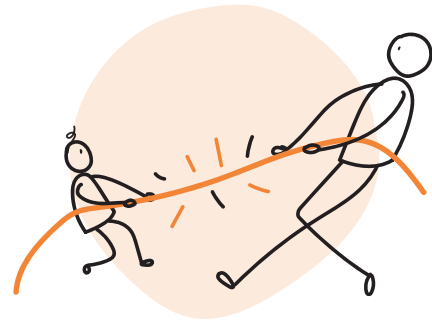
The high price of efficiency



It's not so black and white, there needs to be grey



More than just sustenance



The parent-child power struggle



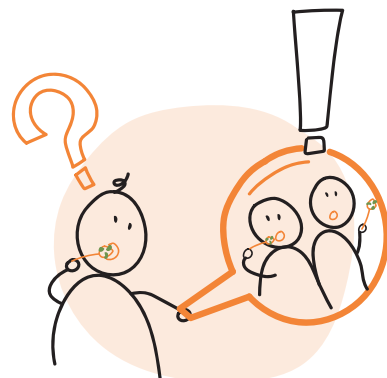
The diversification of families



The desire to fit in



Learning through experiences



Children are the best copycats

Figure 23 | Overview of the 8 meta-clusters identified with the context factors.

CLUSTER 1:

THE HIGH PRICE OF EFFICIENCY

How to choose healthy food, how to prepare food correctly, what ingredients are used in meals, and how food transitions from produce to plate is blurring with the increase of delivered, pre-cut, and pre-mixed food.

Our daily lives are busier, adding pressure for parents to make choices about how to allocate their resources between themselves, their children, and other family members — especially as the relationship we have with our work and home spaces are changing.

Advancements in technology, the rise of e-commerce, the one-and-a-half-meter society, the reduced mobility and push towards online and local shopping have changed our daily and weekly food moments, including how we shop, cook, and consume our food. From online grocery shopping and home delivery to the increase of prepared ready-to-eat and on-the-go meals, pre-packaged ingredient boxes, streamlined preparation practices, and the increase of fast food consumption, parents hope to increase their efficiency. However, this efficiency and distance in food shopping, preparation, and consumption come with trade-offs for families, trade-offs that exist between efficiency, and reduced education and efficiency and reduced shared experiences. For example, parents no longer stop and chat with their children about healthy food practices in a context immersed with food.

“The other day we were ordering groceries and I said, come on Floris, what do you want to eat? And then of course, he said he wanted the pasta, but I said no pasta something different. So we scrolled through the vegetable page on the couch together.”



CLUSTER 2:

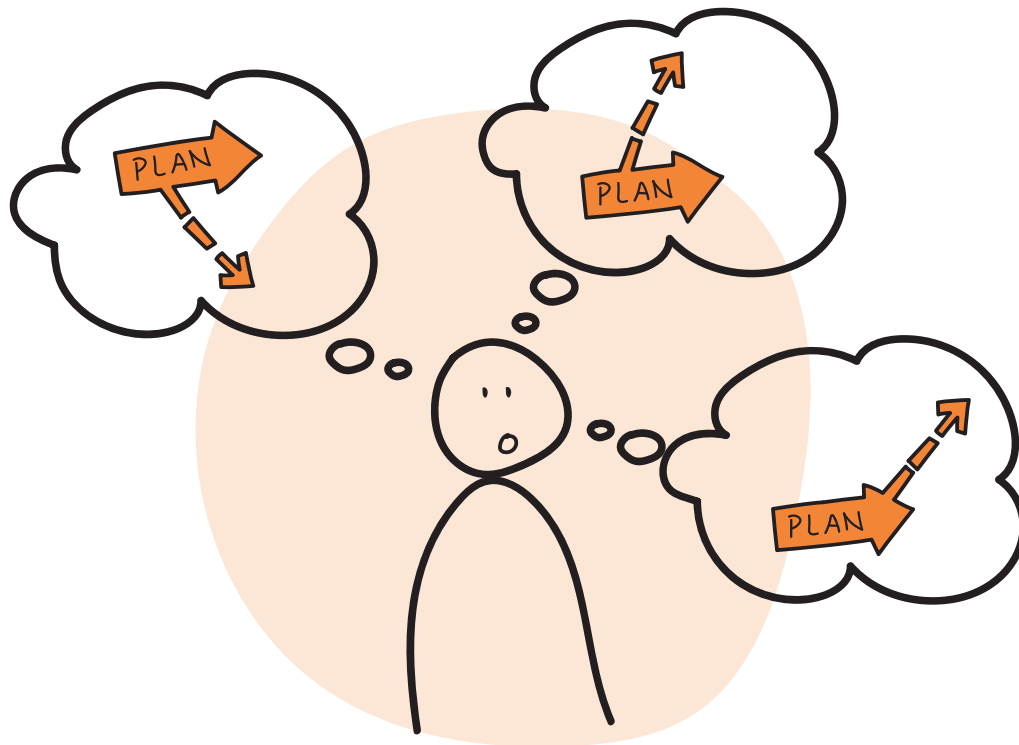
IT'S NOT SO BLACK AND WHITE, THERE NEEDS TO BE GREY

Flexibility does not mean giving in to your child's requests.

People are driven by different, often conflicting motivations. The experiences during the pandemic have changed individual priorities and values. Solidarity, safety, and hygiene are now paramount. The forced isolation to now voluntary distancing has changed how parents are interacting with their toddlers, and offering opportunities to tweak and adjust their interactions based on trial and error, determine what is not working and adapt their rules and values accordingly, as long as they do not compromise their core beliefs as parents. This does not mean that parents are giving into every request from their toddler, but are working together to find solutions that fulfill everyone's needs, keeping in mind that different situations can lend themselves to different rules and approaches.

Parental anxiety over-feeding and the need for nourishment drives feeding concerns, sometimes resulting in parents negating other values if it means that their toddler will eat. Parents are realizing the need for flexibility, however with this flexibility and perceived comprising of values comes either the internalization of negative feelings (*Am I a bad parent for doing this?*), or by accepting the new temporary status quo and embracing the moment (*Today we need a positivity boost so watching TV while eating is okay*).

"When my son first began preparing his own sandwiches he would ask if he could have a sweet one first. I had the principle, if you want to have a sweet one first, take a sweet one first, but you should also eat a healthy one after. But it turned out often he would not eat a second sandwich, so now he has to eat the healthy one first, then he can add whatever he wants."

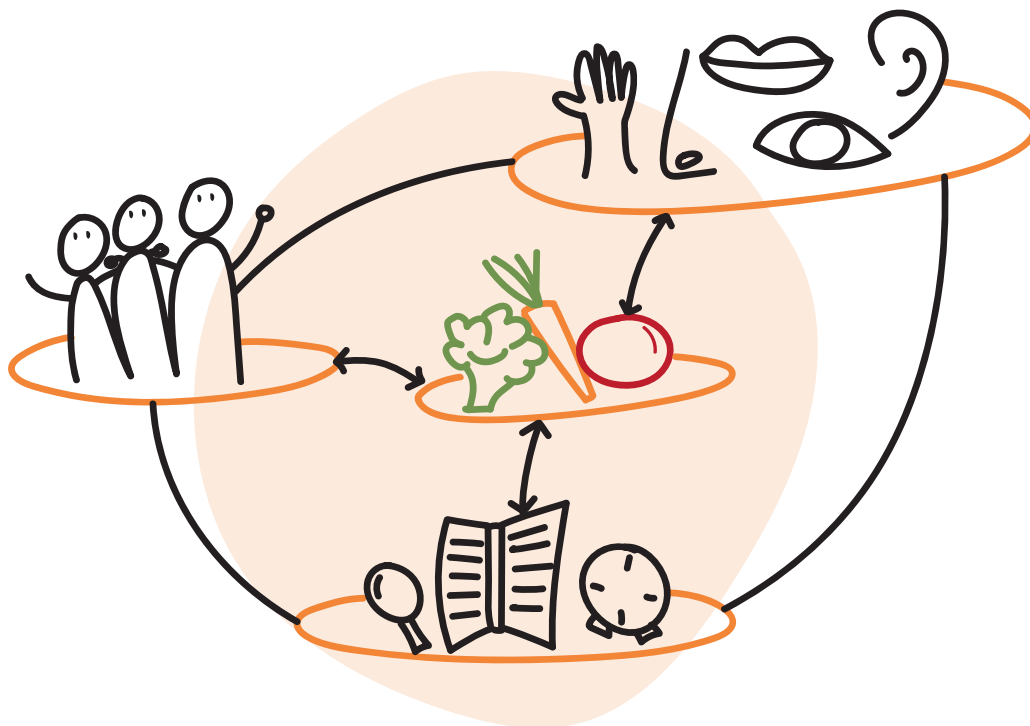


CLUSTER 3: MORE THAN JUST SUSTENANCE

The multiple meanings of food.

Food is no longer just a means of survival, it is increasingly used to evoke experiences across three pleasure dimensions: sensory pleasure, interpersonal pleasure, and cognitive pleasure, which contribute to our happiness and overall well-being. With the reduction of in-person socialization, food is a way to establish, promote and maintain interpersonal relationships, support our values of nostalgia, sentimentality, and comfort, and offer pleasurable experiences are becoming more central to our lives as it allows us to feel connected to those around us during times of distance. Long-distance travel is few and far between, so Christmas now means that every family member makes the same food, sets a place at the table for their laptop, and shares the meal with their family video calling. Sharing recipes, cooking together, and eating together is digital, changing how we interface with each other and our food. Food pleasure is now shared across rooms, cities, and countries.

“We have a sort of ritual to always call the grandparents during dinner since we cannot share a meal in person.”



CLUSTER 4:

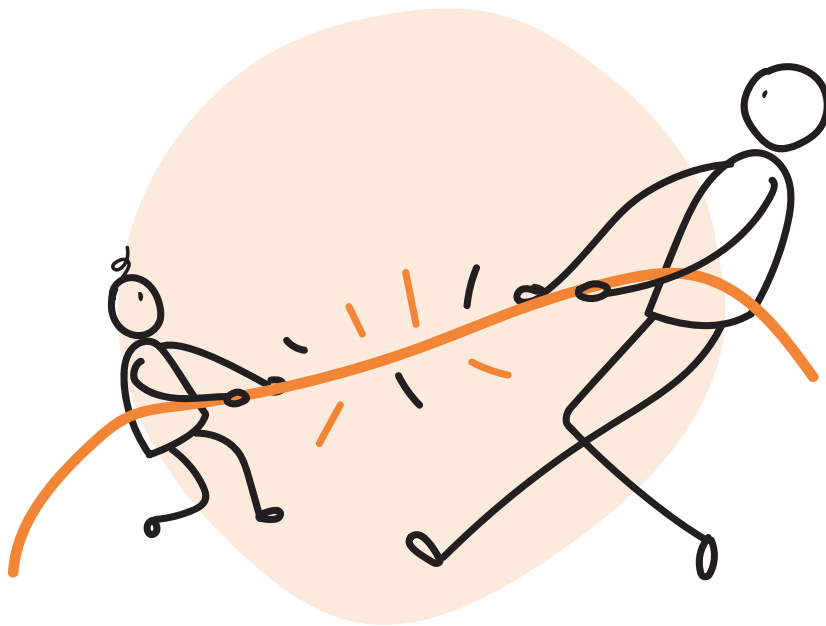
THE PARENT-CHILD POWER STRUGGLE

From overpowering to empowering, both children and parents seek power and autonomy.

A sense of power is a basic social and emotional need. As toddlers develop a sense of self separate from their parents, they begin to exert more control and autonomy over their behaviour. This shift towards individuality means that the interactions between parents and children are more challenging and parenting becomes more bi-directional. This paradigm shift means that parents are no longer initiating and following through with all actions, but rather join as a participant in shared experiences. This transition in roles challenges a parent's sense of power, sense of purpose, sense of control, and tests their parental boundaries and limits.

Restrictions to restaurants, museums, shows, churches, and playgrounds have changed the activities shared as a family and where parental roles, such as passing on knowledge, can be embraced. As parents allow their toddler more autonomy over certain functions in their lives, they seek out new activities where they can still positively embrace their parental role and maintain a sense of purpose and control.

"I would like to find more activities that we can do together that we both have an interest in because then it is more enjoyable for both of us. If she is doing something that I know nothing about, like playing piano, I try not to engage with her because I don't know anything about it and she will get mad if I give suggestions".



CLUSTER 5:

THE MODERNIZATION OF FAMILIES

The lines of parental responsibility are becoming blurred and families are expanding.

The increasing diversification of families is making our current view of the traditional family household outdated. The increase of career mothers, dual-earner families, equal parenting, and the defocus of gender roles, means the lines of parental responsibility are blurring and both parents are becoming equally responsible for raising their children. The increase of working hours of both parents and the adjustment of working from home means that there is an increase in parental mental fatigue, financial stress is increased, working and personal hours are staggered to manage child care, families spend less time eating together, but there is less time dedicated to cooking and meals resulting in it being viewed more as a chore than a shared activity.

Advancements in technology and the ease of sharing our daily lives has created non-traditional extended families. The family structure is moving beyond the walls of the house and allowing more people to be involved and invested in a child's life and growth.

“Right now my husband is working in the morning and my workday starts in the late afternoon to the evening. This way the software I use at work is not overloaded so I can be more productive, and we can share taking care of our daughter”.



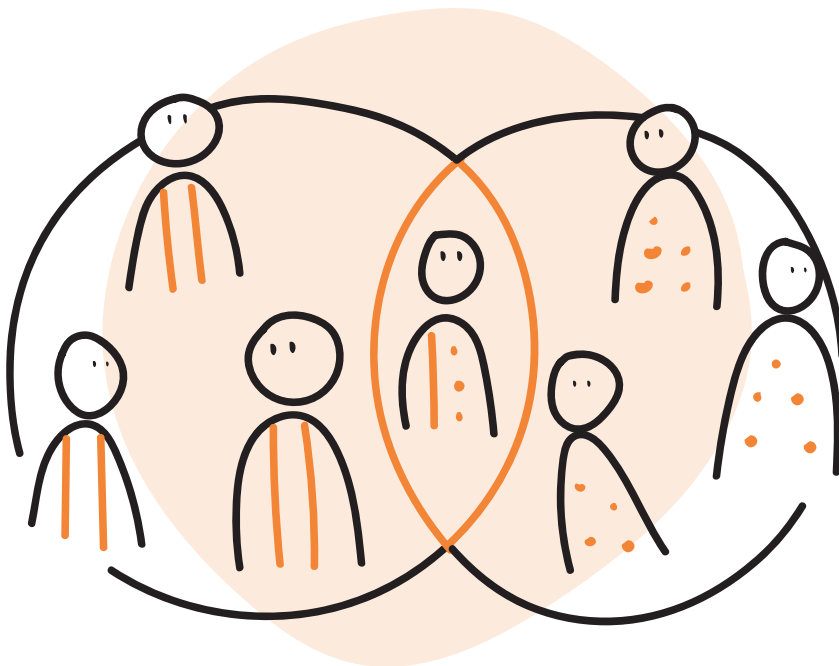
CLUSTER 6:

INSIDE OR OUTSIDE THE HOUSE? DIFFERENT RULES, DIFFERENT EXPECTATIONS.

Our behaviour in public and private settings is governed by different rules and guidelines.

We all seek social acceptance and will adjust our behaviour to avoid social rejection. What you can do inside your house and outside your house is further apart than ever before. Society is increasingly suspicious of others, cough at work or in a public area and you are glared at, people take steps back, and you may be asked to leave. Individuals are following lines of tape on the floor and are ensuring their behaviour is the same as those around them. Toddlers do not understand exactly what is going on in society but as soon as they leave the house, parents have strict rules about how they can behave. As a result, parents may have differing expectations for their children's behaviour in private and public settings, which creates inconsistency in parental messaging, like not allowing their children to eat with their hands in public but allowing this behaviour at home. However, there is an increase of general kindness of people towards each other when they move beyond their private settings.

"He normally goes two days in a week to his grandparents where they also eat. I know he eats with a folk there. But here at home, he will use his hands more, I think because we allow it and because he is more comfortable with us."



CLUSTER 7:

LEARNING THROUGH EXPERIENCES

Touching and playing with food is key to acceptance.

As a toddler's world expands they learn to navigate and make sense of their expanding environment through play. Advancements in technology and the increase in the busyness of parent's lives means that modes of play are more technological and less object-orientated and sensory-based. Sensory play is now a highly undervalued activity. The increased time spent on virtual devices is causing an imbalance in toddlers' neurological development. While the auditory and visual senses are over stimulated, their vestibular, proprioceptive, tactile, and attachment systems are under-stimulated.

Toddlers explore food as they do every other aspect of their life, through play and playful interactions, however food is a tactile and proprioceptive experience requiring physical engagement that cannot be achieved via digital screens alone. Food moments for parents remain goal orientated and opportunities to model playful interactions with food are often overlooked. With more time available for food and eating, the focus can be placed on toddlers familiarizing themselves with the sensorial properties of the food around them.

“Being able to teach toddlers to like healthy foods, by playing or at least relaxed and giving autonomy to explore it as they would explore other toys would be an excellent thing. When she was younger, she would play with carrot and broccoli sticks. It made her more engaged with the food.”



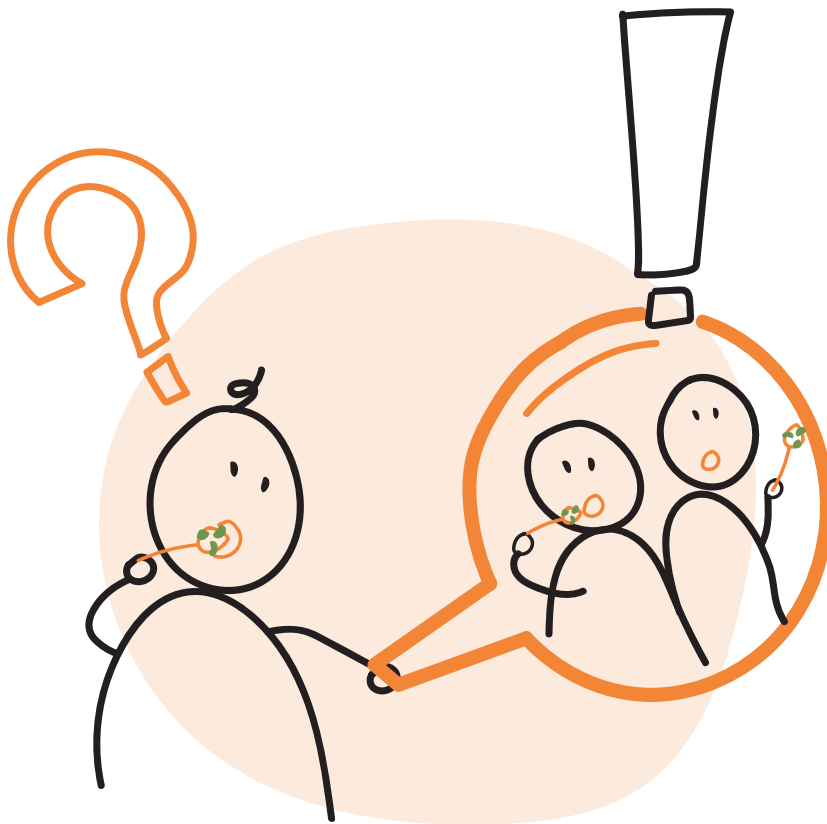
CLUSTER 8:

CHILDREN ARE THE BEST COPYCATS

The need to create a relaxed and pleasurable eating experience.

