



HEALTHY HEROES:

PROMOTING HEALTHY BEHAVIOUR CHANGE FOR
WEIGHT RELATED BODY ISSUES IN CANADIAN FAMILIES



A THESIS PROJECT DOCUMENT
submitted in fulfillment of the degree of Master of Design

Jessica Baratta
Emily Carr University of Art + Design
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A hero can be anyone.
Even a man doing something as simple and reassuring
as putting a coat on a young boy's shoulders
to let him know the world hadn't ended.

Bruce Wayne, *The Dark Knight Rises*



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Abstract

The pursuit for an idealistic body permeates contemporary culture, with research drawing connections to body image dissatisfaction and its emergence in children as young as age 5 (Lowes & Tiggemann, 2003). This Master of Design thesis project focuses on the impact of the parent-child relationship and its importance in the healthy development of a child's self-image.

The scope of the work addresses Canadian parents with a child between the ages of 4-6, emphasizing the influence of their role in promoting positive body awareness during early childhood. This project considers how design may affect the knowledge, perspectives and behaviours of young Canadian families who are struggling with body dissatisfaction. A review of precedent literature triangulates the inquiry within the partnering fields of health and social sciences. Various participatory design methods were introduced in a human-centered approach, collaborating with parents to address the gaps in contemporary parenting resources.

A synthesis of primary and secondary research resulted in the designed outcome of "Healthy Heroes"; a behaviour change system that supports Canadian families in communicating and engaging in positive health behaviours. The system is made up of tools centered around the narrative of the Healthy Heroes superhero team; a set of four children who use their natural, intrinsic traits as superpowers within everyday life. The tools encourage healthy behaviours through shared parent-child experiences, providing children with the education and agency to develop lifelong resiliency skills in an entertaining way.



Keywords

Canadian families
Parent-child relationship
Early childhood
Body dissatisfaction
Body image
Weight

Healthy
Transformation Design
Behaviour change
Superheroes
Superpowers
Parasocial experience

Resilience
Co-creation
Cultural Probe
Affinity Diagramming



Introduction





1.1 THESIS STATEMENT

Direct design interventions may support Canadian families struggling with body image dissatisfaction by generating a deeper parental understanding and child involvement through a family-centred activity model.

1.2 PROJECT CONTEXT

In contemporary culture, it has been well established that there are “dangerous and unrealistic cultural ideals surrounding body image” (Freeman, Craig, King, Pickett, & Public Health Agency of Canada, 2016, p. 136). Body image can be defined as:

...how you see yourself when you look in the mirror or when you picture yourself in your mind. It encompasses what you believe about your own appearance (including your memories, assumptions, and generalizations), how you feel about your body (including your height, shape, and weight), and how you sense and control your body as you move.

(“What is Body Image? | National Eating Disorders Association [NEDA],” 2016)

A 2012 Government of Canada mental health report discusses the cultural pursuit for idealistic traits, particularly slimness in females and muscularity in males (as cited in Abbott, Lee et al. 2010; Duncan, Duncan et al. 2011). These ideals are often connected to body dissatisfaction— an individual's expression of negative feelings towards their body (Hart, Damiano, Chittleborough, Paxton, & Jorm, 2014). Feelings often surface as shame or depression, and have been shown to have links to poor health outcomes including: emotional eating, disordered eating, and a range in mental health problems (Hart et al., 2014). Discourse surrounding this problem space is commonly intertwined with the ambiguous definition of beauty, the influence of media communication and its effects on adolescent development (particularly in young women).

A review of precedent literature has identified that childhood studies investigating body dissatisfaction yield comparable findings to those of older samples (Kostanski, Fisher, & Gullone, 2004, p. 1317). Studies have reported that children as young as five have restricted their eating, had dissatisfaction with their own body weight, and were aware of their peers' own body dissatisfaction (Lowes & Tiggemann, 2003; Dohnt & Tiggemann, 2005). These results cross both genders, even though body dissatisfaction is normatively attributed to females in contemporary culture (Hart et al., 2014, p.). Many national organizations and individuals (ie. Dove,

Common Sense Media, National Eating Disorders Association, Dr. Nancy Etcoff) are presently considering this problem space, with projects drawing attention to family relationships. Their strategies are plentiful; evoking conversation and presenting information through a range of media. Although this topic often has a negative association with media stereotypes, a recent report emphasizes that “body image dissatisfaction is learned from many sources, of which media is only one” (Common Sense Media, 2015, p. 6).

This same report has indicated that an individual’s sense of body image begins to develop in early childhood, “alongside the growth of their physical, cognitive, and social abilities” (as cited in Slaughter & Brownell, 2013, p. 15). It is during this time that a child begins to correlate a healthy body image to healthy living, “making positive choices that enhance [their] personal, physical, mental and spiritual health” (Government of Canada, 2013). These decisions are imperative for building resilience, or the ability to overcome life’s obstacles and hardships, both physically and mentally. (Centre on the Developing Child, 2016). The Centre on the Developing Child at Harvard University has noted that children who do well in hardship have a “biological resistance to adversity and strong relationships with the important adults in their family and community” (2016). The value of parent-child relationships is also expressed by HealthLink BC, stating “parents have the greatest influence on a child’s belief about himself or herself” (2016).

In 2009, the Public Health Agency of Canada generated a report that identified environments which may have a significant affect on a child’s development (Butler-Jones, p. 31). The report stated that: “the origin of influences [on an individual’s physical and social development] is in the home or family environment, with the broader social and school environments playing an increasing role as a child grows” (Butler-Jones & Public Health Agency of Canada, 2009, p.31). As preschool-age children spend the majority of their time with their parents in this environment, this space has a direct influence on long-term health.

Naturally, a parent’s personal attitude towards body image becomes relevant within this problem space. Leading psychologists Jacinta Lowes and Marika Tiggemann have distinguished that a “parent’s personal knowledge, beliefs and behaviours surrounding weight and shape may be transmitted

both indirectly through parental modeling, and directly through specific instruction and verbal comments” (2003, p. 136-137). These comments may place focus on weight, shape, their child’s eating behaviours, and encouragement in altering eating habits. For younger children who are not in control of food choices, “direct comments or instructions may be given regarding their eating behaviour” (Lowes and Tiggemann, 2003, p. 137). To counterbalance these findings, a recent Delphi study (a study where information is provided by a panel of experts) underlines that for parents “to be good role models, [they] need to examine their own attitudes and beliefs about body image, weight and shape and how these may influence their child” (Hart et al., 2014, p. 5). Parallels can be drawn to the results of a study conducted by Lowes and Tiggemann, where child participants were able to indicate their parent’s body dissatisfactions and the dieting solutions that they were pursuing (2003, p. 138). Ultimately, this project focuses on the impact of the parent-child relationship and its importance in the healthy development of a child’s self-image.

The scope of this project extends beyond the fields of health and social sciences. It investigates how design may affect the knowledge, perspectives and behaviours of young Canadian families who are struggling with body dissatisfaction. The transformation design practice thrives in analyzing complex problems and collaboration with experts to create desirable, user-centered changes (Burns, Cottam, Vanstone, Winhall, 2006). The partnership between the social sciences, health sciences and design is beneficial for developing interdisciplinary visual strategies, rather than solely communicating information.



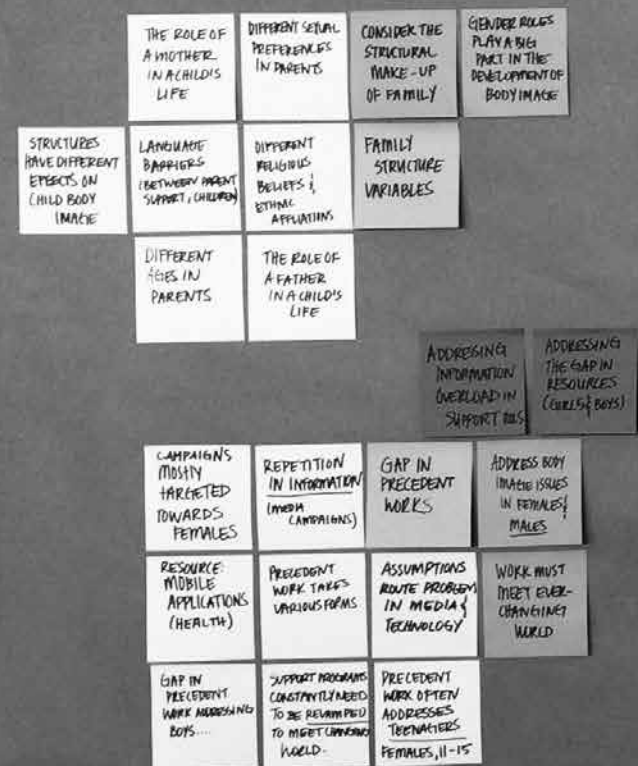
1.2.1 Research Questions

To gather a deeper understanding of the user, primary and secondary research collection seeks to answer the following questions.

- 1 What type of tools do parents need to assist them in the healthy development of their children's body image?
- 2 How can design be flexible in supporting various family compositions?