Imitating and modelling behaviour are key ways in which we learn and develop our habits and behaviour in both food and non-food contexts. For parents, this new norm caused my COVID-19 has been an adjustment, but for toddlers, this lifestyle is all they have known. The atmosphere at mealtime and around other food moments influences how toddlers respond to the food offered to them, as they associate the food type with the social context and physiological consequences of consumption. When toddlers have positive experiences with food modelling at home, they are more likely to try and accept foods in other environments, and, thus helping them to develop a healthy relationship with food.

"I'll try a food once. If she really doesn't like it and starts crying and I'm like, Okay I'm not going to have a crying child at the dinner table, so she can stop eating. I'm not going to fight her over food or force her to eat stuff she doesn't want to eat."



10 THE FUTURE CONTEXT

To understand how my 8 clusters shape the future context it is important to understand how the individual clusters influence each other. To do this I mapped the clusters (see Appendix E) to reveal the main role the relationship has in the future. Based on these relationships a future scenario was written with a visual diagram to express the future context of the parent-toddler interaction that I will use to design for.

10.1 FUTURE SCENARIO

It is 2025, it has been 5 years since the Corona virus has changed your life. The once forced isolation has turned into voluntary distancing. Restrictions to restaurants, museums, cinemas, and playgrounds have changed the type of activities you do as a family, but you still crave meaningful interactions and activities where you can embrace your parental role and spend time connecting with those you love. As your child gains more autonomy over certain functions in their lives you seek out new activities where you can embrace your parental role and maintain your sense of purpose and control. You are spending more time with your family which offers the opportunity to tweak and adjust your parent-child interactions and routines based on trial and error, adapt your rules and values accordingly. This does not mean that you are giving in to your child's every request but you are able to find solutions that fulfill everyone's needs together.

The rise of e-commerce, a one-and-a-half-meter society, and a reduction in mobility are some of the changes you have experienced. The push towards online shopping has changed your daily and weekly food moments, as well as how you shop, cook, and consume your food. With less in-person interactions food as a way to establish, promote, and maintain relationships is much more critical and opens new opportunities for connections.

You realize that the relationship you have between your work and home spaces has blurred. Although you experience more mental fatigue and there is less time dedicated to cooking and meals, you appear to have more flexibility in your day and weekly structure. You plan your meals ahead, you order groceries online, and try to maintain dinner as family time.

The lifestyle changes you experience now might be new for you, but for your toddler this lifestyle is all they know. Their play, their eating, and their upbringing is going to be different than what you had thought a few years ago. One thing that remains constant is your desire to provide for your family and support your child in developing the habits and skills necessary for a healthy life.

10.2 METAPHORICAL REPRESENTATION OF WORLDVIEW

The following image is a metaphorical representation of my world view for 2025 inspired by the 8 clusters and future scenario.

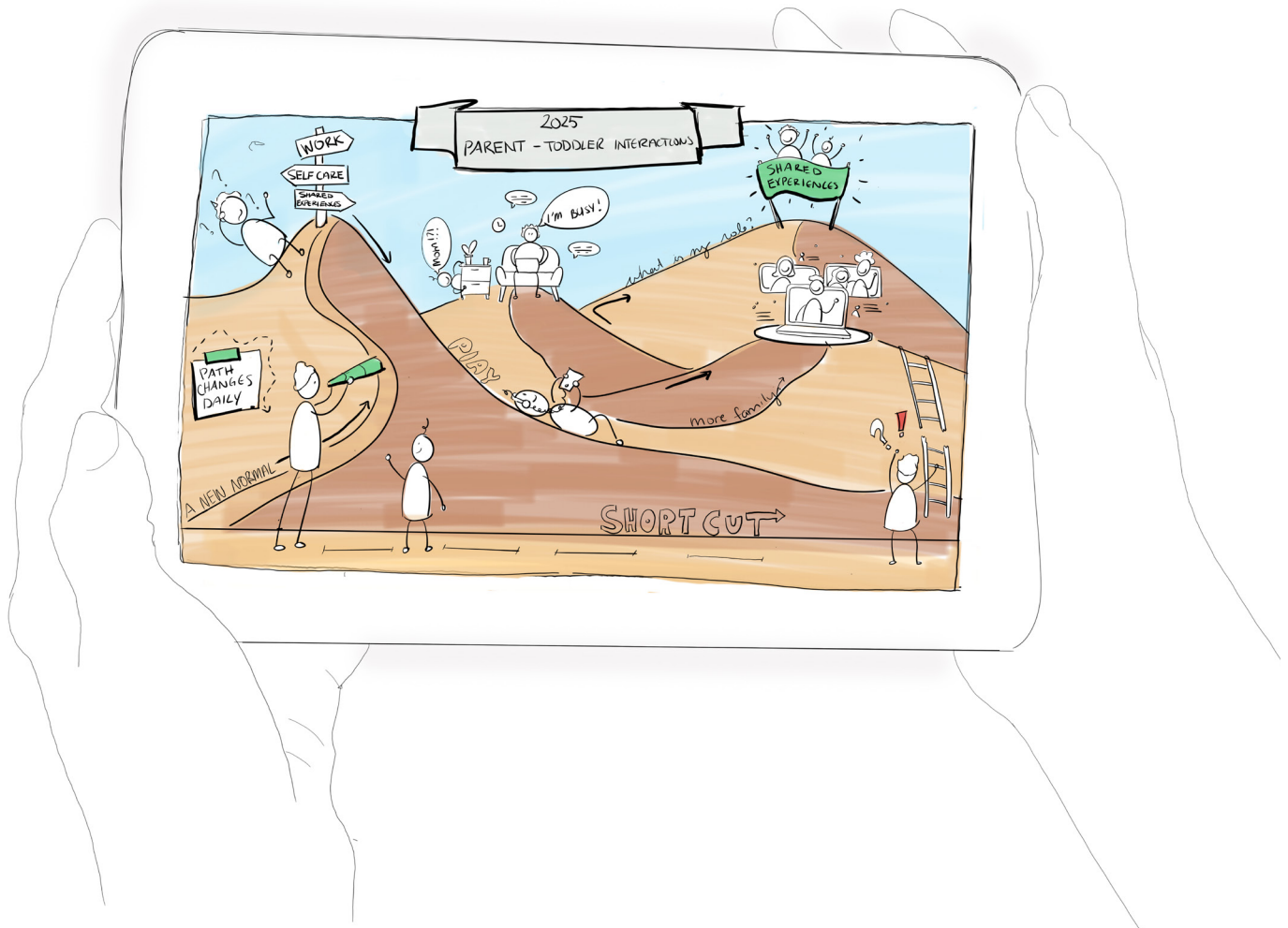


Figure 23 | Metaphorical representation of world view of 2025 with regards to the parent-child relationship.

PART THREE

DESIGNING A PRODUCT EXPERIENCE





CREATING A DESIGN INTERVENTION FOR 2025

CHAPTERS 11 TO 15

The previous two sections of my thesis show the complexity as well as the challenges and opportunities that surround healthy food and eating behaviour within a family context, now and in the future. However, what remains is how I see a design intervention supporting families in the year 2025. This project started with the design goal to support families with toddlers to develop healthy food and eating behaviour with the end objective to prevent childhood obesity. This section of the report will outline the process I have taken to develop a final concept with this objective in mind. I share my vision and statement, my process of conceptualization through iteration, and finally, put forth a final design that will be tested and evaluated by families.

CHAPTER 11: FUTURE VISION

CHAPTER 12: IDEATION AND CONCEPTUALIZATION

CHAPTER 13: FINAL CONCEPT

CHAPTER 14: CONCEPT EVALUATION

CHAPTER 15: CONCLUSION

11 FUTURE VISION

Products mediate our relationship with the world. Most products have been designed by someone who has made a decision about how, why, and what experience the user will have. While these decisions are partly based on research and experience, a designer's personal values and vision also plays a role. For this project, I decided what is relevant and what impact and experience I want to offer families. Therefore, the statement and how I want to intervene in the future world view communicates not only my vision but also my core values as a person and a designer. Before proceeding to my project statement and product concept it is important to communicate why I have framed my statement with the impact of freedom, safety, and empowerment.

11.1 PERSONAL REFLECTION

When I was 6 months old my mom was diagnosed with cancer and my parents separated within a few weeks. The years following I lived with mom but saw my dad on the weekends, I gained three step-siblings and a stepmom, my brother moved in with my dad and we barely spoke or saw each other, I even stopped speaking with my dad for a while. A close family member suffered from substance abuse, there was a car accident, and I was told I would be a failure. Family gathering were awkward, traditions were few and far between, values changed between houses, it was confusing and different than all my friends. However, through all of this, I developed a unique and special relationship with my mom. The first 18 years of my life was chaotic and emotional, but also safe and secure. What I cherish most about my childhood is that my mom created a home that allowed for mistakes, for risks, and for individuality in a judgment free way. She taught me from a young age to stand on my own two feet, to have the courage to march to my own drum, and to not take life too seriously. Ultimately, she was both the person to push me off the ledge and the safety net at the bottom of the fall.

I decided to self-initiate this project because I am passionate about using design and the power of play and positivity to support children to rise above adversity and develop the necessary foundations to flourish, with food being one of the most fundamental building blocks. As someone who has suffered with being overweight in my youth, I am acutely aware of the psychosocial challenges that continue to influence your life, even when you are no longer overweight and have created healthy behaviours. The earlier these healthy behaviours can develop, the more chance a child has at leading a fulfilled life. When I reflect on my own experiences and the impact I want this project to have, it became clear that children have a greater chance to overcome adversity if they have a safe place to come home to that encourages them to try new things, to challenge themselves, and to explore what is possible — not only by telling them what to do but by also showing them how they can do it. The skills to flourish are taught and encouraged by those around a child who love, appreciate, and support them.

“TAKE A LEAP AND GROW YOUR WINGS ON THE WAY DOWN”

-LES BROWN

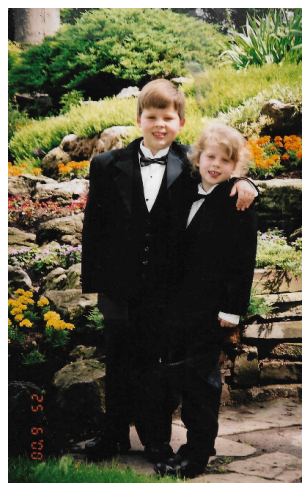


Figure 25 | Images from my childhood and adolescence.

11.2 STATEMENT

Therefore,

**I WANT CHILDREN TO FEEL FREE, SAFE,
AND EMPOWERED TO DEVELOP A HEALTHY
RELATIONSHIP WITH FOOD BY FACILITATING
A HARMONIOUS FAMILY INTERACTION
DURING DINNERTIME.**

Although my statement focuses on children feeling free, safe, and empowered, parents play a crucial role for modelling and developing healthy food and eating behaviour for their children. Therefore, while the impact of the statement is focused on children, parents are a key user of the final design. Phase 1 of this project revealed that the three key things that parents can do to support their child's food journey are by focusing on;



REPEATED EXPOSURE OF FOOD



CREATING A RELAXED & STRESS
FREE ATMOSPHERE



MODELLING POSITIVE BEHAVIOUR FOR
CHILDREN TO COPY & LEARN

Whilst reflecting on my statement and sharing it with others, I realize that clarifying what I view as a healthy relationship with food is fundamental to my design. Based on the literature, interviews, and personal experience, the 4 key elements that I view are important when developing and maintaining a healthy relationship with food are listed below. These elements have been utilized throughout my design phase and will reappear in the final concept.



MINDFUL FOOD & EATING DECISIONS



BALANCED & NUTRIENT RICH DIET



FOOD IS INDIVIDUAL & WHAT
OUR BODIES NEED DIFFERS



FEELING MENTALLY & PHYSICALLY
GOOD ABOUT YOURSELF

11.3 VIP SEQUENCE: STATEMENT TO PRODUCT QUALITIES

After determining your statement, the ViP method suggests to break down your statement at three levels, the impact level, interaction level, and product quality level. This paired with a metaphor of an alternative situation that matches the statement, provide the building blocks for the type of experience you want to offer with the design. Once these have been achieved the interaction vision acts as a bridge between the final design and the statement (Figure 26)

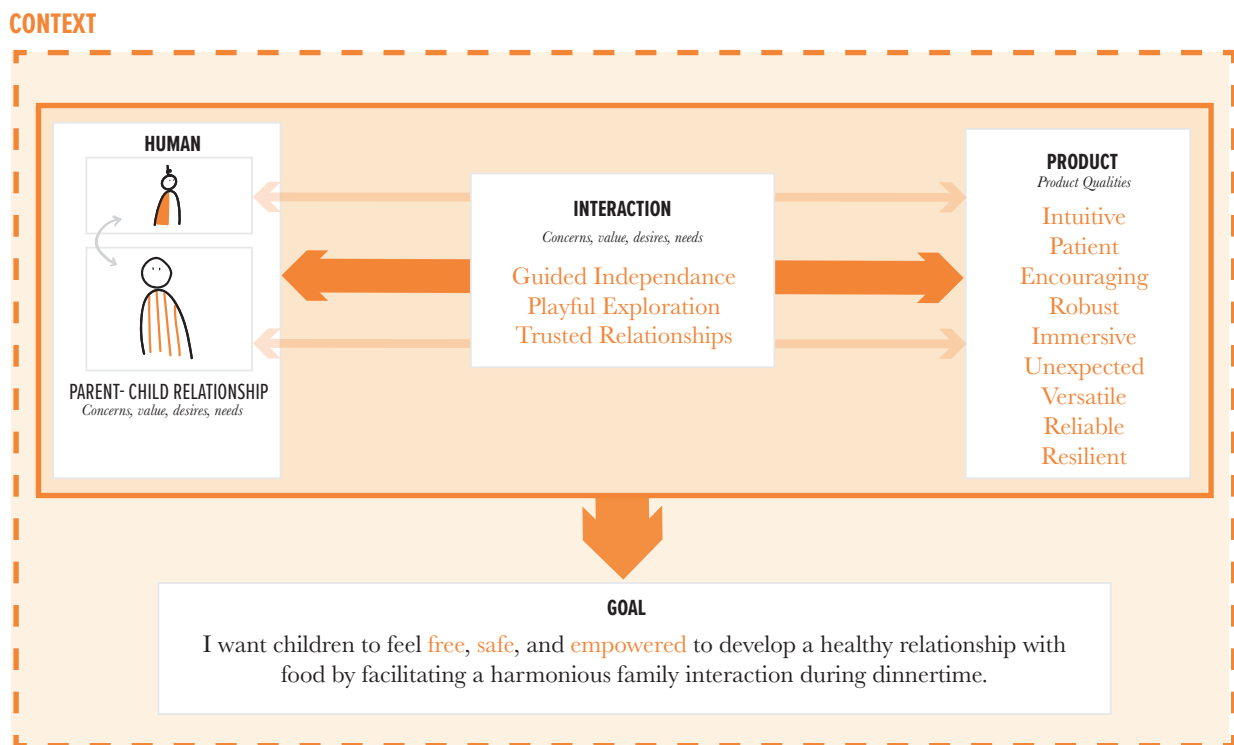


Figure 26 | Customized model of human-product interaction (adapted from Hekkert & Schifferstein, 2008).

The three Figures (Figure 27, 28, and 29) on the next page describe and visualize how I transitioned from the impact level to the product quality level of the design. Ultimately, my vision for the type of interaction I want to achieve with the design includes playful exploration, guided independence, and trusted relationships.

11.3.1 VIP SEQUENCE

IMPACT	FREE <i>To explore</i> <i>To play</i> <i>Open to try new things (diversity)</i> <i>Able to try new things</i> <i>Sense of wonder and openness both in spaciousness and open mindedness</i> <i>Embrace opportunities</i>
INTERACTION	PLAYFUL EXPLORATION
PRODUCT QUALITY	IMMERSIVE UNEXPECTED VERSATILE

Figure 27 | Breakdown of “free” to product qualities.



IMPACT	SAFE <i>Having a base to explore from</i> <i>Supported to try something</i> <i>Trusted and familiar</i> <i>Catch you if you fall</i> <i>Acceptance</i> <i>Sense of Home</i>
INTERACTION	TRUSTED RELATIONSHIPS
PRODUCT QUALITY	RELIABLE RESILIENT

Figure 28 | Breakdown of “safe” to product qualities.

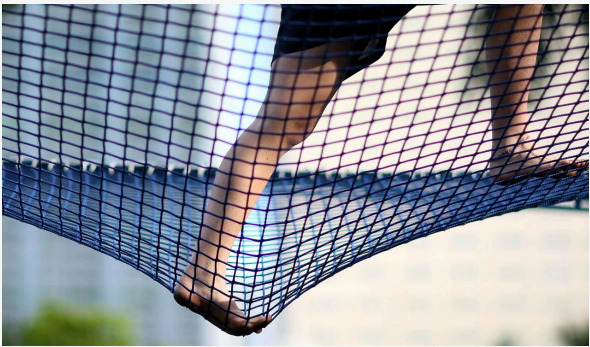


Image from (Raedle, n.d.)

IMPACT	EMPOWERED <i>Guided</i> <i>Confident</i> <i>Active Involvement</i> <i>Building Independence</i> <i>Autonomous</i>	
INTERACTION	GUIDED INDEPENDENCE	
PRODUCT QUALITY	INTUITIVE PATIENT	ENCOURAGING ROBUST

Figure 29 | Breakdown of “empowered” to product qualities.



Image from (Giant Leap, 2012)

11.3.2 METAPHOR

When brainstorming possible metaphors, I wanted to choose something that most people could relate to and that easy to understand. Based on this, I felt that the situation that best communicates how I want families to experience my product is camping, an experience that most people have done at least once in their life.

Experiencing my product should feel like going on your annual family camping trip. It takes a lot of planning and preparation but once you are there and in the moment you are focused on the experience.



Figure 30 | Metaphor of family camping trip used to describe the product experience, as well as the characteristics that embody the experience (image from Hollingsworth, 2018).

12 IDEATION AND CONCEPTUALIZATION

After defining the essence of the product interaction, the next phase is to design an innovative and meaningful product. To achieve this, I took a research through design approach and began creating interventions based on the product qualities, my world view, and the elements of a healthy relationship with food. This iterative journey involved approximately 13 different interventions, all of which were self-tested and/or tested with other families. Some iterations involve minor changes, such as including serving utensils, whereas some involve larger changes, such as when I added a spin wheel to decide what food to eat each mouthful. For the interventions undertaken with other families, a questionnaire, which included the Playful Experience Categories, PrEmo, and open ended questions were included so that I could get a better sense of how the experiment was experienced (See Appendix J for questionnaires). I also conducted short reflective interviews after each test. After each testing, I reflected on and documented the insights. Themes like rebellious food play, reflecting on food values, connecting at a distance, and mindful eating were prominent throughout this phase. Figure 31 shows some of the interventions and testing conducted throughout this phase. In Appendix F, all the interventions with a short description, images, a list of insights, as well as other materials, such as mindmaps that were used for reflection and ideation during this phase are provided.



Figure 31 | Collage of design interventions that I self tested and tested with others.

12.1 INSIGHTS FROM IDEATION

The two primary things that surprised me most during this project was how apprehensive people are to eat with their hands, and that triggering others to reflect on their food values, either through conversations or food experiences, can prompt a shift of their current behaviour towards one that is healthier and more mindful. In addition to these several other insights were identified, some of which are relevant to designing eating experiences, and some are specific to this project. These insights have been categorized and summarized on page 63 and 64 and guided me towards a cohesive design direction.

Insights gained through iterations:



1. While a bib encourages messy exploration by protecting clothes and offering a way to clean hands between mouthfuls, adults often view them as a childish way to eat.
2. Adding personalized elements to the experience, such as adding names on each bib, adds a sense of individuality and belonging. Each person feels important and welcomed to the dining experience.
3. As an adult, wearing a bib is unnatural and can be associated with a lack of being in control leading to feelings of vulnerability. However, this vulnerability can create greater empathy and can act as a uniform that creates unity and belonging for family members, even those who do not live in the same household.



SERVING AND PRESENTATION

4. Presenting food in a communal way leads to a greater sense of relatedness and family cohesion. Everyone has equal autonomy and control over their food portions and pairing, there is a lack of superiority as everyone engages in the same activity in the same way, and the pressure felt to finish the food served to you is removed.
5. Visually presenting food in an interesting way shifts focus towards the experience, which helps to remove the pressure to offer a wide variety of food, and creates a moment of appreciation for the person or persons who cook, plate, and/or and present the meal.
6. The crockery and cutlery placed on the table play a critical role in guiding the dinner, by hinting at what type of interaction is allowed or intended. For example, if you are served soup and bread without a spoon, you may choose to sip the soup from the side of the bowl or use the bread to soak up the soup.
7. Washing your hands acts as a transition from just before the meal (building anticipation), to the meal itself (eating hygienically with more stimulation), to after the meal (preparing for what is next).



EATING WITH YOUR HANDS

8. Rebellious play as a family creates a greater sense of family cohesion, connection, and bonding as you are breaking social norms and taboos together in a safe environment.
9. There is a greater willingness to break, or continue to break, social norms when a positive outcome has been experienced.
10. Mindful eating can be stimulated by removing plates and visible portion sizes as less emphasis is placed on the quantity of food on your plate, but rather on how nourished you feel while eating.
11. Eating without utensils slows the eating process and allows people to reflect more on their satiety cues.
12. Preparing your senses for eating (visual > tactile > gustatory) increases enjoyment as the intensity of the flavours is increased and remains on the tongue longer.

13. Eating with your hands allows for control, discovery, and exploration as to the pairing of food elements. This promotes the opportunity to reflect (consciously or subconsciously) as to which foods are enjoyed most. This is further stimulated when mixing foods of different textures, colours, and temperatures.
14. Eating with your hands removes the desire and ability to do other things while eating, such as going on your phone, which in turn allows the focus to remain on eating and engaging with those around you.

ATMOSPHERE

15. A shared family dinner that is harmonious and joyful is more likely to inspire after dinner activities that can be experienced together (e.g. playing Rummikub, going for a walk). This is further supported when the transition between dinner and after dinner is cumbersome.
16. Eating with more sensorial stimulation creates a greater sense of awareness, intimacy, and nourishment as you are more immersed in the meal and experience.

PREPARING, SHARING, AND EATING DINNER WITH SOMEONE WHO DOES NOT LIVE IN YOUR HOUSE

17. Sharing the same sensorial experience creates a sense of bonding and relatedness even when not experienced together.
18. Preparing meals with the same ingredients offers a sense of connectedness throughout the week. From shopping to thinking about what to cook, to the preparation, sharing, and eating.
19. Creative expression, competition, and challenge are experienced when determining what recipe to prepare and share with others. While sharing the final meal itself, through video or text, offers fellowship, curiosity, and connectedness, seeing the meal others have created offers inspiration and discovery for the future.
20. Capturing and sharing your preparation and cooking experience through videos increases the possibility of connections and new family interactions. They can be shared beyond those involved in the meal itself and can include other family members that may not enjoy cooking but still want to participate, such as by filming and sharing the videos.
21. The sense of connectedness that is increasingly felt while sharing the preparation and cooking with others is often tainted at the moment of sitting to eat the meal, as you are acutely aware that you cannot share your physical meal with your family.



13 FINAL CONCEPT

The concept presented in this chapter is as a result of idea generation sessions, discussions with others, a lot of personal reflection, and the consideration of both the design aim and vision. Firstly, I will introduce the concept, The Happi Hanily, in its entirety, followed by a description of the concept elements. Following this, I will share the envisioned user journey and describe the value this concept offers families. Stimulating families to eat with their hands and be more explorative with food are central to the final concept. Since a key element is stimulating families to challenge the taboo of eating with their hands, this concept is designed for western societies where this behaviour is not commonplace (yet).

13.1 CONCEPT DESCRIPTION

The Happi Hanily is a family food play experience that facilitates the reflection of family food values, supports mindful eating, and creates an atmosphere that fosters harmony amongst the family—all of which promote the development of healthy eating behaviour for every family member over time. This concept supports families in coming together for one harmonious experience that can be adopted as a dinnertime ritual over time. Rituals are repeated and meaningful activities that provide families with a sense of belonging, transmit family values, and provide a sense of continuity across generations. Similar to the metaphor of a family camping trip, Happi Hanily focuses on the qualities of playful exploration, trusted relationships, and guided independence and can be enjoyed by the whole family. The product has three components. The digital Food Finder, the Spill Supporter and the Wacky, Wavy Wheel of food.



Figure 32 | Three elements of the Happi Hanily concept.

13.2 HAPPI HANILY BRANDING

When deciding the name for the product I wanted to choose something that would be easy to say, somewhat melodic and combines the elements of the concept as a whole. After exhaustive brainstorming, I came to the name Happi Hanily. The first word *Happi*, was chosen for a few reasons. Firstly, with that design I want to create a positive and playful experience, ultimately, making people happy. Additionally, in Afrikaans (my family is South African) 'snack' or 'bite' is spelt happie. The second part of the name *Hanily*, is a loose combination of the words hands, family, and Hannah. I want families to have happy hands, a happy family, and if the experience achieves this, I will be a very happy Hannah.



Figure 33 | House style for Happi Hanily, including the logo and slogans.

13.3 FOOD FINDER

The food finder is a personalized platform that offers families inspiration, guidance and exploration in preparing for the family's dinner. The design of the platform is interactive and engaging for the whole family. By choosing ingredients a recipe is recommended to you. The ingredients to choose from change weekly, based on what is in season near you, so there are always new combinations to discover. Once you find a recipe you can watch a video from the person who created it. Learn why it is meaningful to them and perhaps be triggered to reflect on your own experiences and food values. Through this platform, you are connected to other families, cultures, and foods. It stimulates children to explore a wide variety of food and food-related stimulation (texture, colour, flavour). Other features include adding your own videos and pictures to the recipes you have already tried and uploading your own meaningful recipes. The Food Finder is a step towards creating a family recipe book that can be passed down through generations and can be shared with others you love.



Figure 34 | Selecting ingredients on the Food Finder.

SEARCHING FOR RECIPES

This playful interface has different ingredients floating around the screen. Simply drag the ingredients you fancy eating to the wacky wavy wheel. Once you are ready you can click the “TRY THIS” button. The platform will then suggest a recipe based on the ingredients you selected. If you are happy with what you have chosen you can proceed to learn more about the recipe. If not, no problem. Simply keep trying combinations until you find an intriguing recipe. You can also use this moment to teach your children more about how ingredients change when cooking. For example, a fish as an image/icon looks is quite different when eaten as fish sticks. This might spark curiosity in your family.

Furthermore, each recipe has been carefully chosen to offer a balanced nutrient rich and child adaptive recipes. From different textures, colours, and flavours, each recipe will stimulate your senses and encourage an unexpected and immersive family eating experience. Page 68 shows the walkthrough for searching for recipes.

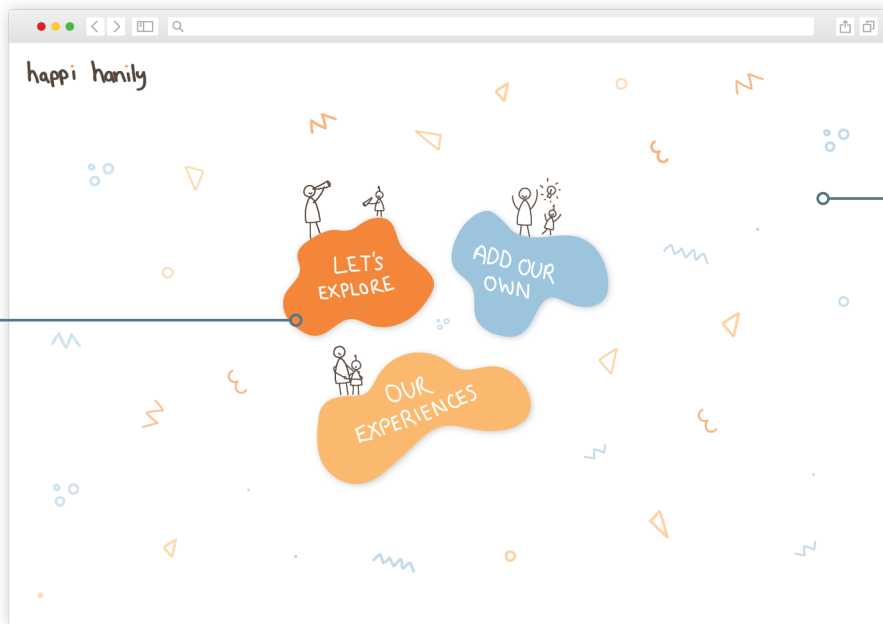


Figure 35 | Food Finder home page.

THE PLATFORM HOMESCREEN. THERE WOULD BE A LOG IN PAGE BEFORE THIS WHERE PARENTS CAN ADD INFORMATION ABOUT THEIR FAMILY PREFERENCES, AGES, AND OTHER INFORMATION THAT WILL HELP THE PLATFORM TAILOR SUGGESTIONS.

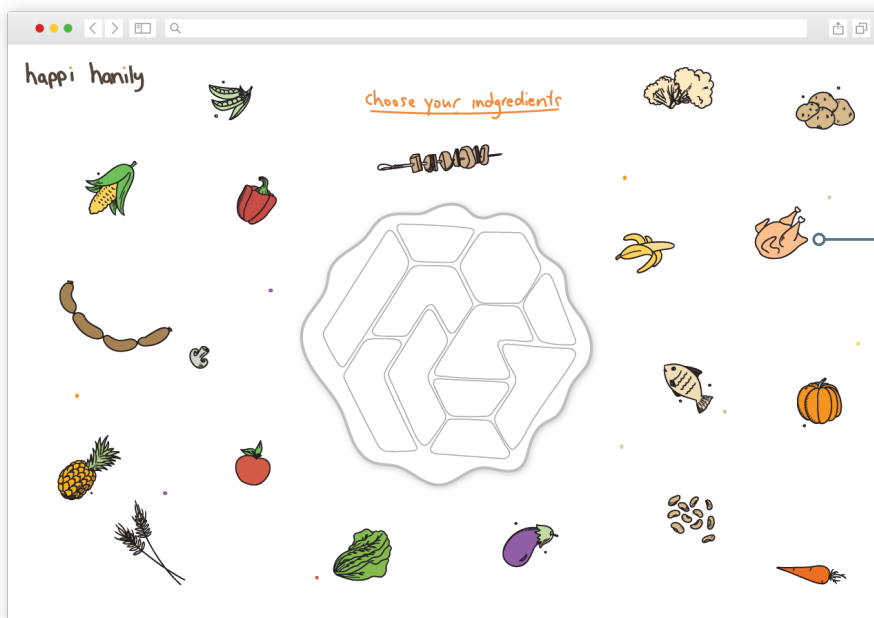


Figure 36 | Choosing which ingredients to add to the meal.

THE INGREDIENTS WOULD BE FLOATING PLAYFULLY IN THE SCREEN.

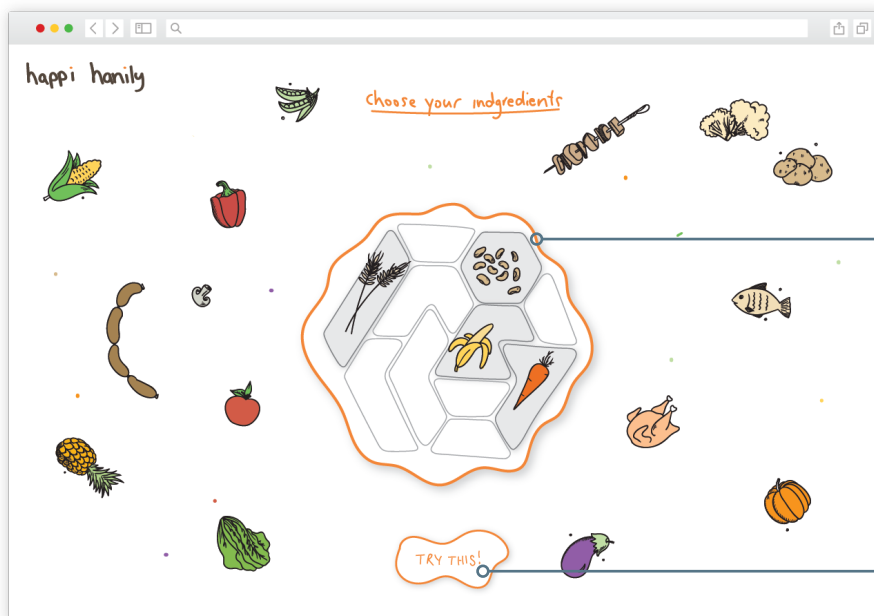


Figure 37 | Change of screen when ingredients are moved on the digital Wacky Wavy Wheel.

WHEN INGREDIENTS ARE DRAGGED ONTO THE WACKY WAVY WHEEL IT CHANGES COLOUR AND THE BOXES REACT BY CHANGING TO GREY.

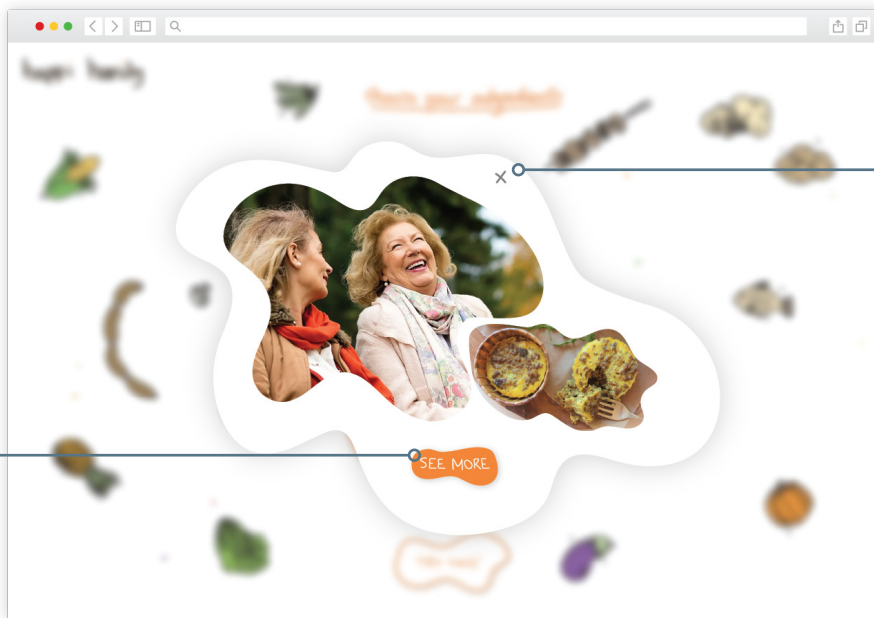
ONCE A COMBINATION IS CREATED, THIS WILL LEAD TO A FULL SCREEN OVERLAY WITH A SUGGESTED RECIPE.

CHOSEN RECIPE

Once a recipe has been chosen you are guided to the individual recipe page where you are invited to read a short story from the family that created the recipe, learning why this recipe is special to them as well as what value and meaning it has to their culture and family. Through this narrative you are triggered to reflect on your own food values, and can connect more with the recipe itself. After the narrative you are guided through the preparation and arranging of the meal. You can adjust the serving sizes and add the ingredients to your online grocery order to ensure you have everything once the ritual day arrives.