Within this phase, it would also be beneficial to assess:

- If parents are conscious of how their words and actions affect their children;
- Where parents are currently seeking support in parenting their children;
- If there are any activities that parents are consciously promoting or in engaging with their children that support a healthy body image;
- Precedent work that addresses children of both genders.
- How design may educate parents about this issue without criticizing their methods;



PARENTS' AWARENESS OF THEIR MANNERISMS IN THE RELATIONSHIP	LIMITATIONS OF DIFFERENT HOME ENVIRONMENTS	CHILDREN DEVELOP RESILIENCE WHEN THEY HAVE SUPPORTIVE/ NURTURING ADULTS IN THEIR LIVES	CHILDREN'S MANNERISMS REFLECT THOSE OF PARENTS	PARENT'S ROLE HAS THE LARGEST INFLUENCE
ENFORCING THE IMPORTANCE OF THIS RELATIONSHIP TO PARENTS	PARENT-CHILD DIALECTIC	PARENTS' ROLE IS INFLUENTIAL	THE HOME ENVIRONMENT DICTATES A CHILD'S EMOTIONAL DISPOSITION	VISUAL EXPOSURE: WHAT A CHILD SEES/ HEARS

UNREALISTIC IDEALS OF BODY IMAGE	NEGATIVE BODY IMAGE IS STARTING YOUNGER AND YOUNGER...	UNREALISTIC IDEALS OF BODY IMAGE
CREATING A UNIVERSAL DEFINITION OF HEALTHY	EVERYONE'S VIEW OF BODY IS DIFFERENT	70% OF MENTAL HEALTH CHALLENGES HAVE ONSET IN CHILDHOOD / YOUTH
WORKING WITH/ CHANGING MEDIA PERCEPTIONS	NEGATIVE BODY IMAGE CAUSES LONG-TERM EFFECTS	EVERYONE'S VIEW OF "HEALTHY" IS DIFFERENT
MENTAL HEALTH PROBLEMS IN CHILDHOOD ↓ GREATER CHANCE OF SUBSTANCE IN ADULTS	SELF ESTEEM IS CONNECTED TO BODY IMAGE	EXTERNAL FACTORS (OUTSIDE OF THE HOME) ALSO AFFECT BODY IMAGE

WORKING WITH/ CHANGING MEDIA PERCEPTIONS OF "HEALTHY"

EDUCATING PARENTS WITHOUT CRITICISM

ADAPTABLE TOOLS THAT ENGAGE ALL PARENTS (UNIV. OF C. 3-8)

HUMANIZE SUPPORT TOOLS	SUPPORT TOOLS THAT ARE UNIVERSAL (i.e. language / access)	
PARENT SUPPORT	CONDENSING INFORMATION SO IT IS NOT OVERWHELMING	
SUPPORT METHOD: DOCTOR	RESOURCE: PARENTING MAGAZINES	RESOURCE: WEB APPLICATIONS
SUPPORT METHOD: PARENTS IN CLASS	MANY SOURCES OF INFORMATION (PARENTING) (..... DAWNTING)	PARENTS OFTEN FIND MUTUAL SUPPORT IN OTHER PARENTS
PARENTS FIND SUPPORT IN DIFFERENT WAYS	SUPPORT PROGRAMS BY TARGET SPECIFIC GROUPS	TOOLS OF SUPPORT ARE IN DIFFERENT LANGUAGES
SUPPORT METHOD: FAMILY/FRIEND (OTHER PARENT)	LEARNING NEVER STOPS (IN PARENTING)	SUPPORT METHOD: TEACHERS

	SOME BODY IMAGE FACTORS ARE OUTSIDE OF PARENT CONTROL	
PARENTING FOCUS	PARENTS HAVE DIFFERENT PRIORITIES IN CHILD DEVELOPMENT	SPEED OF LIFE DEVELOPS HABITS IN PARENTING
RESILIENCY SKILLS ARE IMPLEMENTED IN EARLY CHILDHOOD DEVELOPMENT	DIFFERENT METHODS OF PARENTING	
PARENTS CAN NOT CONTROL ALL FACTORS ON BODY IMAGE	CONSCIOUS VS. UNCONSCIOUS PARENTING	
AGE 3-8: CHILD IDENTIFIES HEALTHY LIVING (HealthLink BC)	SPEED OF LIFE IS EXHAUSTING. PARENTS HAVE NO TIME	
NON-SEXIST CHILDREARING: A PARENTING MODEL?	HEALTHY HABITS FORMED IN EARLY CHILDHOOD DEVELOPMENT	

AFTER CHILD'S BIRTH, MOTHERS CAN SUPPORT LONG-TERM BODY IMAGE ISSUES	A PARENT'S VIEW OF THEIR BODY IMAGE IS INFLUENTIAL (IN CHILD)	PARENT'S VIEW OF SELF
PARENT'S VIEW OF THEIR BODY IS IMPORTANT	BEHAVIOR THEORY COGNITIVE → emotions → thoughts	PARENTS ALSO STRUGGLE WITH CONFIDENCE / BODY IMAGE
PARENTS ARE NOT ALWAYS CONFIDENT	RELATIONSHIP WITH SELF AFFECTS SOCIAL RELATIONSHIPS	PARENT'S VIEW OF SELF BODY IMAGE IS DIRECTLY INFLUENTIAL





1.3 PROJECT RATIONALE

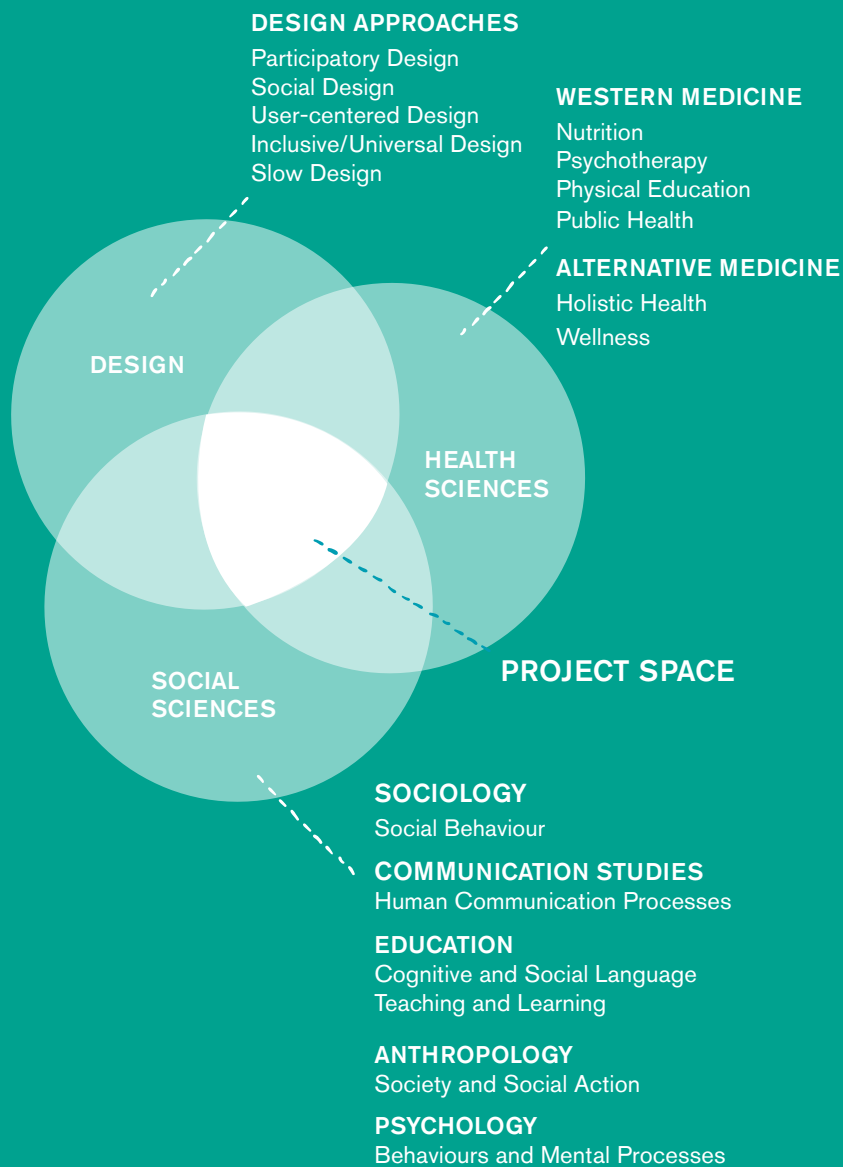
The pursuit for an idealistic body permeates contemporary culture, with research findings drawing connections to body dissatisfaction. Many researchers and national organizations are presently working in resolving this complex problem, with strategies ranging across various forms.

With a positive approach to the problem space, this project addresses Canadian parents (with a child between the ages of 4-6), emphasizing the importance of their role in promoting positive body awareness during their child's development. These skills may help in generating knowledge and an understanding of dealing with quintessential body type pressures; ultimately supporting in greater long-term Canadian mental health.

The relevance for this investigation is grounded in a comprehensive literature review, which is summarized by the following key findings:

- 1 Body image dissatisfaction starts at age 5, and has been connected to long-term mental health issues;
- 2 The linguistic and behavioural actions of a parent impact the healthy development of a child's self-image;
- 3 A gap is present in contemporary body dissatisfaction resources, with most focusing upon the adolescent demographic (predominantly females).