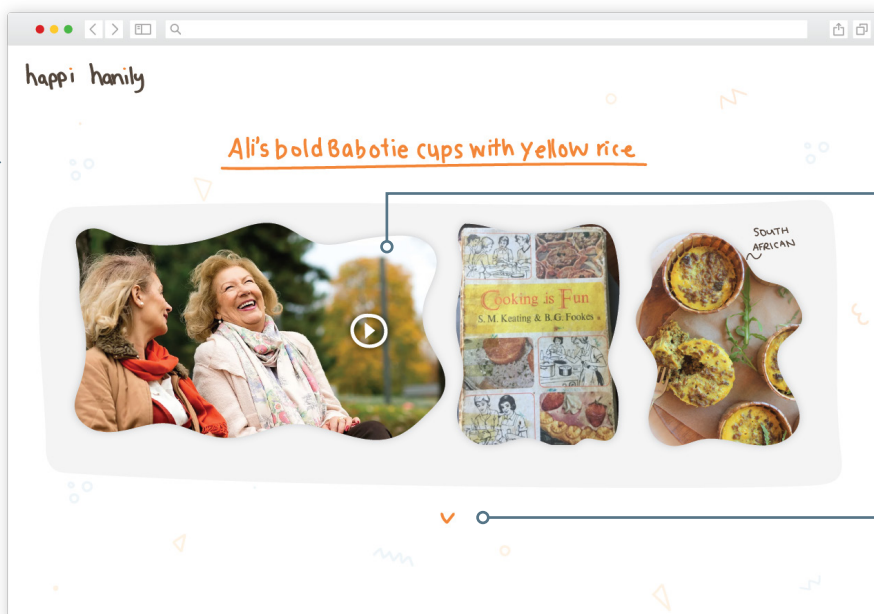
All family members are encouraged to be involved with some aspect of the preparation and/or arranging of the meal. This will give everyone a role, sense of purpose, and make you feel connected to one another before even sitting down to eat. I designed the serving platter with children in mind to encourage them to participate by exploring how to arrange the Wacky Wavy Wheel, and perhaps decide which containers should have food in them to start.

After you have prepared or eaten the meal you can add a pin to your family's map to capture the moment, and may be inspired to share with your extended family and friends. Next time you are preparing for the ritual you can be reminded of this meal and experience.



CLICK OUT OF THE OVERSCREEN
POP UP TO SELECT A NEW
INGREDIENT COMBINATION.

Figure 38 | When a recipe is recommended based on chosen recipes.




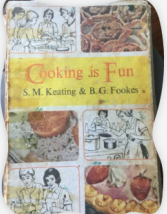

EACH RECIPE UPLOADED BY THE
HAPPI HANILY INCLUDES A VIDEO
MESSAGE FROM THE PERSON WHO
CREATED IT. CONNECT WITH WHY
THIS RECIPE IS MEANINGFUL TO
THEM.

IF YOU ARE STILL SATISFIED WITH
YOUR SELECTION, SCROLL DOWN
TO SEE THE FULL RECIPE.

Figure 39 | "See more" options. This shows families more information about the chosen recipe.

happi family

Ali's bold Bobotie cups with yellow rice

Recipe

INGREDIENTS

Yields: Makes 12 mini boboties

BOBOTIE CUPS

2 slices white or brown bread
125 ml milk
30 ml cooking oil
500 g lentils
2 medium onions, coarsely chopped
2 cloves garlic, crushed
3 ml ground ginger
15 ml medium curry powder
2 ml ground coriander
3 ml turmeric
100 ml fruit chutney
15 ml brown vinegar
15 ml chopped fresh thyme or 5 ml dried
Salt and freshly ground black pepper to taste
125 ml (75 g) raisins or chopped dried apricots
2 bananas
50 g carrots

BOBOTIE TOPPING

300 ml milk
2 extra-large eggs
15 ml cornflour
salt and freshly ground black pepper to taste

YELLOW RICE

1 cup rice
½ tsp salt
1 tsp turmeric powder
1Tbsp butter
¼ cup raisins
½ tsp cinnamon

SERVED WITH (OPTIONAL)

Sliced Banana
Yellow Rice
Fruit Chutney


Preparation

BOBOTIE CUPS

Soak the bread in milk.
Heat oil in a medium prepare lentils and diced carrots, until soft.
Add onion and garlic and sauté for a few minutes until soft.
Add spices and fry for 1 minute.
Add 45 ml of fruit chutney.
Add all remaining ingredients and soaked bread with milk. Mix well.
Prepare the Topping: Beat all the ingredients together. Mix half of topping mixture into the lentil mixture. Spoon lentil mixture into 12 hollows of a greased muffin pan. Pour the remaining topping mixture over each bobotie cup.
Bake in a preheated oven at 180 °C for about 30 minutes or until set and golden brown.
Remove bobotie muffin tin boboties and transfer to serving dish.
Slice the bananas into pieces and serve with fruit chutney.

YELLOW RICE

Rinse the rice.
In a pot, bring water to a boil and add the rice.
Add the salt, turmeric, cinnamon, and the raisins. Turn down the heat.
If you do not like cooked raisins, add them with the butter at the end. I like to add dried cranberries instead.
Simmer gently for about 25 minutes or until the rice is tender and dry.
Add the butter and fluff the rice lightly with a fork before turning it into a dish to serve.
Lightly with a fork before turning it into a dish to serve.


WE ATE THIS!

SAVE RECIPE

THE PORTION SIZE IS ADJUSTABLE.

BY CHOOSIN “WE ATE THIS”,
THE RECIPE WILL BE ADDED TO
THE MEMORIES SECTION OF THE
WEBSITE. SAVE THE RECIPE TO
EASILY FIND IT AGAIN.

Figure 40 | A detailed explanation of the recipe ingredients and preparation instructions.

ADD YOUR OWN RECIPE

Food has had a central role in connecting with your culture and family for centuries. Happi Hanily understands this and encourages family members to collaborate and begin to capture their own recipes which have meaning and value to them. Through the add recipe template, families are able to add their own recipes, upload their own narrative, and begin a family keepsake that can be passed down through generations. Perhaps you have a special chicken recipe your grandmother always made when you were younger, now you can capture this story and recipe and share it with your children and other family members. If you feel comfortable, you can also share it with the Happi Hanily community.

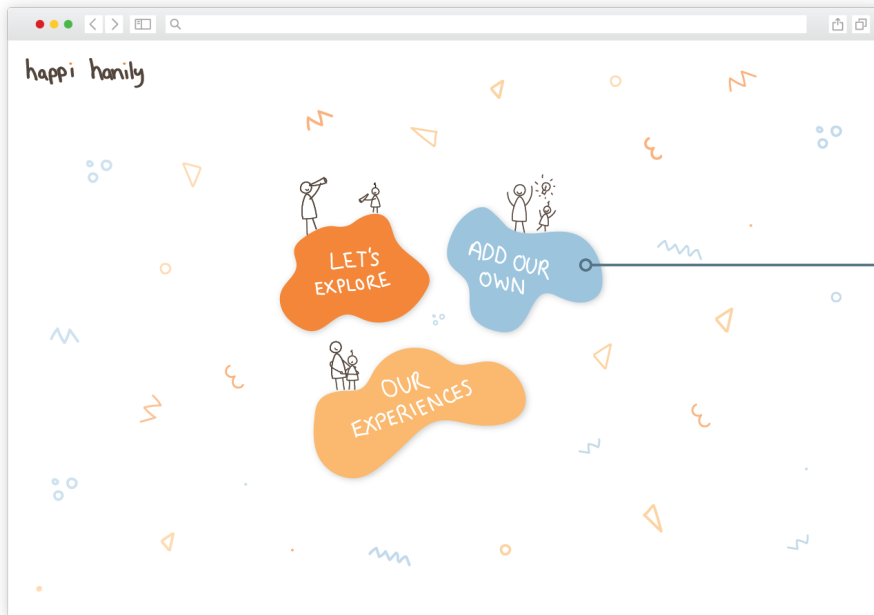


Figure 41 | Food Finder homepage.

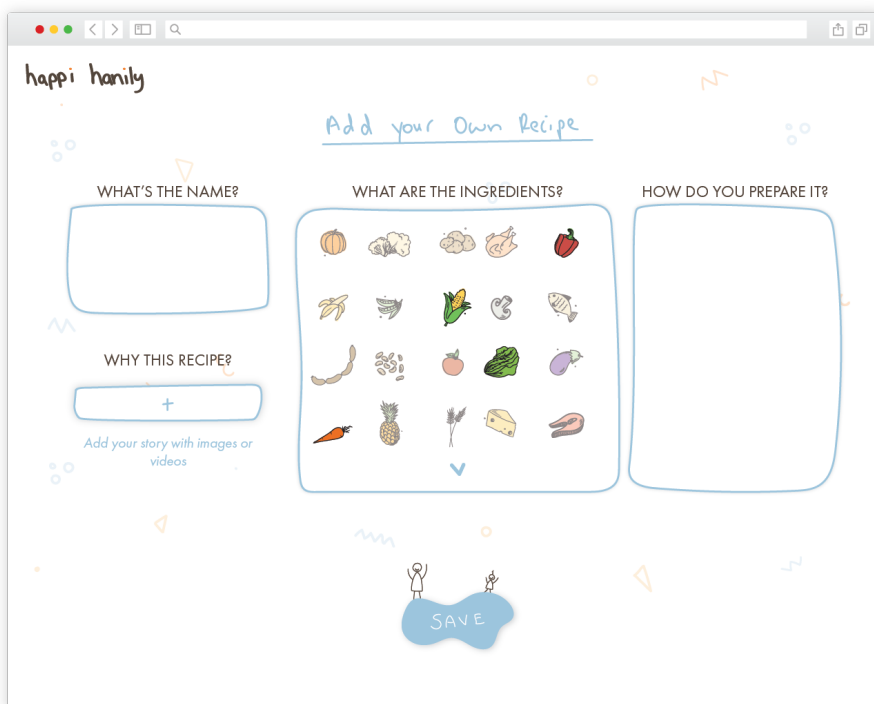


Figure 42 | Uploading and detailing your own recipe to the platform.

REFLECTING ON YOUR EXPERIENCES

Reflecting and reminiscing on past experiences can make us feel closer to one another. The last feature of this platform is the “Our Experiences” collection. Here you can see all the recipes you have already explored during your family ritual evenings. Take this one step further and add images, videos, or a reflection on how the evening was experienced. Over time this can become a family keepsake and as you children grow you can be reminded of how they were when they were younger and how their taste preferences have developed over time.

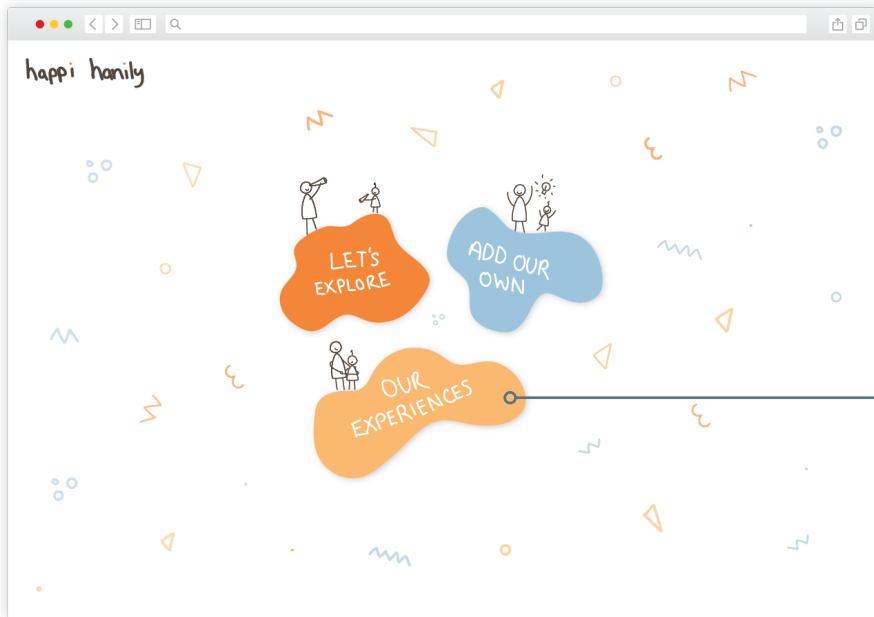
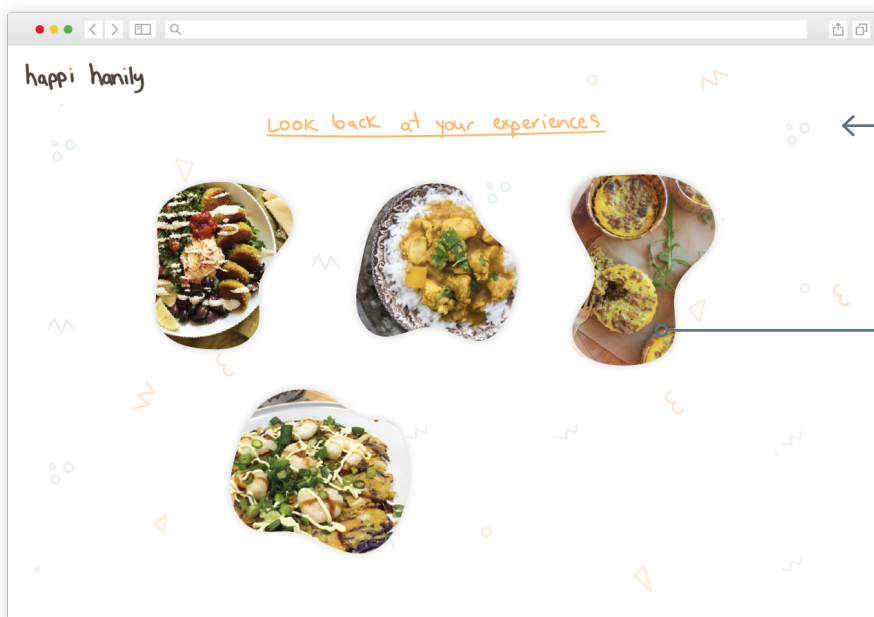
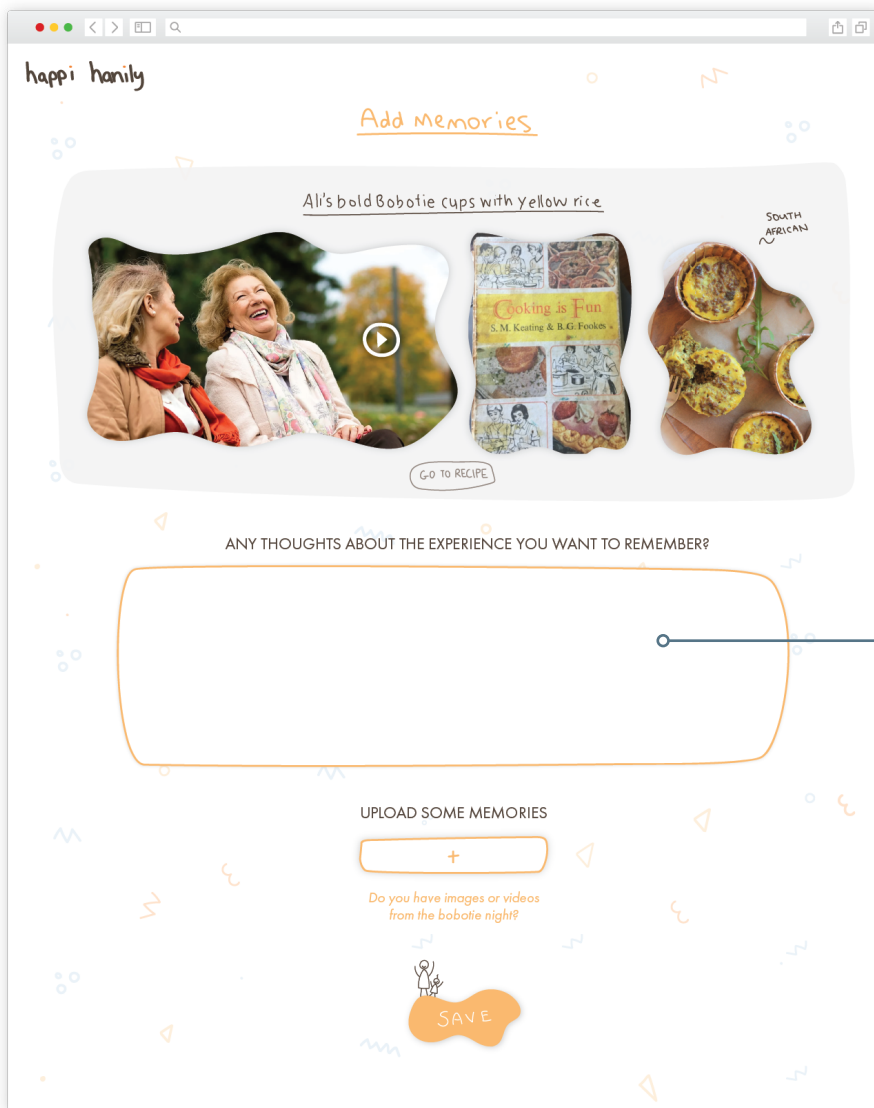


Figure 43 | Food Finder homepage.



VIEW THE RECIPES WHICH HAVE BEEN ADDED TO YOUR OWN PERSONAL MOMENTS.

Figure 44 | Food Finder page that shows all the recipes the family has already explored and eaten.



ADD INFORMATION ABOUT THE FAMILY EXPERIENCE YOU SHARED. THIS ALLOWS YOU TO LOOK BACK ON THE EXPERIENCE IN YEARS TO COME.

Figure 45 | Option to add memories and images to a recipe already enjoyed by the family.

EXAMPLE NARRATIVES

As mentioned on page 69, each recipe includes a video recording of the person and/or family who wrote the recipe. These narratives help the Happi Hanily families connect with the recipe further and triggers the reflection of their own values. Below, on pages 74 - 76 are three written example narratives to offer an impression of the video content.

EXAMPLE 1



“This meat dish has multiple layers of meaning for me. It is a South African dish, and although I was an emigrant to South Africa from the United Kingdom, arriving with my parents as a young baby, I consider myself South African. This dish is quintessentially South African melding together aspects of its colonial past. Babotie is an economical dish traditionally made with leftover cooked meat which was then ground. Today, it is made with fresh ground meat.

Babotie was a part of my childhood and a delicious meal that my mother, who was an excellent cook, made often. Eating babotie reminds me of my childhood. One of my school subjects was Domestic Science and babotie was to be found in our school recipe book. I have a copy of the book which I took from my younger sister. She used the book at school from 1976 until 1978. I remember at school reading the word “Rechauffes” above the entry for babotie and pondering over that foreign-sounding word.

Emigrating to Canada when I was 29 with my husband and young son was difficult and challenging for the reasons that being an immigrant is known for. It was a comfort to make babotie and smell is so very South African aromas. When we entertained, I frequently cooked babotie because I knew it would be a different taste experience for our guests. Everyone loved it and were curious as to its history. It is a comfort food to me, steeped in the memories of my life, and I have never tired of preparing it to share with friends and family. Today I have a slightly adapted version to share with you. You can also substitute the beef with lentils for a vegetarian friendly option.”

EXAMPLE 2

Maria's Surprisingly Good Cod Stew



"I remember growing up how adults always enjoyed and praised this dish. I did not think the same because I was not a fan of fish as a child, so I did not care for it much. I have memories of my mother gathering with three of my aunts and preparing enormous pots of it while my cousins and I would play. I remember that one of the first steps was to fry the onion and garlic in olive oil. This always made my aunt's house smell terribly, especially since in Mexico we do not cook with olive oil but with canola oil. So, I was always curious why it smelled so different. Now I know it was because of a different type of oil. The truth is I was just not used to that smell so I simply decided I disliked the dish without even trying it. I mean if the first step of the recipe made the house smell differently then why would I even try to taste it; it was probably going to taste terrible right?"

Well, I was wrong. As an adult, I can assure you that this dish is exquisite, it has so many flavors that combine perfectly. My mom still cooks a very large portion of it so it can be given as a gift to some family members, and because this dish tastes even better when reheating. I guess when kept a few days the flavors merge and blend fully together. She always makes sure there is more than enough for all of its uses: for Christmas dinner, to reheat, and to share.

Moreover, my mom still manages to surprise us by freezing one of the portions so we can eat it in the middle of the year, usually when all my family is together. My oldest brother and I live abroad so when we gather it's like having a small remembrance of Christmas during any other moment of the year."

Paul's Fanciful Fish Cakes



“Whenever I think of a meal that brings back cherished memories it is of my grandmother’s fishcakes. As you can see from the photograph, my grandmother was a colorful character and she enjoyed making everything fun. She loved three things, eating fish, live musical plays, and singing. In fact, my own children know the words to some of her favourite songs. Making fish cakes was quite a performance. Firstly, we would go to the fish market, where she would let me choose the fish, this made me feel special and I wanted to make sure that I got the biggest and firmest fish I could find. Then we would go home put on our aprons, turn on the music, start singing and cooking. Finally, I would lay the table—it was fish themed of course!.

My grandmother was the first person to teach me that cooking is more than just about the food. She encouraged me to squish the fish and potatoes with my fingers, and then pat them as I shaped them into round medallions. That it was fine to take a bite of the carrot you had just peeled and that using the carrot peels to make hair for the fishcakes was okay. She always said that cooking was like a good play, you had your main actors (the fish), the supporting actors (the vegetables), the scenery (the plate) and together they told a story. Best of all was the eating because that was the fun factor. We often ate the fishcakes with our hands because we made them just the right size!

Whenever I cook my grandmother’s face often pops into my head and reminds me of how much fun it is to cook as a family and the pleasure you get when share a meal with people that you love. I know how much she would have loved to sit around table as we ate her famous fishcakes. She would be so happy that we had kept the tradition alive.”

13.4 SPILL SUPPORTERS

Flexibility in the meal is a key element of Happi Hanily. To encourage messy exploration during the meal, but to protect clothes and offer a way to wipe dirty hands, over-size convertible napkins are included. Each cloth napkin is uniquely shaped and embroidered with a name of your family member; this increases the feelings of belonging, individuality and importance. The napkin can be folded and tucked into your shirt, placed on your lap, or worn as a bib. This flexibility gives your family members a sense of control over their eating experience. While each family member has the freedom to choose how to use the napkin, if the meal is very messy the recipe will recommend the napkin be worn as a bib. It is practical and encouraging solution when exploring foods with your hands.

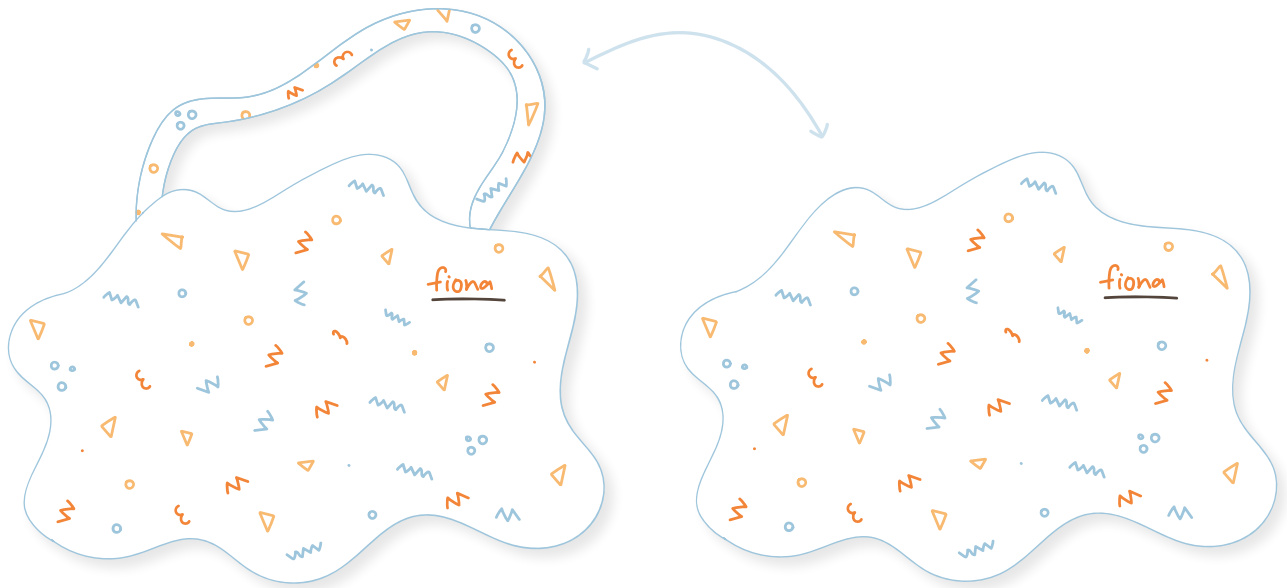


Figure 46 | Spill Supporters in the normal and 'bib' configuration.

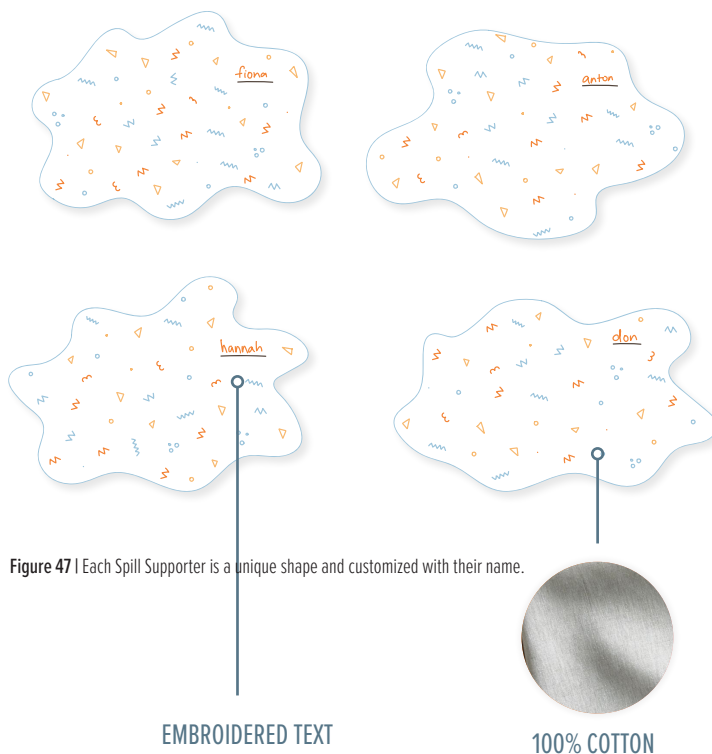


Figure 47 | Each Spill Supporter is a unique shape and customized with their name.



Figure 48 | Different configurations of the napkins.

13.5 WACKEY WAVEY WHEEL

Portions sizes and plates often go hand in hand. Therefore, Happi Hanily encourages a more mindful eating experience and does not include pre-determined portion sizes. Instead, everyone is encouraged to reflect on their own satiety before reaching for another mouthful. By having more autonomy over food choices, the pressure to finish what you are served is removed and everyone is able to control what and the quantity of food they eat. Eating with your hands also slows the speed of consumption, which helps with digestion and the feeling of fullness. The dish enables a communal eating experience, and the design offers autonomy and control over food choices in a more explorative and playful way than traditionally experienced while eating.

To prepare for dinner, you first need to assemble the Wackey Wavey Wheel of food. With 11 different sizes and shapes you are able to adapt the dish to suit the needs of your meal. Each dish is coloured coded to help guide you when fitting it together, but remember that it can be assembled in a variety of ways depending on the dishes you include, so customize the layout in a way that suits your meal. The 11 different dishes serve as both your individual eating surface, as well as the area to place your food during the meal. Fill as many or as few of the dishes with food as you would like. Throughout the meal take what you please and combine different ingredients to explore new flavour experiences. The food being separated stimulates more exploration as to how to pair and select your food choices throughout the meal. Four of the dishes also have a unique design that will help you to enjoy and explore your food (Figure 55, Page 80).

Another feature is the ability to turn the base 360 degrees. This allows you to face certain dishes towards yourself, or perhaps move dishes away from someone else. However, this also means that you need to be more aware of what your other family members are reaching to eat and taste. In this way you are encouraged to be not only being mindful of your own satiety and eating experience, but also to those around you.



Figure 49 | Wackey Wavey Wheel in use.

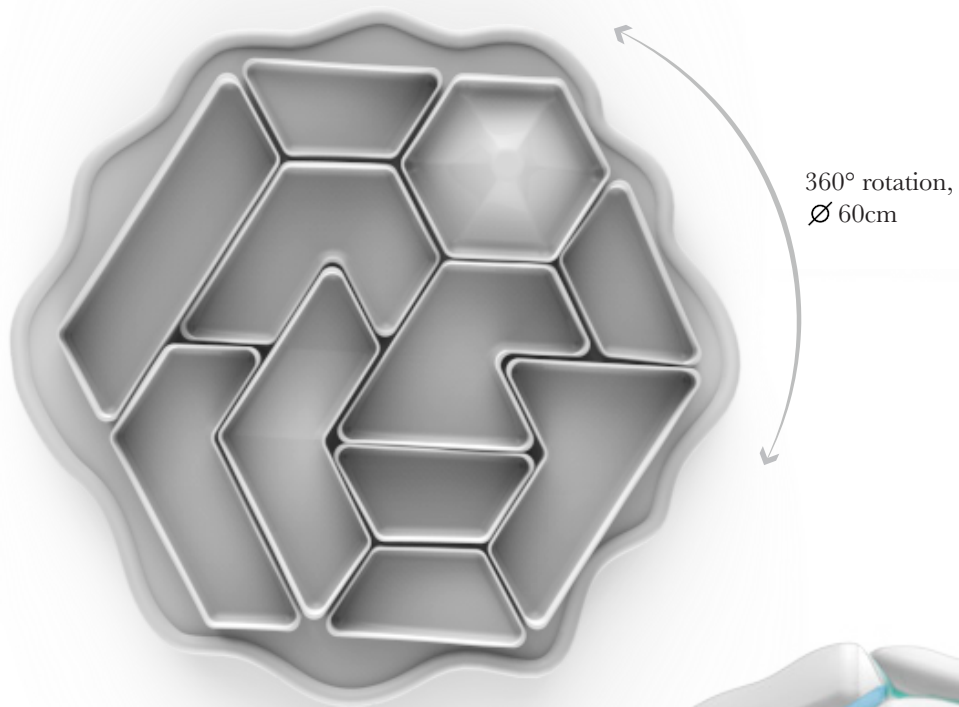


Figure 50 | Top view of the Wackey Wavey Wheel.

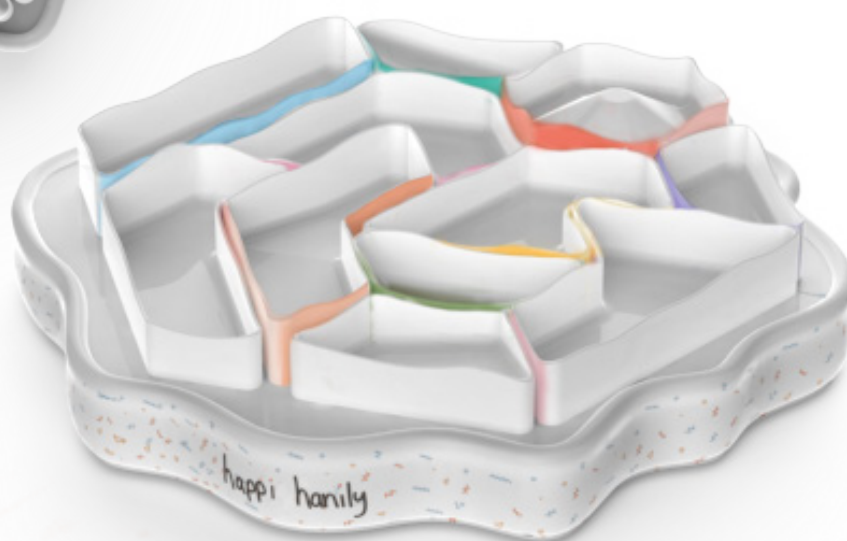


Figure 51 | Side view and colour coding of Wackey Wavey Wheel.



Figure 52 | Side view with dimensions of Wackey Wavey Wheel.



Figure 53 | Colour palette and view of dishes.

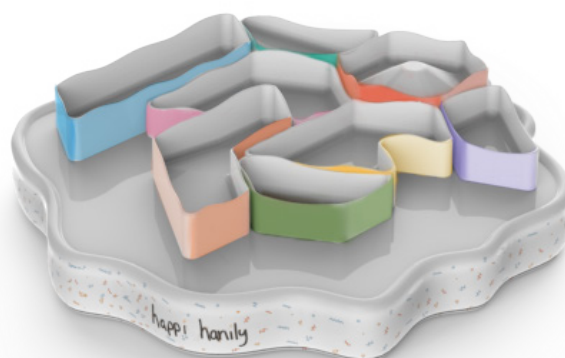




Figure 54 | Examples of Wacky Wavey Wheel Showcase Prototype in use.

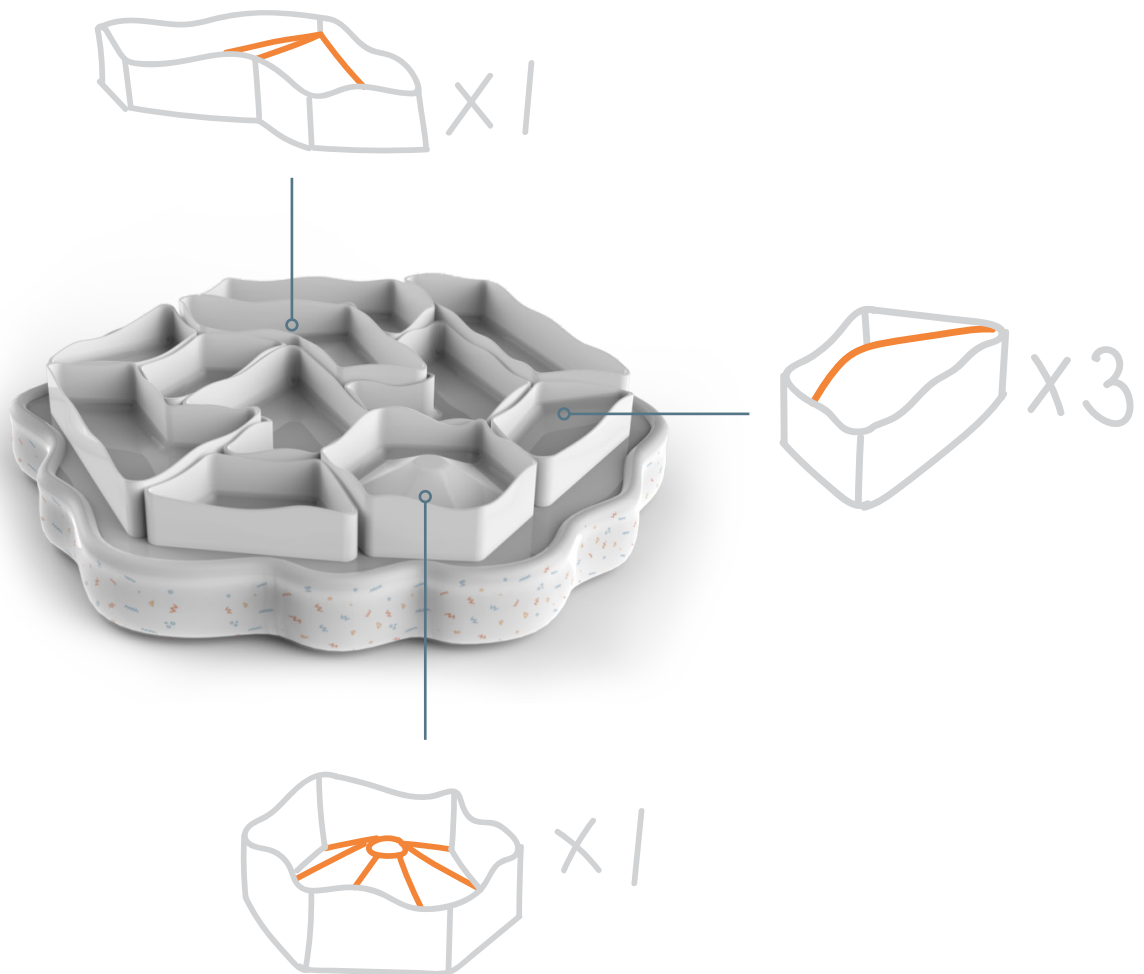


Figure 55 | Visual explanation of the 5 unique dishes within the Wacky Wavey Wheel.

ASSEMBLY

Once everyone is finished eating a seamless transition from dinner to the rest of the evening will allow the enjoyment of this harmonious family time to continue. With so many components two key elements to the design is that everything is dishwasher safe, and can be stacked together for easy storage. To store the product, the napkins and dishes are nested within the outer unit. This ensures that no dishes are lost over the years.