Secondary Research



2.1 THEORETICAL BASE

In order to undertake this investigation, it was necessary to construct a theoretical base to fully understand the body image landscape. This base was often referred to throughout the course of the project, providing validity for design decisions, and utilizing the predictive nature of established theories.

The subsequent sections explore the partnering fields of the investigation (social sciences, health sciences and design) in further detail; creating a framework of relevant theories and foundational ideas.

2.1.1 Social Sciences

Dr. Nancy Etcoff, an evolutionary psychologist, tells us that no ideal beauty of the human form exists, it exists only in our imaginations (Etcoff, 1999). The social complexities associated with beauty satisfaction are ingrained within history; philosophers tried to encapsulate its meanings, poets craft the emotions it arouses, and marketers utilize it as a transformation platform for commodification.

Etcoff's publication, *Survival of the Prettiest: The Science of Beauty* outlines a comprehensive inquiry into beauty, encompassing her diverse professional experience at Harvard Medical School, Massachusetts General Hospital and as an active member of Dove's Global Advisory Board. This body of work introduces the notion of beauty from a high-level overview, arguing upon its position within philosophy, physical form, expectations, pleasures, alteration, and current media. Etcoff rigorously presents the origins of beauty as a learned behaviour, noting the popular wisdom and acculturation of parental behaviours (Etcoff, 1999). She connects perspectives of well-respected cognitive scientists Lakoff and Scherr, "beauty is not instantly and instinctively recognizable; we must be trained from childhood to make those discriminations" (1999, p. 31). This position is also highly embodied in the work of psychotherapist, psychoanalyst and co-originator of the Dove real beauty project, Dr. Susie Orbach. Orbach's publication, *Bodies*, identifies how the "particular gestures and movements of a parent or a sibling form a visual/neural template within. This explains why children's mannerisms so often reflect those of their parents" (Orbach, 2009, p. 43).

These learning perspectives are in agreement with Dr. Albert Bandura's Social Cognitive Theory, which emphasizes how a child's experiences influence their development. The theory focuses on an individual's learning process, illuminating that when people "observe a model performing a behavior and the consequences of that behavior, they remember the

sequence of events and use this information to guide subsequent behaviors" (Bandura, 2002, p. 126). The meaning of Social Cognitive is twofold, referring to:

- 1 The social experience of observing behaviour (with the addition of reinforcement and punishment contributing to an important source of information about the world);
- 2 The cognitive effort of a child in understanding their world, with experiences providing a sense of self-efficacy.

(Bandura, 2000)

The development of self-efficacy is of vital importance as it strengthens one's belief in their own ability to complete tasks and reach goals (Omrod, 2006). Bandura's theory has greatly influenced academia, with much of his work embedded into the field of psychology, and referenced in health communication messaging models. The value in his expertise is woven throughout the project, highlighting the impact of observed behaviours within the parent-child relationship, and how this role affects a child's behaviour and cognitive perspective of their world.

To gain further perspectives in cognitive development, Jean Piaget's Developmental Theory discusses how a child's cognitive processes change over time. Piaget, a historically influential figure in the study of child development, suggests that children's thought processes become more informed as they develop; "reflecting the more sophisticated theories that children create" (Kail and Barnfield, 2007, p. 16). His theory identifies four fundamental cognitive stages of development: Sensorimotor (birth to 2 years), Preoperational (2-6 years), Concrete operational (7-11 years), formal operational (Adolescent and beyond). For the interests of this project, the focus here lies within the Preoperational stage. Within this timeframe, a child interiorizes "how to use symbols such as words and numbers to represent aspects of the world, but relates to the world only through his or her perspective" (Kail and Barnfield, 2007, p. 16). The key feature of this stage is egocentrism, with the additional emphasis on play, symbolic representation, animism, artificialism, and irreversibility (McLeod, 2015). As Piaget's perspective is specifically concerned with children, his theory is valuable in understanding the qualitative differences within development.

2.1.2 Health Sciences

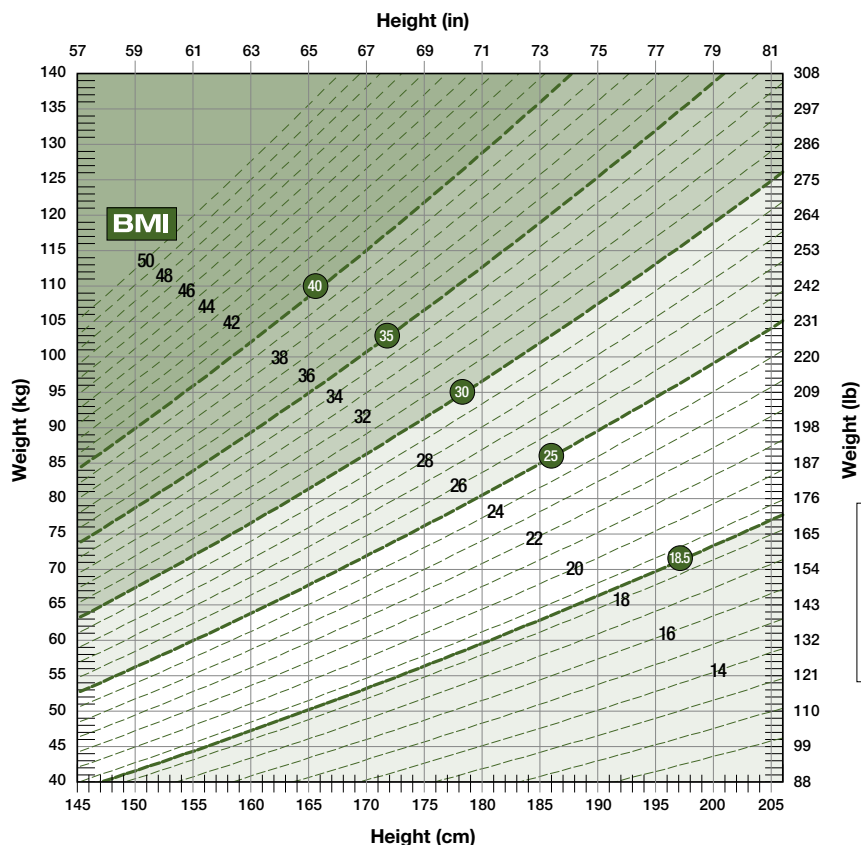
As the scope of this project focuses on the public health of Canadians, it was imperative to assess the current resources available to the public by Health Canada. The role of this federal department is to assist Canadians in maintaining and improving their health by conducting high-quality scientific research, providing ongoing consultations, communicating disease prevention and encouraging active participation in one's own healthcare (Health Canada, 2014). Health Canada annually updates their Canadian Guidelines for Body Weight Classification in Adults, a body weight classification system that is used to measure and "identify health risks associated with body weight in individuals and in populations" (Health Canada, 2015). This system has been aligned with the World Health Organization recommendations and is used specifically for adults age eighteen and over. The classification system utilizes two forms of measurement to analyze health risks: the body mass index and the waist circumference (Health Canada, 2015).

To foster an individual's understanding of a 'healthy' food intake, Health Canada established the Canada's Food Guide resource. This resource provides children, teenagers and adults with guidelines for food groups and recommended number of servings; encompassing the nutrients that are needed for good health (Dieticians of Canada, 2016). The Guide has been divided into four food groups:

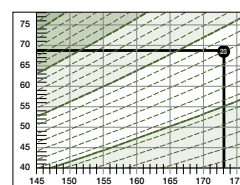
- 1 Vegetables and Fruits
- 2 Whole Grains
- 3 Milk and Alternatives
- 4 Meats and Alternatives

(Health Canada, 2015)

According to the educator's version of the Food Guide, a child between the ages of 2-5 can "get all of the essential nutrients and calories they need for healthy growth and development by following the eating patterns" (Health Canada, 2015). This guideline served as a crucial resource throughout the course of the project, translating the science of nutrition into simple eating behaviours.



For a quick determination of BMI (kg/m^2), use a straight-edge to help locate the point on the chart where height (in or cm) and weight (lb or kg) intersect. **Read the number on the dashed line closest to this point.** For example, an individual who weighs 69 kg and is 173 cm tall has a BMI of approximately 23.



Refer to the table below to identify the level of health risk associated with a particular BMI.

BMI Formula

BMI can also be calculated using this formula

$$\text{BMI} = \frac{\text{weight in kilograms}}{(\text{height in metres})^2}$$

Note: 1 inch = 2.54 centimetres and 1 pound = 0.45 kilograms

BMI	Risk of developing health problems
< 18.5	Increased
18.5 – 24.9	Least
25.0 – 29.9	Increased
30.0 – 34.9	High
35.0 – 39.9	Very high
≥ 40.0	Extremely high

Note: For persons 65 years and older the 'normal' range may begin slightly above BMI 18.5 and extend into the 'overweight' range.

Adapted from: WHO (2000) Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation on Obesity.

Waist Circumference (WC)

- WC is an indicator of health risk associated with excess abdominal fat.

To determine WC, the measurer should stand beside the individual. WC is measured at the part of the torso located midway between the lowest rib and the iliac crest (top of pelvic bone). The tape should fit without compressing any underlying soft tissues.

WC Cut-off Points	Risk of developing health problems*
Men ≥ 102 cm (40 in.)	Increased
Women ≥ 88 cm (35 in.)	

*Risk for type 2 diabetes, coronary heart disease, hypertension.