Figure 56 | Wacky Wavy Wheel when ready for storage or not in use.

ALL THE SEPARATE DISHES AND
SPILL SUPPORTERS FIT WITHIN
THE OUTER CONTAINER FOR
EASY STORAGE.

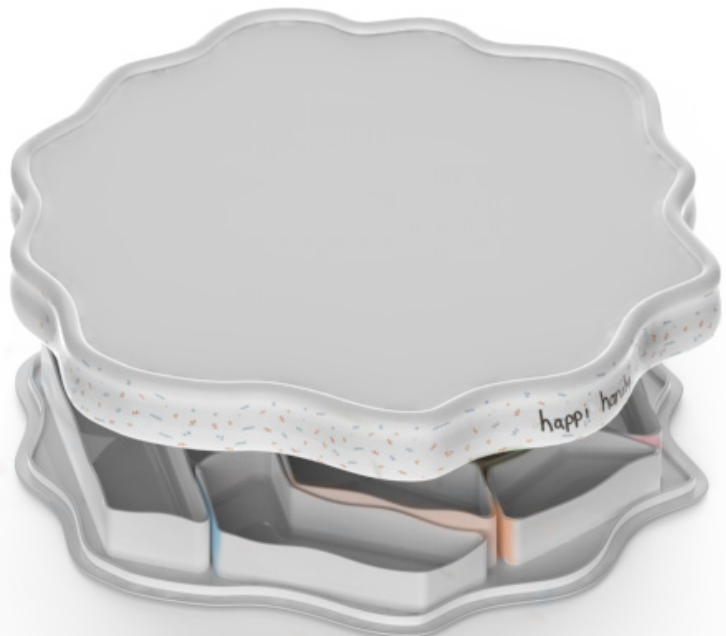


Figure 57 | Exploded view highlighting that all the elements fit with the outer shell of the design.

13.5 FAMILY EXPERIENCE JOURNEY

Happi Hanily includes 3 designed elements, the Food Finder, the Spill Supporters, and the Wacky Wavey Wheel of food. Equally as important to these components is the experience it facilitates, an experience that goes beyond choosing, preparing, and eating a meal. When reflecting on the family experience there are other elements that contribute to the feeling of family cohesion, such as including the sub ritual of washing your hands as a family before and after the meal. Figure 57 on page 83 visualizes a family's journey with Happi Hanily from when they first discover the product to the rest of the evening following the meal. Each step has considered how playful exploration, guided independence, and trusted relationships can be integrated and enhanced.

Amsterdam municipality has an annual funding of €5.2 million for their Healthy Weight Program (Amsterdam 2018). With this funding, I can imagine that the Happi Hanily is produced as a pilot project within this program. Currently, families within Amsterdam set up meetings and counselling with youth healthcare professionals so that they can be educated on healthy eating habits and behaviour. Additional support and funding are offered to families with obese or overweight children. If the Happi Hanily were to be associated with the municipality families would be more open to breaking through the taboo of eating their hands and try the concept within their family. This would also offer an opportunity for nurses to discuss the family's eating behaviour in a way that can be empathised and enjoyed by the whole family.

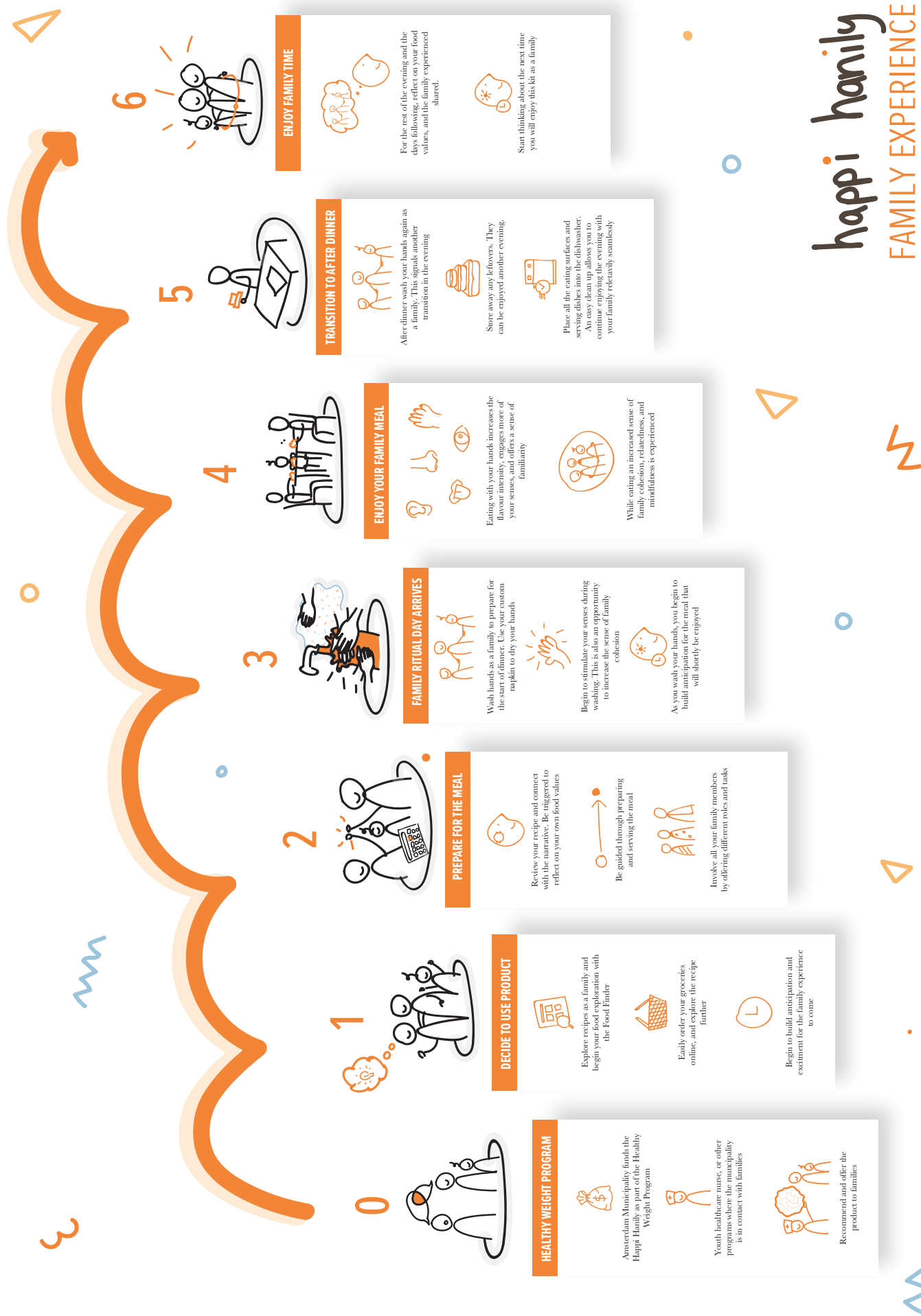


Figure 57 | Family experience when using Happi Hanily

14 CONCEPT EVALUATION

14.1 EVALUATION OBJECTIVE

When determining the scope and goal of the concept evaluation I referenced back to my design statement and interaction qualities.

I want children to feel free, safe, and empowered to develop a healthy relationship with food by facilitating a harmonious family interaction during dinnertime. Beyond this, I want the interaction to have the qualities of playful exploration, trusted relationships, and guidance independence.

Due to the time restraint for this project, measuring and evaluating whether a child develops a healthy relationship with food is out of scope, as it would require a lengthy testing period. Therefore, the objective of this concept evaluation is twofold. Firstly, to verify whether the interaction qualities and a harmonious family dinnertime are met. Secondly, to gather knowledge and insights to formulate recommendations to improve the design as well as identify future avenues of research.

The research questions identified for the concept evaluation are the following:

- *How do families experience eating with their hands?*
- *How do families interact with the concept, what are the strengths and weaknesses?*
- *Does the perceived experience align with the interaction qualities and project aim?*
- *What aspects of the concept contribute to a mindful and harmonious eating experience?*

14.2 ACTIVITIES

To be able to evaluate the concept and formulate recommendations, participants tested a prototype of Happi Hanily during a family meal, completed a short questionnaire, and participated in a semi-structured interview. The prototype used during testing included the Wacky Wavy Wheel and the Spill Supporters (Figure 58). The digital Food Finder (Figure 58) was not included in the testing experience because of its limited functionality. This element of the design was shown to and discussed with the participants during the interview. The questionnaire activities were chosen to reveal how families perceived the concept, with regards to their own experiences, their family interactions, and the method of eating itself. The interview focused on understanding their perception of the concept as a whole and deepened my understanding of what qualities of the concept contributed to their experiences. Taking a qualitative approach, as I have, is most suitable for this type of study as it reveals underlying reasons, opinions, and motivations for behaviour (Stappers and Sanders, 2011).



Figure 58 | Left to Right: Wacky Wavy Wheel and Spill Supporters used with Participant; Wacky Wavy Wheel and Spill Supporters used with Participant 3; Digital Food Finder used in all tests.

Five tools have been used for the questionnaires to support participants in expressing themselves and their experience of the concept. These tools include:

- 1. **Pick-a-mood:** used to allow participants to express their moods through a cartoon based pictorial instrument (Figure 60) (Desmet, Vastenburg, & Romero, 2016).
- 2. **Playful Experience Categories put to a Likert scale:** this allows participants to identify what playful elements they experience (Figure 59) (Lucero & Arrasvuori, 2013).



Figure 59 | PLEX categories used in the parent questionnaire.

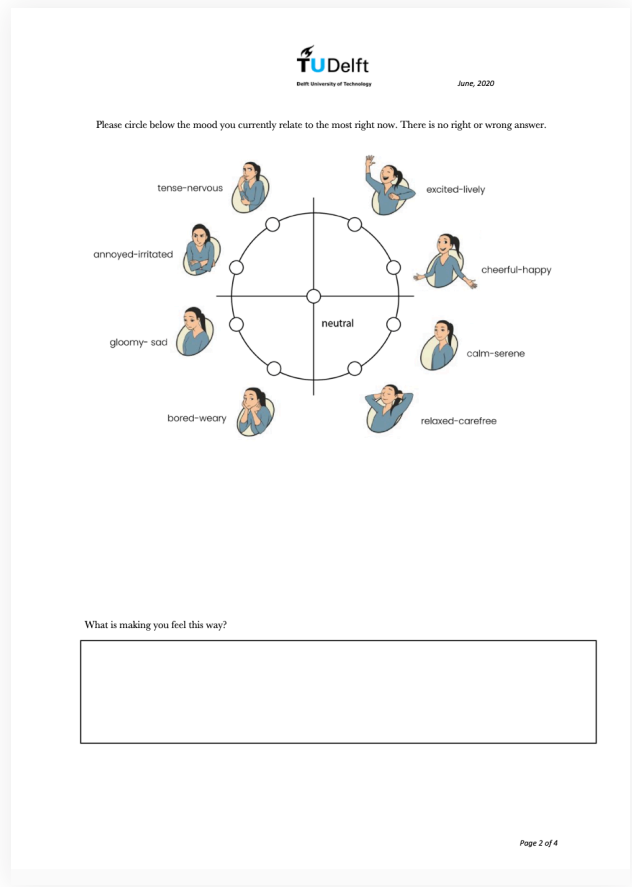


Figure 60 | Pick-a-mood questionnaire used in the parent questionnaire.

- 3. **Likert scales:** specifically designed for this evaluation and include questions related to the desired interaction qualities (Figure 61, Page 86)
- 4. **Open-ended questions:** two open-ended questions were added to support families in expressing how they experienced eating with their hands and their likelihood of adopting the concept into their routine (Figure 61, Page 86).
- 5. **PrEmo:** this tool is added in a special questionnaire for the family's children, and include an adapted version of the PrEmo tool (Figure 62, Page 86) (Desmet P. , Product Emotion Measurement Instrument, n.d.). This was included to allow the children to express how they felt during dinner; however, this was not required but rather added if the children felt like sharing.

TU Delft
Delft University of Technology
June, 2020

Please indicate to what extent you agree with the statements below. There is no right or wrong answer.

Indicate degree you agree

	1 <i>strongly disagree</i>	2 <i>disagree</i>	3 <i>I do not agree nor disagree (neutral)</i>	4 <i>somewhat agree</i>	5 <i>strongly agree</i>
I felt free to use the different parts of the concept as I wanted during dinner	1	2	3	4	5
This product was intuitive to use	1	2	3	4	5
I ate slower then I usually do	1	2	3	4	5
My thoughts were wandering while I was eating	1	2	3	4	5
I noticed the subtle flavours in the foods I was eating, more than I usually do.	1	2	3	4	5
I stopped eating when I was full	1	2	3	4	5
Before I ate, I took a moment to appreciate the colours, smells and textures of the food	1	2	3	4	5
I gave my child autonomy over their food choices during this meal	1	2	3	4	5
I felt I was able to choose the food that interested me most during dinner	1	2	3	4	5


How did you experience eating in this way?


Would this concept be something you would want to incorporate into your family routine? Why or why not?


Page 4 of 4


Figure 61 | Custom Likert scale to touch upon interaction qualities.


Omcirkel het plaatje met wat je voelde tijdens het diner. Er is geen goed of fout antwoord.



Blij


Verdrietig


Vies


Goed


Bang


Boos

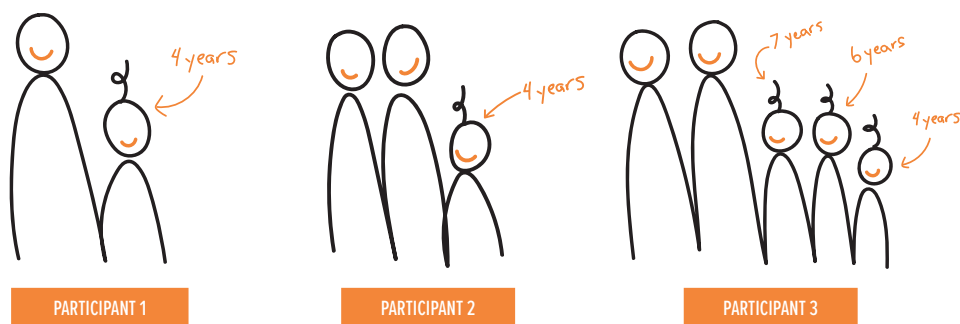
Vond je het leuk om met je handen te eten?

Figure 62 | Adapted PrEmo for the child's questionnaire.

These tools offered a starting point for the interview that followed the testing, and serve as a way to gather data and answer the research questions.

14.3 PARTICIPANTS

Three families tested the concept. The first two families had previously been involved with the project during the Context Mapping phase, and both have a child of 4 years old. These participants were selected based on their previous interest in the testing of my concepts, and their proximity to Delft. The third family was selected for the Project Showcase Video filming and have children ages 4, 6 and 7. This family was selected based on their availability and comfort of being filmed. They also have a personal relationship with me.



14.4 SET-UP AND PROCEDURE

The testing of the first two families occurred over a two-day period. Figure 63 illustrates the overall procedure that took place. Prior to the testing day, I visited each participant at their home to provide all the testing material and to explain what would be involved with the testing. The materials include all elements of the prototype, instructions for the sessions, a consent form, and 2 questionnaires, one for the parents and one for the child. To begin I sat with the mother and walked her through the elements of the design. I explained that there was no correct or incorrect way to engage with the prototype and that they should not worry if anything gets damaged during use. Once the mother was comfortable with the testing procedure, we scheduled a time for the follow-up interview either the same evening or the day following the testing. This ensured that the experience was fresh in the participant's minds when we conducted the interview.

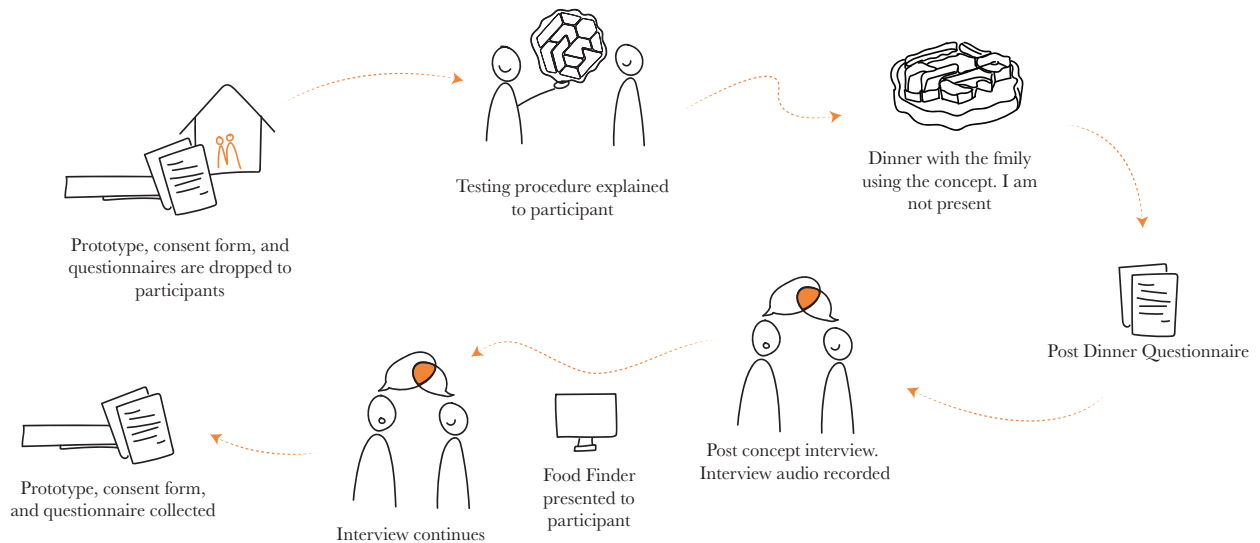


Figure 63 | Visual representation of user testing procedure.

The testing of the experience was held in the home of the participants without me present. This was deliberately chosen to ensure that the participants were comfortable and that the dining atmosphere is as close to a normal family evening as possible at the start of the eating. One day during the week the families were asked to prepare a meal and eat dinner using the concept. They were given the freedom to decide which day to use the concept and what they would eat. Following their dinner, each participant was asked to complete a questionnaire. If their children wanted, they were also free to complete the questionnaire designed for them.

The questionnaires took approximately 10 - 15 minutes. The 30-minute interview following the testing was also conducted at the home of the participants. This helped to ensure that participants felt comfortable sharing their opinions in a familiar environment. During testing, participants were asked to take images and videos during dinner and to share the content with me afterwards. This allowed me to get a sense of the experience without being present. The consent form, prototype, and questionnaires were picked up after the testing when the interview was scheduled. During the semi-structured interview, I showed the participants a click-through prototype of the digital Food Finder, produced using Figma, to ascertain their perception of this concept element. The interview was audio recorded for easy review and evaluation during analysis.

Testing of the third family had a different setup and procedure because it doubled as the Showcase filming and was not focused on the concept evaluation per se. Therefore, it involved using an updated version of the Wacky Wavy Wheel, and capturing the dining experience itself was the central aim. No questionnaire or formal interview occurred before or after the testing. I brought dinner and helped to prepare the table prior to eating. During dinner, I was present with a video camera and observed the interactions. After dinner, I spoke with the parents about the concept and asked some questions about how they experienced both

14.5 RESULTS

The concept experience is characterized by 4 specific qualities; playful exploration, trusted relationships, guided independence, and harmony. The names of the participants have been changed to respect anonymity. In Appendix I you can find the completed questionnaires.

PLAYFUL EXPLORATION

When reviewing the Playful Experience Categories and the interviews, 14 of the 22 playful categories were perceived and experienced by at least one participant during dinner (see Figure 64). The most prominent playful qualities include discovery, exploration, fellowship, humour, nurture and relaxation. The Wackey Wavey Wheel was the largest contributor to the playful enjoyment, especially for the children. As illustrated in the quotes (Figure 65, Page 89), this is predominantly because the experience was novel, the dish was able to spin, and everyone was given autonomy over what they ate. When reviewing the Food Finder, Participant 2 expressed that “if you have a clip where they explain a bit about the history it would be really interesting and fun”.

Participants were also more open and less strict during dinner. When preparing for dinner participant 3 parents both reached for plates for the table. When mentioned that they did not need them, they both said “well okay, this will take some getting used to. Let’s see what happens”.

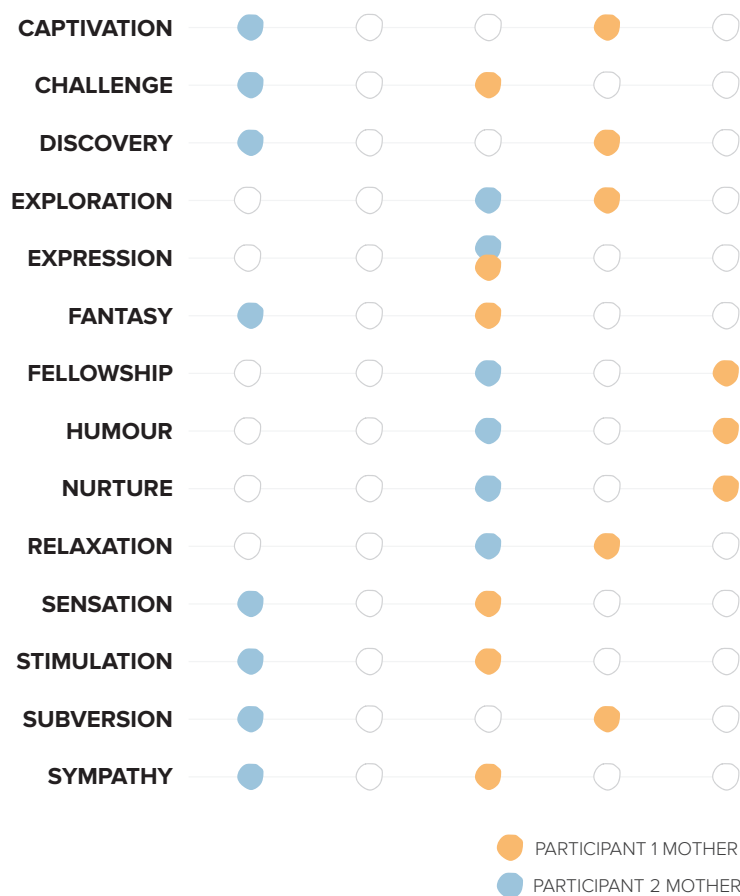


Figure 64 | Categories that were perceive by at least one participant during dinner. Categories are presented on a scale from 1 to 5.

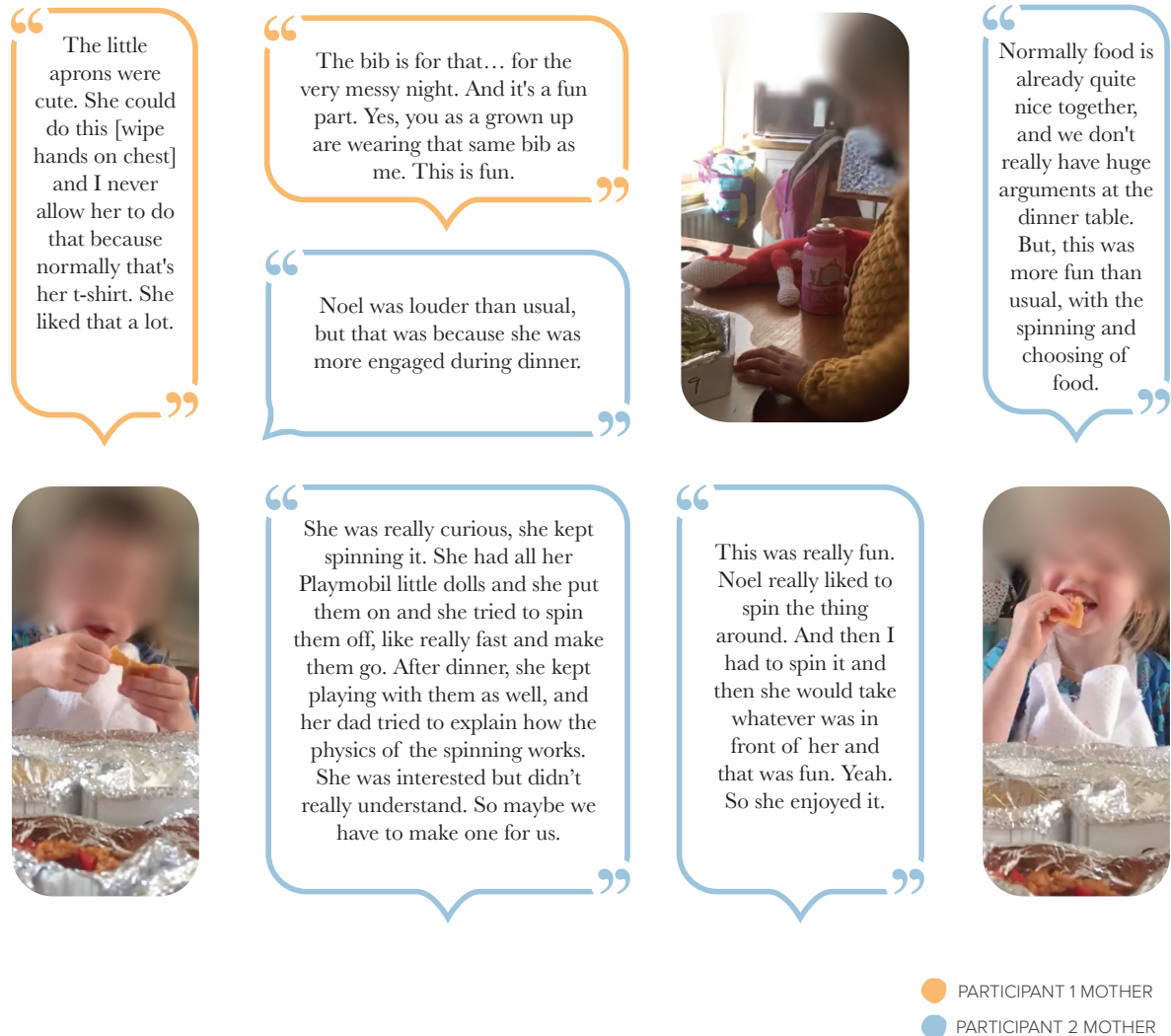


Figure 65 | Participant quotes related to playful exploration.

GUIDED INDEPENDENCE

In the three testing situations, the children took a leading role in controlling the Wacky Wavey Wheel, and choosing what they wanted to eat. Although the participants felt the puzzle was challenging to put together, it was still engaging and involved the entire family. The participants indicated, as seen in Figure 68 on Page 92, that the concept was intuitive and that they gave their children more independence and autonomy during this meal. The participants also conveyed that when serving the food, their children took an active role in helping to decide which container should be given which type of food.

During the interview with participant 2 and when observing participant 3, it is clear that the puzzle used for the Wacky Wavey Wheel is too difficult and lacked guidance, especially for younger children. While participant 2 indicated that her husband and father really enjoyed puzzling the dishes together, it was too difficult for herself and her daughter. When observing participant 3, one of the children became frustrated during the puzzling phase, while the other two children persevered. While the colours were clearer than using numbers, there was not enough distinction to easily fit them together. However, when the family was able to fit it together with the assistance of the parents, they all cheered and clapped.

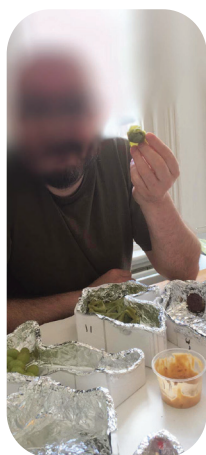
“ I liked to look and see what she’s gonna do. When she has one of the boxes is she going to share or is she gonna say No, it’s mine and eat it all. ”



“ Noel was really engaged with where each type of food should go. I just followed her lead. ”

“ It’s very useful that you can get a recipe based on ingredients. I struggle to find new recipes so this could help with me to be more creative when cooking. And it is more accessible to try new things, like the bobotie cups. ”

“ Noel likes playing with computer games, so probably she would like choosing the ingredients. Plus she likes helping with cooking. So I think she would enjoy this too. ”



“ The digital platform is fun, because when she’s smaller she can recognize the ingredients. So yeah, I want to eat that with this in it [pointing to ingredient]. She will recognize the dish and then you have your own online recipe book, and that is fun. ”

“ She insisted on putting the puzzle back together herself after we finished dinner and I cleaned each part. ”

“ Adding your own recipes is cool. Cause Noel would be able to recognize the ingredients and then I could help write the instructions or video her doing it herself. ”

“ The suggested recipes could be helpful to new parents, especially if they aren’t sure what children should and can eat. It can be hard at first, this would be very useful and offer some support to them. ”



Figure 66 | Participant quotes related to guidance independence.

- PARTICIPANT 1 MOTHER
- PARTICIPANT 2 MOTHER

TRUSTED RELATIONSHIPS

All the participants supported and offered their children the opportunity to take the lead during dinner. All participants were unaware of how much their children ate, and just let them finish when they said they were full. They also were not strict on what they had to eat, for example making them eat a certain amount of vegetables versus protein. Participant 3 specifically mentioned that she usually tries to keep an eye on portion sizes and how much her children eat. She was surprised that she enjoyed the meal so much given that she was unable to have a frame of reference for this and that this meal has made her reflect on this behaviour. She expressed that this is something she will work on in the future. Participant 1 mentioned that the Food Finder would also be an opportunity for her daughter to become more familiar with how food looks before preparing it, and how it is then transformed to the plate.

When observing the dinner of participant 3, the family including the children were engaged with each other and wanted to make sure everyone was able to have what they wanted. For example, when only two meatballs were left the middle daughter split the meatball with her younger sister.



“ I just prepared all the food, and then I said, Okay, now I need you. So together we decided what dish should go with what food. She said okay, that’s this one and that needs to go there and then she put it in. And then we sat at a table. We just chatted and she just decided what she wanted to eat. ”

“ The website is nice if you say, okay I want this just for me. It’s my little part of the website only I can enter. Or I can share it with others and others can also have the recipe too. So, I can choose who sees it. ”

“ With this I struggled to know about portion sizes. I really have no clue how much they ate, but they seem full and happy. ”



“ Let’s say I never wanted the kid who wants to play in the sand. So eating with my hand is like...okay. How are you eating corn? And Jess just said, like this mom, and scooped a handful into her mouth. I thought... no, not like that. I’ll just take them one by one. But it was fun. I just do it with three fingers. Then the rest is clean. ”



● PARTICIPANT 1 MOTHER
● PARTICIPANT 3 MOTHER

Figure 67 | Participant quotes related to trusted relationships.

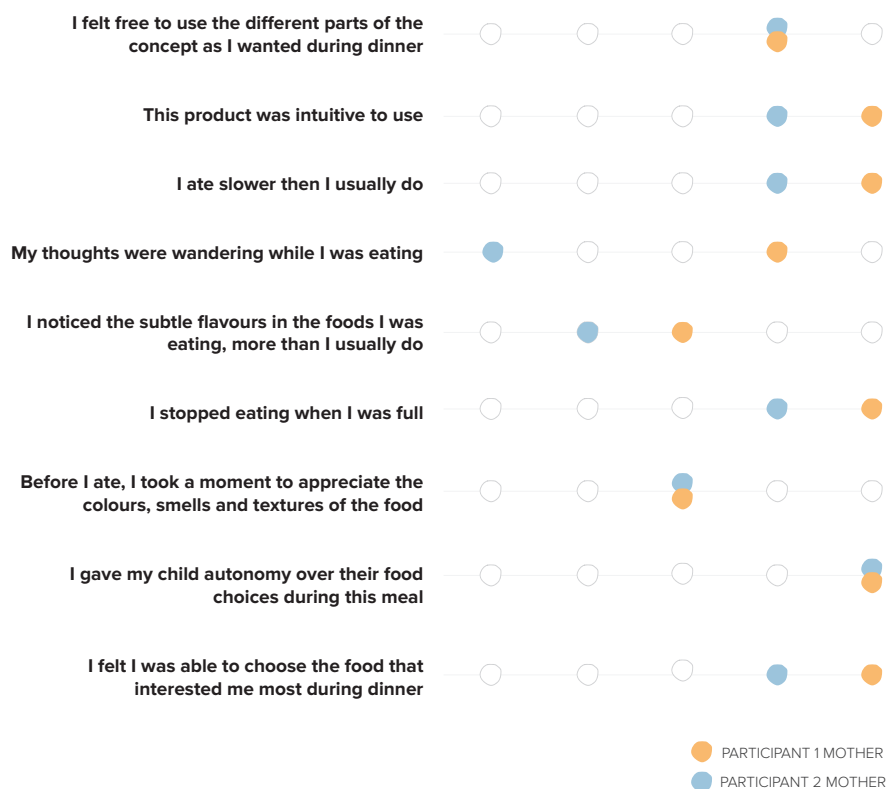


Figure 68 | Qualities of the concept defined by the participants.

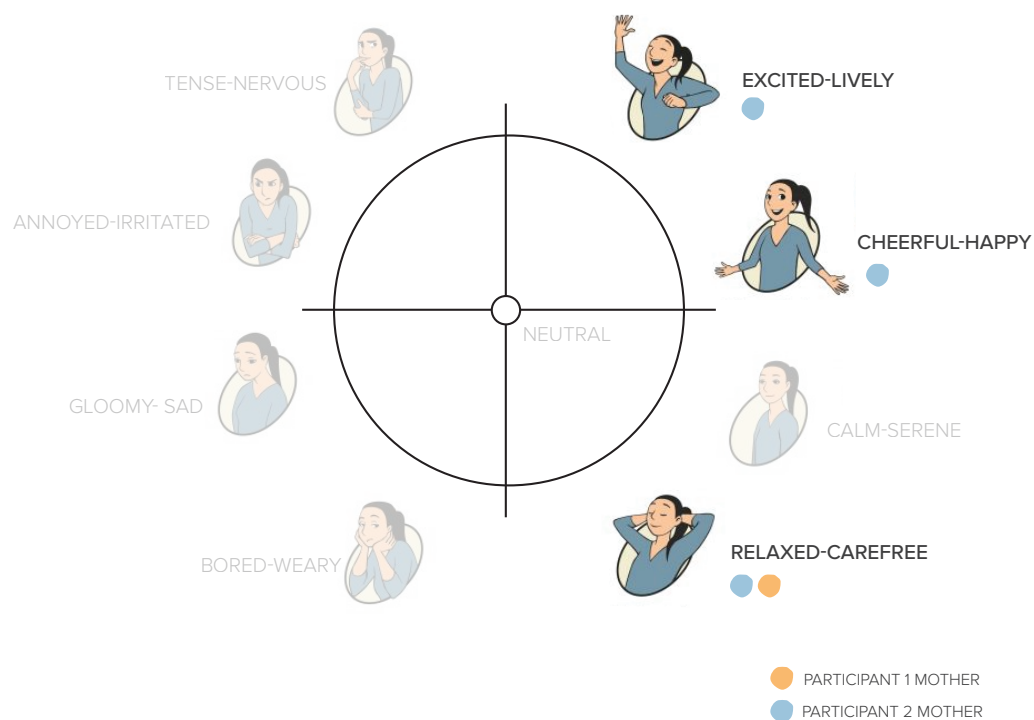


Figure 69 | Mood experienced after the concept defined by the participants.

HARMONIOUS EXPERIENCE

All the participants mentioned, in some form or another, that the meal felt more like family time rather than just another dinner. Participant 1 mentioned that her daughter, rather than following her regular routine of watching television after dinner, decided to sit near her mom and draw for the evening. This surprised the participant but also made her feel like they were spending the evening together rather than doing two different activities. As seen in Figure 69, the participants felt excited-lively, cheerful-happy, and relaxed-carefree, during and immediately following dinner. Participant 1 said this was because “it was very fun and a relaxed way to have dinner. Jess was in charge of turning the monkey platter which she liked a lot and we could both eat what we liked”. While for participant 2 felt it was because “it was fun to eat this like this and her daughter really liked it”.

When asked about eating with their hands participant 2 thought “it was fun to see all the different elements of the meal separately”. She also explained that her daughter was very critical to make sure everything in the meal was cooked and presented nicely. Interestingly, participant 1 found the experience “way more fun than I had expected. It made dinner really easy too because I didn’t have to tell Jess to keep her knees under the table. So, we could actually talk about our day.”



“Because this is so new and so different from a normal dinner she didn’t keep sticking her knees above the table and pushing away and trying to do other things. She was just busy with what’s there and asking if she can turn it again. So that also was nice that I didn’t have to keep telling her to sit properly.”