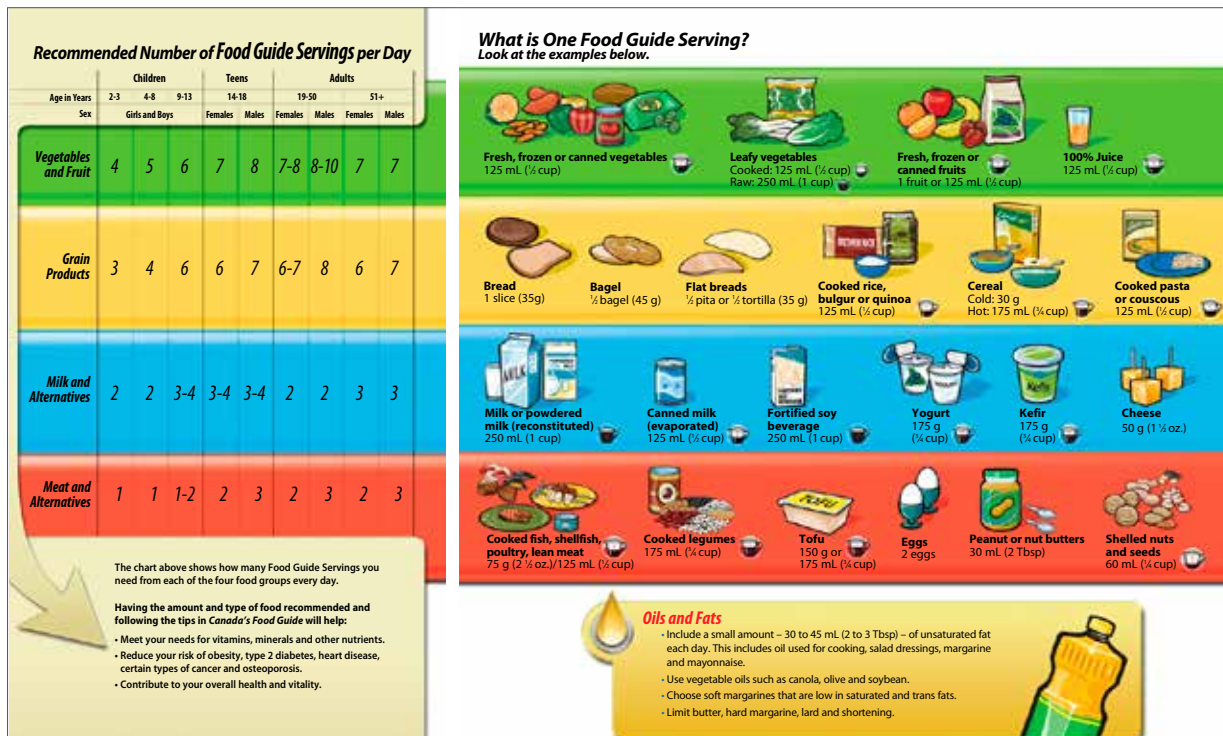
Adapted from: WHO (2000) Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation on Obesity.

Health risk classification using both BMI and WC

- WC measurement can be used for individuals with a BMI in the 18.5–34.9 range. For BMIs ≥ 35.0, WC measurement does not provide additional information regarding level of risk.

		BMI		
		NORMAL	OVERWEIGHT	OBESE Class 1
WC	< 102 cm (Males) < 88 cm (Females)	Least Risk	Increased Risk	High Risk
	≥ 102 cm (Males) ≥ 88 cm (Females)	Increased Risk	High Risk	Very High Risk

Adapted from: National Institutes of Health (1998) Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.



EATING WELL WITH CANADA'S FOOD GUIDE, HEALTH CANADA The reproduction is a copy of the versions available at:
<http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>.

2.1.3 Design

The boundaries of design have shifted in the 21st century to accommodate for emerging areas of practice. In 2006, the RED Design Council formally introduced transformation design; a discipline that challenges complex social and economic problems by placing the user at the centre, allowing for designers and experts to collaborate in creating a desirable and sustainable change (Burns, Cottam, Vanstone, Winhall, 2006). Transformation design focuses on applying design thinking in non-traditional categories, asking a designer to “shape behaviour of people, systems, organizations as well as form” (Burns, Cottam, Vanstone, Winhall, 2006). This project undertakes the combinative process of transformation design, and intertwines relevant persuasion theories to create desirable, lasting changes.

Behaviour Scientist, Dr. BJ Fogg, has stated that for designers to effectively change behaviours “[they] need a rich, yet practical understanding of human psychology, specifically insights into the factors that drive human behavior” (2009, p.1) His well-respected *Fogg Behaviour Model* (FBM), simplifies

the behaviour change process, asserting that:

..for an person to perform a target behaviour they must

- 1 Be sufficiently motivated;
- 2 Have the ability to perform the behavior; and
- 3 Be triggered to perform the behavior.

These three factors must occur at the same moment, or else the behavior will not happen.

(Fogg, 2009, p.1)

This framework is advantageous for designers as it may inspire new persuasive techniques for users, identify barriers within the research and design process, and develop further understanding of how elements systematically trigger behaviour (Fogg, 2009). The FBM has been used by behaviour change professionals in multiple fields, proving its adaptability for reaching successfully intended outcomes.

To place a spotlight on the health care field, the work of Dr. Martin Fishbein and Dr. Marco C. Yzer, highlights extensive research into creating

successful health communication messages. Their *Integrative Model of Behavioural Prediction* combines aspects of three social theories: Health Belief Model (Janz & Becker, 1984; Rosenstock, 1974), Social Cognitive Theory (Bandura, 1997), Theory of Reasoned Action (Azen & Fisbein, 1980).

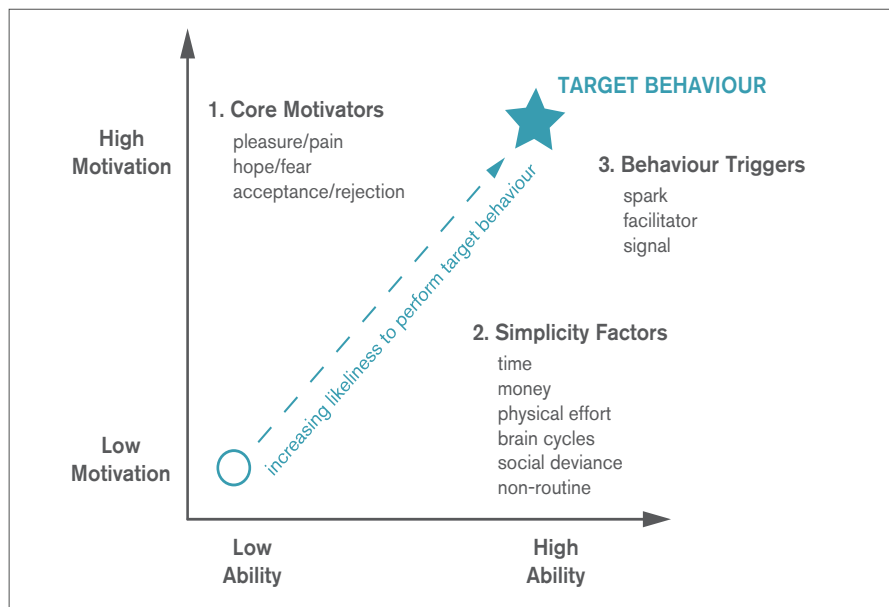
The application of three elements is required for a successful behaviour change to occur:

any given behavior is most likely to occur if one has a strong intention to perform the behavior,

if a person has the necessary skills and abilities required to perform the behavior, and if there are no environmental constraints preventing behavioral performance.

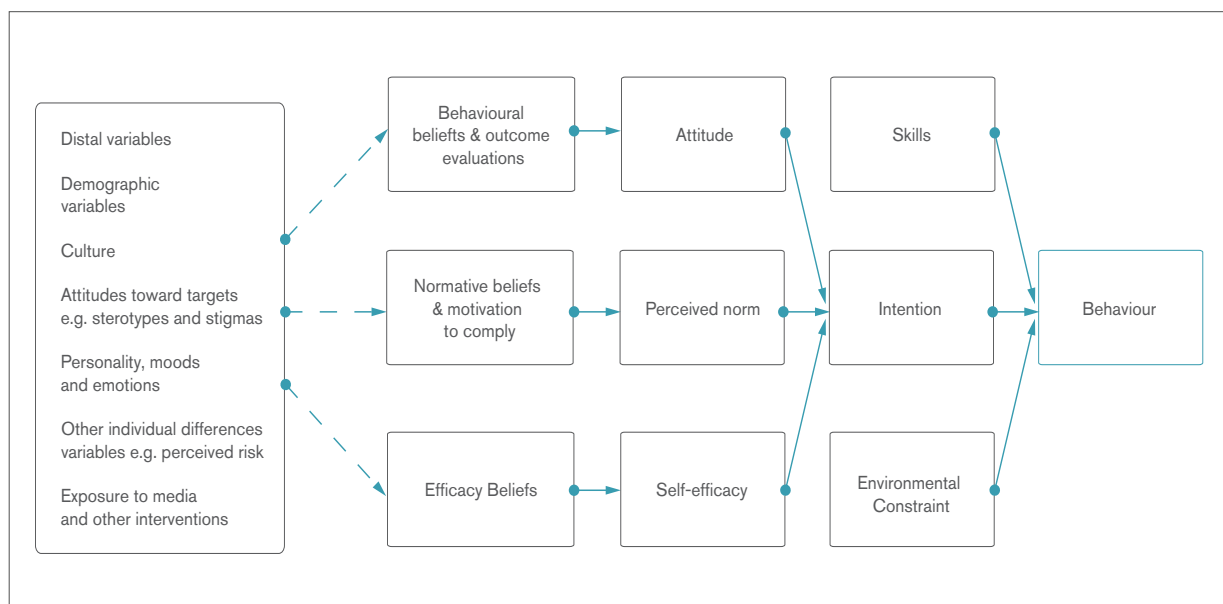
(Fishbein and Yzer, 2003, p. 166)

Showing many similarities to the FBM, this model differentiates by recognizing how environmental factors may affect an intended behaviour performance.



FOGG BEHAVIOUR MODEL

A visual representation of the three factors in the Fogg Behaviour Model: motivation, ability and triggers.



INTEGRATIVE MODEL OF BEHAVIOURAL PREDICTION

A visual representation of Fishbein and Yzer's theory.

Primary Research

After conducting secondary research, various gaps were identified within existing parenting resources and precedent works. These knowledge gaps necessitated primary human-centered research to gather a deeper understanding of the user (the parent), and various perspectives from experts in surrounding fields.

3.1 METHODOLOGY OVERVIEW

The research framework of this project utilized a multiple methods design approach, using various methods and analysis techniques to collect primary and secondary data. The benefit in this approach is that it encompasses a wide variety of methodologies, allowing for flexibility throughout the research process.

3.1.1 Research Materials

The primary research phase of the project engaged in three design research methods: co-creation, cultural probes and semi-structured interviews.

Co-creation

Co-creation is a design research method that enables people who will be served by a designed outcome to participate in generating solutions. The primary purpose of utilizing this methodology was to acquire a greater understanding from parents on how they engage with their children around the development of body image. Co-creation discussions circled around the daily interactions between parents and their children, seeking insight into:

- 1 Activities that the families enjoyed engaging in together;
- 2 Understanding the developmental traits that are of value to parents in their child's development;
- 3 How these traits were implanted into daily interactions with their child.

Cultural Probe

A cultural probe is a research method that helps to understand the experience of others. Probes allow participants to record events, feelings or interactions through such means as diaries or photographs. The purpose of utilizing this research tool was to gather a deeper understanding of parent-child relationships over an extended period of time. The probe (See Appendix A) was deployed to parent participants for one week, gathering insights into:



- 1 The amount of time that parents spent with their child on a daily basis, and what activities they engaged in together;
- 2 Any shared experiences with their child that may have involved body image, and how they reacted to the situation (ie. When I was reading a book with my child, my child made a comment about the main character's body image. This led to a conversation about...).

At the end of probe deployment, parents were able to share their experiences over the week, reflecting upon how they felt and identifying designed outcomes that would be of value for them to have in the future.

Semi-structured interviews with experts

The purpose of utilizing this research method was to acquire multiple perspectives of the research topic from experts in health, education and nutrition. Dialogues with ten experts assisted in understanding participants' perspectives, established the potential barriers of the project, and illuminated potential design opportunities.

This semi-structured approach allowed for management of the interview process, guiding participants through questions (see section 6.a) of the problem. The interviews were conducted over the phone and face-to-face, with each lasting for approximately one hour.

3.1.2 Participant Selection

As an overarching goal of this project was to be inclusive by nature, it was important to gather a diverse spectrum of primary research participants. Research insights would benefit from:

- 1 Parent participants that reflected a range in age, gender, family structure, socio-economic status and lifestyles;
- 2 Interview participants that varied in professional and academic experience.

The final research participants reflected a breadth of perspectives towards the problem space. Parent participants encompassed both genders and ranged between the ages of 28-48. Each participant had 1-2 children within the project demographic, which created an equal balance between boys and girls. The expert interviewees had a multitude of professional experience, practicing in a variety of health settings.

Prior to conducting research, it was necessary to obtain a participant's voluntary approval. The documentation for this project received Full Research Ethics Approval from the Emily Carr University Research Ethics Board (May 6, 2015, ECU-REB #2015022507). From an ethical standpoint, this documentation explained the intentions of the research and an understanding that the activities were low risk; comparable to experiences one may encounter in everyday life.

Interviewees

JANICE MORGANTE

Executive Director of the York Region's Riverwalk Eating Disorder and Wellness Centre

SARVIE RIAHI

Clinical Social Worker

AMY KHEONG

Clinical Counsellor

SAMANTHA SARRACINI

Certified Teacher, experience working with children ages 3-14

CHRISTOPHER STERIOVSKI

Certified Teacher, experience working with children ages 3 -11 with a placement completed in special education

MARIELLA PELUSO

Certified Teacher, recently retired with experience working with children ages 3-8

KRISTINA CHESTER

Registered Dietitian at Fortinos (National Food Chain)

3.2 FINDINGS

The following subsections reveal the key insights from primary research collection and how this information was brought forward into the brainstorming process.

3.2.1 Experts

Interviews with nine experts provided valuable opportunities to gather multiple perspectives on the research topic. These dialogues allowed for a much richer understanding of the problem space.

As detailed in section 1.3, an evident gap was identified in body image resources for the project's demographic (children ages 4–6). This lack in resources was affirmed by Janice Morgante, the Executive Director of the York Region's Riverwalk Eating Disorder and Wellness Centre. In an interview with Morgante, she acknowledged that a designed tool would be helpful for promoting healthy body behaviours in young families. The interview circled around the development of a coaching tool for parents that would support them in promoting a healthy body image. This educational platform could have the potential to assist in all levels of body image issues. In addition, it could potentially open a dialogue about preventing severe cases of body dissatisfaction, if it were accessible throughout local systems.

As body dissatisfaction is approached differently among varying disciplines, it was beneficial to understand how it is discussed within a healthcare setting. The expertise of one General Practitioner focused on dialogue that is utilized in discussing the topic of body image with her patients. She approaches the topic by placing emphasis on the words 'healthy body mass' versus 'image'. With over twenty years of experience, she has found that children may have difficulty in understanding the concept of an 'image' because it can be confused as what people are portraying, and not what they look like. This approach differs when speaking to parents about their children, as body image is discussed apart from the child at a separate appointment. She also confirmed that many parents within this project demographic would not naturally bring their child in with body issue concerns. It is in her belief that a designed outcome would be most beneficial if its intention was twofold: informing the parent that their child may be struggling with their body image, and seeking to alleviate body dissatisfaction within the child themselves.

Two interviews with mental health professionals affirmed a parent's direct role in their child's emotional development and well-being. The conversations included discussion of body dissatisfaction and its association with underlying emotions (ie. shame, low self-esteem, perfectionism, gender identity issues). Clinical Social Worker, Sarvi Riahi, highlighted her experiences in utilizing Emotion-Focused Family Therapy with parents. This approach is used to assist families in mastering their emotional identification skills. The therapy emphasizes that by identifying negative emotions, parents may be able to help their children recognize and validate their feelings through self-soothing techniques. She notes that many parents naturally want to assist their child with reassurance, but the validation process is often more effective (ie. sitting with the child, giving them a hug or letting them know you are there for them). Amy Kheong, a Clinical Counsellor, had a similar position towards body dissatisfaction, suggesting that parents focus on not being direct or confrontational, using a "reading between the lines" approach. It is important to note that after conducting these two interviews the project demographic was changed to target children between the ages of 4–6. This change was made on behalf of concerns by Riahi, recognizing that the original demographic (originally 5–8) could be a potential barrier within the project. She felt that the designed outcome should be cognizant of social attachment theories, regarding that children develop foundational understandings earlier than age five (as the ethics application detailed).

As a child between the ages of 4-6 spends a large part of their day learning within the classroom, it was vital to gather a deeper understanding of this environment from primary school educators. Interviews with three teachers provided valuable approaches to communicating with children and their parents, and methods on how to deal with complex issues such as body image. From our dialogues, all three of the teachers generally approached body image dissatisfaction on a case-by-case basis, highlighting that each situation is unique to the student's age/family structure/severity of the issue. Certified Teachers, Samantha Sarracini and Christopher Steriovski, recognized storytelling as a wonderful approach to reinforce positive body messages, without drawing attention to one particular student. Mariella Peluso, a retired Certified Teacher, also promoted the value of role-

play; which allows children to remove the problem from personal context and brainstorm solutions. Towards the end of the interview, Steriovski brought forth an insightful piece of information from his professional training as a teacher. He revealed that he was instructed to not use the term "boys and girls," as children within this age demographic may not have identified as a particular gender yet. This was an important insight to be aware of when conceptualizing, as it recognized the significance of this developmental period in a child's life.