“I’ve never seen my kids so quiet during dinner.”

“It’s more like family time. It’s not just a meal.”



“This was more relaxed than normal. It takes you out of your routine. Especially when you have had a long day at work and you need to get some food and you know, it’s like, knees under the table. Where are my knees? Keep your knees under the table. Then you all get more stressed. But now it was more relaxed because of this experience I think.”

“We had way more time at the table eating. And then afterwards we filled in the questionnaire together. She didn’t ask for any television, which she normally does, but just sat there at her table and just kept colouring. Even though the iPad was right there and the tele right beside her. She was reminded of it but didn’t feel like it.”

● PARTICIPANT 1 MOTHER
● PARTICIPANT 3 MOTHER

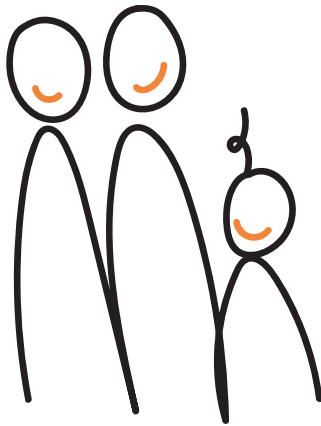
Figure 70 | Participant quotes related to harmony.

OVERALL EXPERIENCE

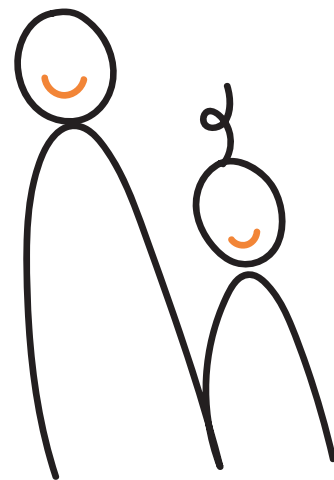
As also shown in the previous sections, all participants enjoyed the Happi Hanily experience and said they would do it again.

“We would use it again, but not too often.”

“It’s really cool idea and we enjoyed it. And the puzzle is really cool. And yeah, picking the ingredients. And even better if it helps you think about something useful.”



“I would do it maybe once or twice a week, to keep it special but also familiar.”



“It is really convenient to take it back to the kitchen and clean.”

“It would be great for leftovers. I would do it again, especially since the kids liked it.”



- PARTICIPANT 1 MOTHER
- PARTICIPANT 2 MOTHER
- PARTICIPANT 3 MOTHER

Figure 71 | Participants opinions of including Happi Hanily into their family ritual.

14.6 DISCUSSION

The results show that Happi Hanily facilitates a harmonious family experience in a way that encourages playful exploration, guided independence, and trusted relationships. Although families were skeptical of the concept at first they all enjoyed the experience and, in some cases, even surprised themselves with how much. This enjoyment, while partially due to the physical interactions with the prototype, is also likely because the experience is novel and not within their regular routine. Additionally, of the three participants, participant 2 had already tested some design iterations during the ideation phase which may have influenced her responses to a small degree. When reviewing her previous questionnaires, it is seen that her child was more engaged and involved with preparation and eating with the Happi Hanily, however, the novelty and rebelliousness of eating with their hands were less impactful compared to the other families.

It can also be questioned whether the type of food the parents served played a significant role in the experience being positive. For example, one participant mentioned that they made all their child's favourite foods. If the parents were to choose blindly from the Food Finder it would be interesting to see if the child's engagement, enthusiasm, and exploration would remain consistent. However, without a longer study with a variety of meal options, it is unclear whether this experience will elicit the same positivity and enjoyment over time. With that said, all the participants felt that this would be something that they would adopt as a family ritual.

Video recording their dinner did not appear to influence the family's level of comfort or authenticity. During dinner with participant 3, the children and parents appeared to be uninfluenced by the camera, as focus remained on each other and their food during dinner. Therefore, the visual footage shared with me from the participants are authentic and represent their family meal accurately. This increases the trustworthiness of the analysis.

Although the number of participants was limited, they were suitable for a qualitative study and provided trusted and relevant insights for evaluation and design recommendations. All participants speak English, and therefore it can be assumed that they have a higher level of education. This may have resulted in a lack of diversity and representativeness among the families. Testing with a wider variety of participants could elicit different responses, especially with regard to eating habits and behaviour, as mentioned in the literature review. However, this was not possible within the project time frame or within my language capabilities.

Testing in the families homes was a favourable choice given the age of the children and the objective of the concept. This offered more comfort and familiarity with the testing environment. This also meant that the families were able to reflect on what preceded and followed their dinner. Especially for participant 1, this was valuable and extremely relevant to the idea of harmony and togetherness after dinner. With pure excitement, this participant mentioned during the interview that when her daughter completed her PrEmo questionnaire, indicating she felt happy, that it was the first time she had ever written her own name. This might be as a result of the relaxed and empowered feeling her daughter felt after sharing the Happi Hanily experience.

14.7 DESIGN REVIEW AND RECOMMENDATIONS

The interviews and observations of the testing provided valuable insights for future design recommendations to Happi Hanily.

FOOD FINDER

Nutritional Information

When reviewing the Food Finder, a future version of the platform should include nutritional information about the meals. While all the recipes chosen for the Food Finder are diverse

and healthy, nutritional information could be added as a button at the end of each recipe for parents who are curious as to which recipes are healthier than others. This also might trigger more reflection and surprise for families.

Recipe Instructions

The design of the platform has been done in such a way to attract the entire family. Taking this one step further I would include pictorial based instructions for the recipes. Using simple images, with added text for parents, would allow children to also participate in the preparation of the meal in a way that suits their skill level. If parents input their child's age when creating an account on Food Finder, the instructions would become more complex as the child ages. This addition would likely increase a child's exploration with food, offer guided independence, and build a more trusted relationships between the parent and child.

WACKY WAVY WHEEL

It is very clear that the difficulty of the puzzle is too challenging for children under the age of 7 years old. It was a bit challenging to watch the families fit together the Wacky Wavy Wheel, I kept wanting to jump in and help them. Although the colour coding was helpful, depending on the lighting of the room it was difficult to see what colour matched with what colour. Three options to improve the design could be either making the colours more distinct from another, to simplify the overall puzzle itself, or a combination of the two. I can imagine the design could include a puzzle with fewer pieces when the children are younger, and as they age and begin to eat more, the puzzle is able to grow in size and piece number. This would also continue to stimulate exploration, as new combinations and configurations would be possible with each additional piece.

“IT WAS A BIT CHALLENGING TO PUT IT TOGETHER. MY FATHER AND HUSBAND REALLY LIKED IT AND PUT IT TOGETHER THE DAY BEFORE EVEN. BUT FOR ME, IT WAS A BIT CHALLENGING”

“WE DIDN'T USE ALL OF THE BOXES BECAUSE WE DIDN'T HAVE ENOUGH FOOD”

SPILL SUPPORTERS

Design changes to the Spill Supporters are minimal compared to other concept elements. The prototypes I made were too large for younger children, and it is recommended to have different sizes and shapes to align with the child's growth. For example, for children under 3 years old sleeves could be added. This would allow them to continue to participate in the experience even when they may not eat the same food as the rest of the family and when they likely make bigger spills.



15 CONCLUSION

The initial objective of this graduation project was to design a product experience that supported families with toddlers to develop a healthy relationship with food by focusing on play. Achieving this objective and supporting families to develop a healthier relationship with food would help in the prevention of childhood obesity in the long run.

Reviewing the literature found that;

- The routines and activities we engage in are facilitated by tools and objects. When viewed with another activity, objects can be shared between systems, activities, or people. Therefore, understanding the goal and motivation of the activity is crucial because it is the driver of the activity, and can provide a starting point for behaviour change.
- Play is extremely important and supports values that are essential to well-being, such as exploration, curiosity, and reflection. While many parents feel there should be a distinction between play time and meal time, overlap inherently exists. Touching and playing with food is an essential part of accepting new foods, however, within the domain of food it remains relatively limited and unexplored. This can partially be attributed to the negative 'taboo' playing with your food has in most Western societies.
- Our daily and weekly food moments are beginning to change, including when and how children are exposed to food. Food is increasingly served as a final dish. Therefore, an understanding of what ingredients are used in meals, how the food transitions from produce to plate, and how the visual and textual elements of food link to the interpretation of the flavours are often unclear and lack visibility. Through imitation and modelling, toddlers learn and develop habits and behaviour.
- As our lives get busier parents have to make choices about how to allocate their resources and time amongst their themselves, their children and other family members. Parenting practices and styles are not universal but rather are often influenced by numerous external factors such as cultural, social contexts and socioeconomic status.

To reveal more of the underlying motivations behind parent's and children's behaviour a qualitative study with parents of toddlers was conducted. Through these interviews it became clear that flexibility is a key component to a successful parent-child relationship as well as a positive relationship with food. Additional insights gained through this study in combination with literature became the foundation of my future vision and the basis for what impact I want to have with Happi Hanily. After an extensive ideation and testing phase the Happi Hanily was designed. The design focuses on enabling children and families to feel free, safe, and empowered to develop a healthy relationship with food by facilitating a harmonious family interaction at dinnertime. By focusing on the qualities of playful exploration, guided independence, and trusted relationship families were able to begin to reflecting on their food values and relationships.

FUTURE RESEARCH

Many researchers have explored the domains of play, food, and the parent-child relationship. However, few have explored how these areas can influence and serve as inspiration for designing for family well-being. With the onset of COVID-19 we experienced abrupt and unexpected changes to our routines, relationships, and daily interactions. Through testing and ideation, I saw numerous opportunities for further exploration, not only with regards to the topic of eating with your hands, but also of how food can be used as a way to connect across households, cities, and even oceans. In my own experience this graduation project has increased the frequency I speak with my brother who lives in Australia. Food is a common interest we share and now we share weekly talks about food and non-food related topics, it has brought our relationship closer.

I urge future graduation students to explore how this connection can be shared and deepened with food. COVID-19 has in some ways made us more connected to those we love. What will happen when things inevitably go back to normal? Will we become consumed with our own lives again and stop making those weekly calls to our family? How can food be a facilitator to maintain these connections and relationships. During my testing one direction I explored was to have each family member choose an ingredient that they will all use in their meal. Then through video recording to share the final meal with one another. This increased creativity, relatedness, and initiated the idea of creating a family cook book. This resulted from one small test, but there are likely more interesting directions that could be explored within this topic.

Within the specific topic of my graduation, I believe there are many exciting avenues that can researched and designed. For example, how can this concept be translated into a consumer product? My design is more conceptual, but I believe there is value and a desire to create this kind of experience on a consumer level. Other research and design areas may involve exploring how eating can be enhanced by focusing on a mindful experience, and one that stimulates the senses in new and playful ways. Food is universal, it is something everyone needs to survive, and food can be a daily struggle for many families. Families provide many exciting and interesting opportunities for designers to explore, and designing for children allows us to invest energy into the future generation, which is extremely worthwhile.



PART FOUR

PROJECT EVALUATION





REFLECTING ON THE PROJECT

The last phase of this interesting yet challenging graduation project is to reflect on and evaluate the design process I pursued. This final chapters will offer a reflection of the personal and academic goals I achieve throughout this project, discuss what challenges and learnings I had, and offer some tips for future graduation students.

CHAPTER 16: DID I ACHIEVE ACADEMIC AND PERSONAL GOALS?

CHAPTER 17: TIPS FOR OTHER STUDENTS

16 ACADEMIC AND PERSONAL GOALS

16.1 DID I ACHIEVE ANY ACADEMIC GOALS?

I initiated this project so that I could explore how play can be used within the food domain to improve children's well-being. For me, designing for children, designing for play, and designing for well-being within the food domain were three areas I wanted to learn more about during the final months of my master's degree. Based on these criteria and motivations a few key academic goals have been achieved;

This project has expanded my knowledge and skills in design, specifically with regard to designing for children's play, designing for well-being, and designing for behaviour change. The knowledge I have produced will be valuable for future design projects as the topics are relevant and necessary for the world we live in today. Additionally, I became more empathic and open minded about the nuisances that exist in a parent-child relationship, and how societal expectations have created habits and ideologies that are quite difficult to challenge and change.

At the onset of this project I did not intend to use the Vision in Product Design approach, however, taking this first step in learning and applying the method, while not done perfectly by any means, is an achievement I am proud of. Applying ViP for the first time was an extremely challenging, frustrating, but overall a worthwhile decision. I do not think that I have ever felt so uncertain about any design related method in my whole career. However, this uncertainty and applying myself in a new and scary way has made me grow as a designer and embrace the uncertainties in our process. In hindsight, there are things I would have liked to have done better. For example, when looking at the ViP levels, I could have been broader with my images and metaphors. Such as including images of flying birds or open waters when discussing the concept of "freedom". I am excited to have more opportunities to apply ViP and become more skilled using this method, as it is a highly relevant and innovative tool when trying to solve wicked problems.

Another academic goal I achieved during this project was to maintain a link and coherency between the literature review, the qualitative testing, and the final design concept. In my previous design projects, there was not as much emphasis on ensuring that the literature informs the final design. With this project, I feel confident that the final concept aligns with and compliments previous literature and knowledge within the domains of food, play, and the parent-child relationship.

16.2 DID I ACHIEVE ANY PERSONAL GOALS?

Graduation has been a roller coaster and I must admit that the process I ended up taking was not what I had initially thought 82 days ago. However, during the creative facilitation elective one of the rules you learn is *that whatever happens is the only thing that could have happened*. I embarked on this graduation open-minded and ready to learn from the literature, my participants, peers, supervisors, and myself. Happi Hanily could have not ended any differently because I followed the research, feedback, and my own gut, all of which led me to what I presented in this graduation report. I struggle to accept uncertainties and imperfections in my work. This project has helped me to accept this side of myself and accept that sometimes you have to shoot your darlings in order to make progress.

Another personal goal I achieved was improving my communication skills, especially with regards to drawing and video making. I have always lacked confidence with my drawing skills, but I wanted to push myself to draw and communicate visually as much as possible. Although my people might sometimes look like aliens (at least according to my partner) I feel more confident now with my visual communication abilities. Similarly, I see such value and a need to be able to tell stories using videos. Wherever possible I have explored using Aftereffects and Premier Pro as a tool for this communication. Video editing and learning through doing are things I will continue to apply in the future.

Of all that has been achieved with this project, the thing I am most proud of is actually helping someone develop a healthier relationship with food. With all my design projects I always hope that it will impact at least one person's life. I am thrilled and humbled that this graduation process has helped my mom improve her relationship with food to the point where she "doesn't think broccoli are so bad".

17 TIPS FOR OTHER STUDENTS

FOLLOW YOUR OWN INSTINCT

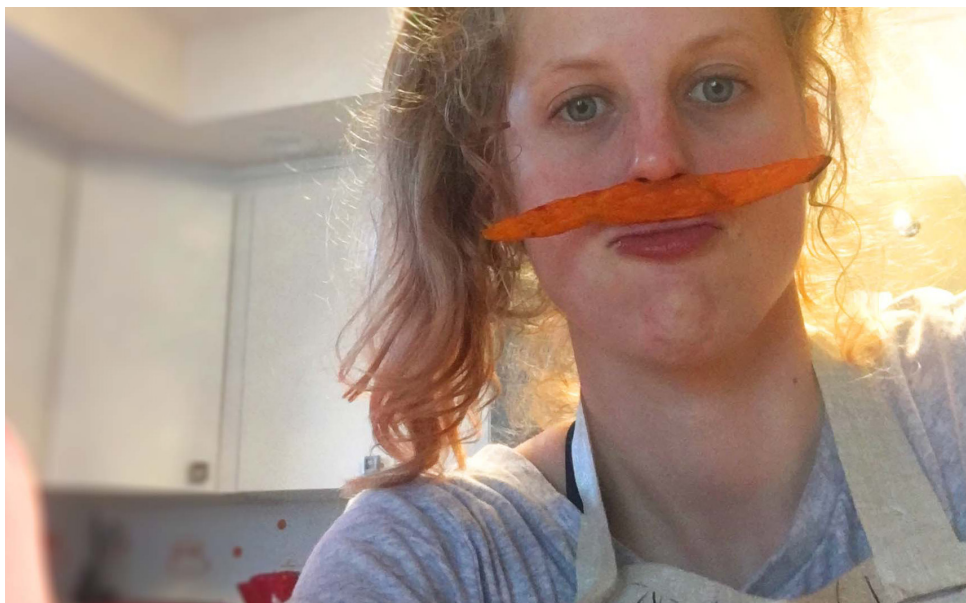
I found it challenging at times to follow my own intuition as a designer, and often got carried away with making the concept 'realistic', 'marketable', or 'acceptable' based on the standards of other people. These preconceived expectations meant that the design did not speak to my personal aesthetic or belief as a designer. It was not until after my greenlight that I took a step back and began to design the form and design from my heart and instinct. I am thankful to have a supervisory team that supported a more conceptual design approach. My recommendation to other students is that it is easy to be swept up in making something realistic that you end up losing your own design identity along the way. It might sound cliché, but the projects that express who you are are the ones that are most impressive.

BE FLEXIBLE

I guarantee that the planning you have made for your graduation will inevitably go out the window. Flexibility within your graduation project will keep the project moving forward in perhaps better and unexpected ways. I had to accept switching to ViP a month into my project, it was scary and I was not sure what to expect. In the end, I could not see my process going any other way. Stay open to unexpected twists and turns because being able to tackle them head-on might lead to something more impactful.

LET YOURSELF BE SURPRISED

This graduation project has had a greater influence on my own life than I would have anticipated. It has changed aspects of my relationship with my family and has made me reflect on my own food values. Many conversations, outcomes, and insights have surprised me over the last 100 days. My biggest recommendation is to not only embrace these surprising moments but to lean into them. Ask yourself why they are surprising and remain open to responses that might go against your design or thought process. Good luck!





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APPENDICES

The appendices that accompany this thesis can found in a separate documents. Below is an overview of the appendices content:

Appendix A: Design Brief

Appendix B: Context Mapping Materials

Appendix C: Results from interviews

Appendix D: Contextfactors

Appendix E: Context Cluster map

Appendix F: Design Interventions and Insights

Appendix G: Ideation Mindmaps

Appendix H: Recipe Narratives

Appendix I: Completed Participant Concept Questionnaires

Appendix J: Questionnaires from Ideation

**GIVE IT A TRY, TONIGHT EAT
WITH YOUR HANDS!**