Within this developmental period, children are also learning about their bodies needs and developing their internal hunger radars. Interviews with two Registered Dietitians distinguished the importance of hunger indication and its influence from family eating patterns. Each dietitian explained how a parent must focus on role-modeling a balance of mostly healthy behaviours (ie. meal planning, creating a grocery list, cooking together), as children will naturally observe and shadow their parents behaviours. Kristina Chester described that a parent must be persistent in creating food environments that are approachable for children, allowing them to continually develop their radar in a non-judgemental space (ie. removing labels such as "picky-eater"). The second Dietitian had a similar point of view, noting that there is often a disconnect when parents take on the identity of "the food police" (ie. monitoring or becoming suspicious of children's actions towards food and meals). By working with children creatively, she also provided tactics that parents could use to target negative health behaviours (ie. using a non-obvious word such as bird to represent a negative health habit). These strategies may help to navigate nutritional patterns amongst various family structures, and also emphasize the importance of making healthy changes to an entire household.

3.2.2 Parents

Cultural Probe

The cultural probe was a vital tool for understanding the weekly experience of the user (parents). When first analyzing the qualitative results of the probes, it appeared that the parents did not have many shared experiences with their child that involved body image. After closer analysis, it was evident that of the shared experiences that were tracked over the one week period, the majority were in the final days of the parents' participation with the tool. These intimate experiences spoke of scenarios

Please describe the experience and how you responded . Feel free to reflect upon as many as you want.	
7:00	
8:00	
9:00	woke up + got dressed → is wearing shorts
10:00	went to Wonderland but wants to pretend it is a skirt.
11:00	went on rides &
12:00	went to waterpark.
1:00	↳ asked why some
2:00	people were wearing
3:00	their clothes in the
4:00	water. I told her
5:00	that they may have
6:00	forgotten their
7:00	bathing suit at home.
8:00	

CULTURAL PROBE SAMPLE A representation of the research booklet that parents were asked to fill out on a daily basis.

that occurred within the home environment, with most parents noting that they engaged their child in conversations to resolve issues. There also seemed to be no apparent links between comments and behaviours from the children throughout the course of the week. The results within the Feedback section illuminated that the optimal route in hosting information was on a web platform, with many of the parents actively searching for resources on a weekly basis.

Follow-up discussions with the parents identified that many found it quite enjoyable to track and reflect upon activities that they did with their child.

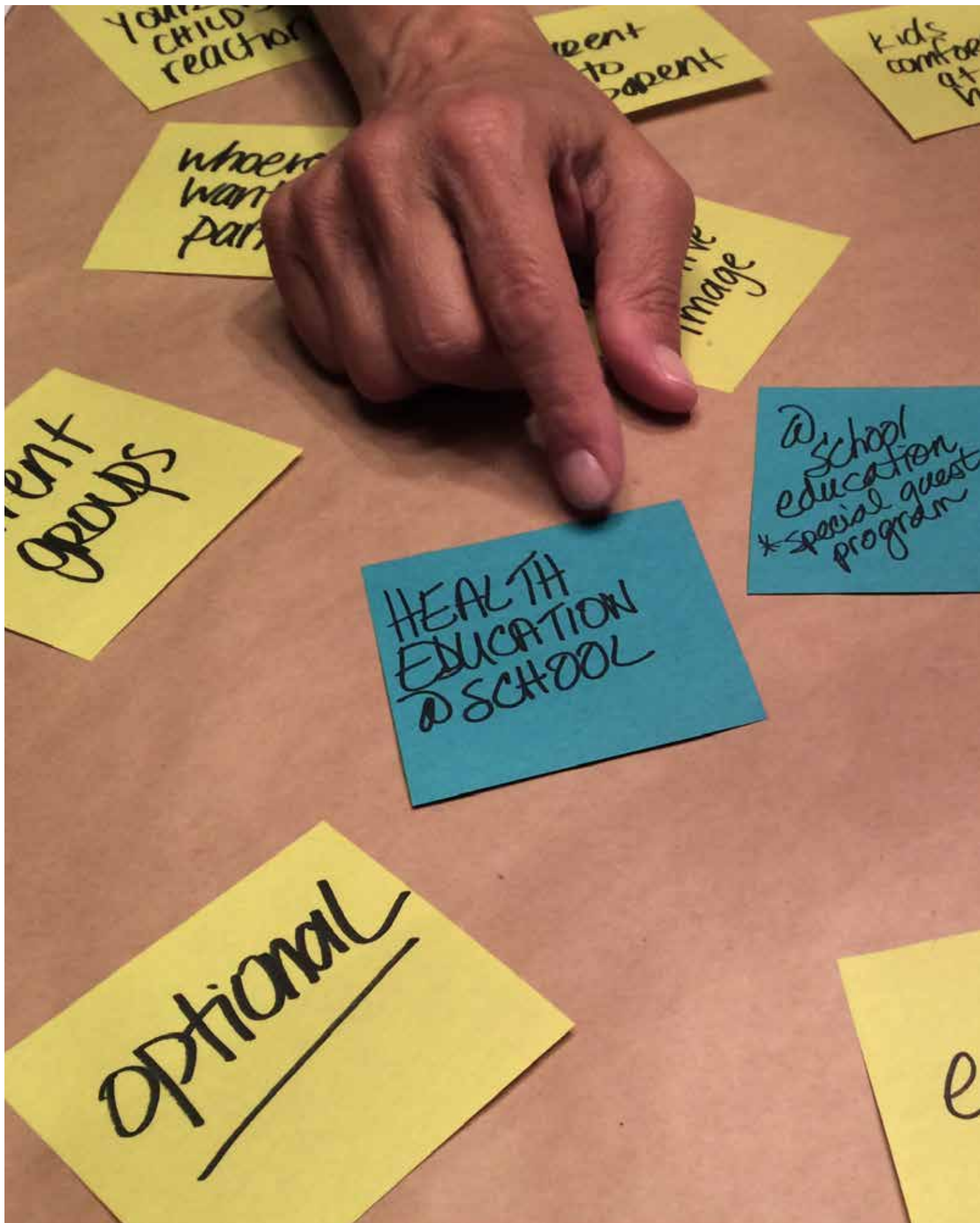
Some of the participants also thought that it may be beneficial to note experiences for more than a week of time. This is due to the fact that many were unconscious of these behaviours until the final days of probe deployment. As one participant explained, "it's one of those things that once you become aware of it, you begin to notice it everywhere" (Probe participant, 2015).

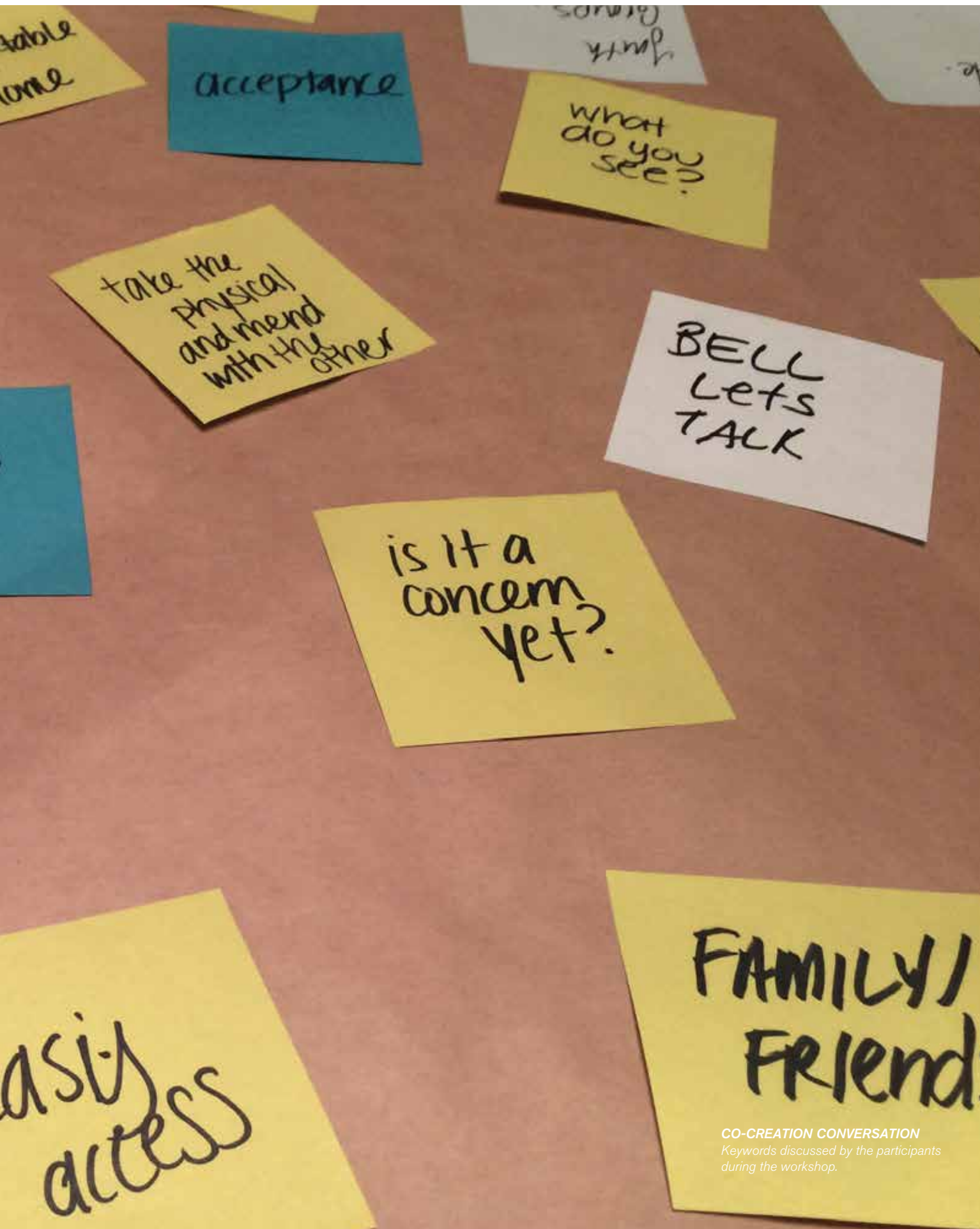
Ultimately, these insights were very valuable and might help to inform other research methods within future studies.



CO-CREATION ACTIVITY #1

An image-based activity, seeking to understand which pastimes that the families enjoy engaging in together.





CO-CREATION CONVERSATION
Keywords discussed by the participants
during the workshop.

Co-creation

The co-creation session was a valuable research experience in communicating and gathering perspectives directly from the user (parents). Throughout the session, the parents made several comments that the concerns about body are primarily geared towards the teenage years, with very little focus placed on a younger demographic. This confirmed the gap identified within my research proposal, that no materials focus on body image for younger children, at a time when they are forming a sense of self.

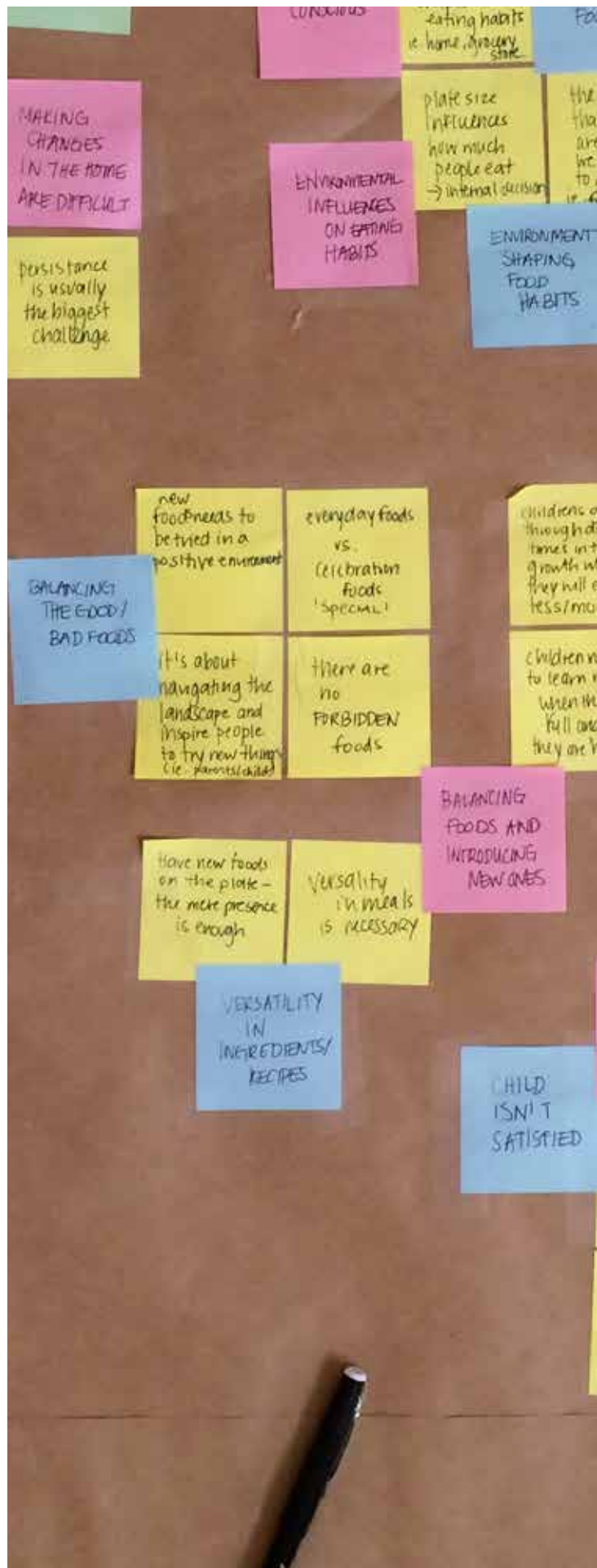
Parents also discussed how they would handle the issue if it became present within their own families. They noted that they would immediately speak with their child about any negative body behaviours and provide messages of positive reinforcement. From there, they would seek advice from a family member or trusted friend if the issue was ongoing. In conjunction, they would read and access literature from internet resources, with two of the parents highlighting that they find this space “daunting and incredibly overloaded” (Co-creation participant, 2015). One of the parents also suggested visiting the family’s Pediatrician or General Practitioner with their child, as this is a knowledgeable resource that is free of charge. The parents agreed that they would only visit an expert if the case was severe, as these resources have an associated cost.

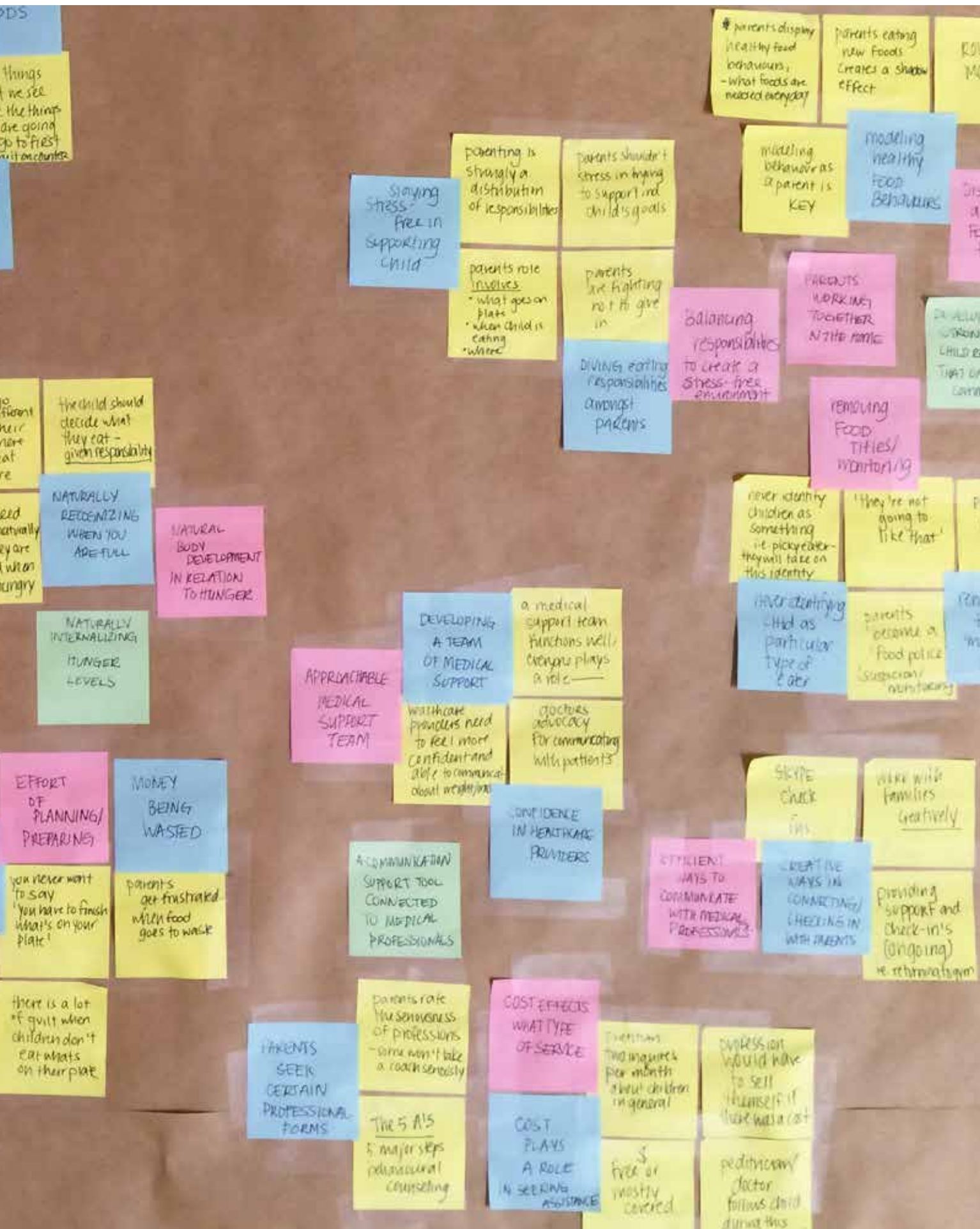
Working with parents in this session directly reaffirmed much of what was discovered during the primary and secondary research phases. Many of the parent's were unaware of how their words and behaviours may be affecting the long-term healthy development of their child. Ultimately, the parents felt that support for this issue would be helpful if presented to them in natural ways (ie. through the educational system/doctors office). All of the parents emphasized that now that they were aware of the issue, they would be more conscious of their own behaviours in front of their child, and be on the lookout for any signs of body dissatisfaction.

3.3 MAKING CONNECTIONS

After collecting primary and secondary research, an affinity diagramming technique was used to cluster the qualitative information into key research insights. These insights were paired into common-interest groupings, which further translated into workable personas.

AFFINITY DIAGRAMMING, PRIMARY RESEARCH Qualitative information clusters formed from the primary research insights.






PERSONA 1

SERENA

Deeply committed user



Age 36

Marital Status Divorced

Children Ryan (5)

Occupation Consultant

Education Bachelor of Communication Studies

BACKGROUND

Serena a 32-year-old single parent, is mother to 5-year-old Ryan. She has a Bachelor of Communication Studies and presently works as a Consultant for a Canadian wholesale distribution company. The company specializes in sourcing products for new parents and children from birth to 5 years. Her mother passed away when she was 12, which has emotionally affected her own development and her much-needed support as a parent.

Ryan's father, Sean, is actively involved in his life and spends equal amount of time with both throughout the week. Ryan participates in multiple sports, which Sean coaches once a week. Throughout the year, Serena brings Ryan to multiple sporting events including: hockey, baseball, soccer, football. Both Serena and Sean maintain a healthy relationship about Ryan's development, consistently communicating each day.

Serena has always struggled with her height (being on a bit on the shorter side) but works hard at the gym 2-3 times a week (when she does not have Ryan) to maintain a healthy weight. In her spare time, she enjoys going to the movies with friends, reading or going for a run. Since her divorce, she has moved in with a friend (the suburbs outside of the city). Her friend is considered overweight, and has very different views on staying healthy. She consistently worries about Ryan's development and actively seeks information about body image and confidence.

She would primarily engage with the platform to learn ways to prevent negative body image in Ryan's long-term development, and seek advice from experts/other parents. Internally, she would also process this information to assist with her own body image.

SCENARIOS

While eating dinner with Ryan, he mentions that he was playing basketball at school in gym class that day. He makes a comment that he 'can't run as fast because he is not as skinny as some of the other kids'. Serena immediately gets a sinking feeling in her stomach, she never wants Ryan to have low self-esteem, or feel unsure of his abilities.

Emotions: nervous, worried, helpless


Serena is feeling very tired after a busy day at the office, and a heated conversation with the man she has been dating. In the morning, she had planned to go to the gym after work (as Ryan was spending the night with his father). However, after getting out of work, she is debating whether or not she really wants to workout. Her thoughts bounce between feeling guilty (especially after having McDonalds the night before), and trying to convince herself that she had a long day.

Emotions: overwhelmed, exhausted, guilty

PERSONA 2

GRACE

Frequent user



Age 45

Marital status Married to Mark (21 years)

Children Cristina (7), Annie (11), Olivia (3)

Occupation Stay-at-home parent

Education Brokers License

BACKGROUND

Grace, wife to Mark and 45-year-old stay-at-home mother to three, presently live in an apartment in the downtown core of a major Canadian city. A few years earlier, Grace and Mark were not expecting another child, but a surprise brought them Olivia. After living in the suburbs for many years, the family embraced these new changes, and moved in closer proximity to the boat near the waterfront. With Cristina moving away for college and Olivia beginning kindergarten, this move felt appropriate and gave the family more changes to sail together.

Prior to giving birth to Olivia, Grace was a part-time real estate agent. As Mark works as a Site Supervisor on commercial properties (early shifts and long hours), Grace is primarily responsible for getting the children ready for school each day and the day-to-day housework. She is a very much a social person, being active on many of the school's committees. Although she comes from a family who loves to cook, she does not personally enjoy it and most dinners are frozen foods warmed up. Grace reasons that it is difficult to create meals that the whole family enjoys, and often tells her children that they are 'picky' eaters. (ie. Olivia will not eat any vegetables.) In her spare time, Grace enjoys to read, go for walks and watching movies with her girls.

She would primarily consult the platform to learn more about healthy meal ideas, ways to educate children about balancing food groups and activities that the family could participate in together.

SCENARIOS

On a Tuesday night, Grace picks up the girls after school, and heads home to prepare dinner. As they had fish the night before, Grace decides to warm up a shepherd's pie. Olivia has been giving her a hard time lately (by not eating any vegetables), but the meat and potatoes hide the vegetables quite well. When sitting down at the table, Olivia immediately comments about the peas under the meat, and refuses to eat. Grace and Mark try reasoning with Olivia, and even threaten to send her to her room without dinner. Annie eats the food without question, as Olivia continues to cry, yelling that she is 'so hungry'. After about twenty minutes, Grace begins to feel really upset and heads to the cupboard to pull out the nutella (Olivia's favourite food). She instantly feels disappointed in herself, and internally calls herself "a horrible mother."

Emotions: disappointed, frustrated, overwhelmed

The family is heading out to the boat on Saturday for a fun-filled day in the Sunday. Most days they dock around lunch, and stop at a restaurant on the pier. Mark was hoping to travel a bit further and spend the entire day at sea. He asks her if she could pack some food for breakfast and lunch. Grace instantly begins to brainstorm, but feels a bit lost.

Emotions: unsure, intimidated, worried

3.3.1 Persona Development

The four personas represent a diverse range in parent profiles, which have been inspired from the research insights.

Although the construction of these personas allowed for a deeper understanding of a parent's cognitive thoughts, it was difficult to personify a

range of family characteristics. Throughout this process, it was recognized that parents share similar thoughts and emotions, which became a suitable method to disseminate information in the designed outcome.

PERSONA 3

MARY

Frequent/Casual User



Age 38

Marital Status Married to John

Children Paul (7), Samantha (5)

Occupation New Business Consultant

Education College Certificate

BACKGROUND

Mary, 38-year-old wife to John, and mother to Paul and Samantha live in the suburbs, just north of a major Canadian city. She has a certificate in Business Administration, and presently works as a consultant for a local property management company. Her husband John also works in close proximity to home, as a sales consultant for printing company.

The weeks fly by quite quickly in the family, between work, school, dance, and hockey practise. Mary loves to cook, and eagerly spends mornings before work and weekends prepping wholesome meals for the family. She also likes to indulge in sweet treats, and is quite the baker. In her spare time, she enjoys visiting new restaurants, reading cookbooks and watching television with her family.

From a medical perspective, both Mary and her children are considered overweight. John has made comments about her body recently, and has suggested that she strive to be more active. Mary personally struggles with her body image, but also feels that she doesn't have the time to do make any serious changes. Her own dissatisfaction has recently been magnified and mirrored in her daughter Francesca. She has noticed her daughter make several negative comments about her own body, and avoid certain clothes. In addition, Samantha has also asked to shop at specific stores, one's that have become 'popular' at school.

Mary would primarily consult the platform to learn about ways to create a more balanced lifestyle, and behaviours/activities that both her and John could model to inspire positive body images in their family.

SCENARIOS

After a busy Saturday morning at the dance studio and the rink, John and Mary are back at home enjoying some sandwiches with the kids. The family has the afternoon free and it is a beautiful day outside. Mary feels exhausted after a long week, and asks the family if they want to stay in and watch a movie/bake some cookies. The kids seem okay with that, but John feels they should go outside and enjoy the weather.

Emotions: tired, pressured, embarrassed

Mary is helping Samantha pick what to wear for school, making suggestions for a few different outfits. With every outfit that she picks, Samantha finds a reason not to select it. The last suggestion Mary makes includes a white t-shirt, in which Francesca responds saying it makes 'her stomach look big'. Samantha then asks if they can go shop at Urban Behaviour on the weekend; a store that has become 'popular' at school. Mary feels really uncomfortable and feels that store is not appropriate for Samantha's age.

Emotions: uncomfortable, concerned, fear

PERSONA 3

KEITH

Casual user



Age 38

Marital status Married to Connie (11 years)

Children Steven (6), Lily (3)

Occupation Senior Technical Advisor, City Transit System

Education College Diploma

BACKGROUND

Keith is a 38-year-old father to Lily and Steven, and husband to Connie, living midtown in a major Canadian city. After graduating with a diploma in mechanical engineering technology, he was very excited to work as an engineer for the city's transit system. Keith was recently promoted to Senior Technical Advisor, where shifts range anywhere from day to late night. This adjustment has been challenging for the family, and each week Keith and Connie (a primary school teacher) find new ways to balance the family schedule. In the little spare time he has, Keith enjoys watching a variety of sports, and plays baseball once a week in a men's league.

With this lifestyle change, Keith is exhausted most nights and the amount of time he is able to spend with his family is very limited. Recently, he has begun to notice that his son Steven has been spending quite a bit of time on his iPad. When at home, he has asked Steven if he would like to engage in outdoor physical activities (ie. throw the ball around, go for a walk, or to the park), but Steven shows little to no interest. Innately, Keith has become worried and does not know what to do.

He would primarily consult the platform to gather ideas about how to engage with Steven about his body image, and activities that they could participate in together.

SCENARIOS

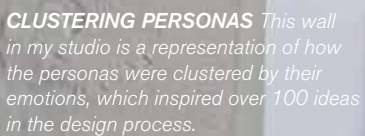
Keith worked a mid-shift today, and was excited to head home at a reasonable hour. The kids would just be finishing up dinner, and he was excited to spend time with both Connie and them. He had worked night shifts for the past two nights, and had hardly seen them over the past few days. After arriving home, he eats briefly with Connie, and then sits down to talk with Steven (who is entranced with his iPad). Keith asks if he wants to throw a ball around, or play a game. Steven only seems interested if the game is digital, which disappoints Kevin.

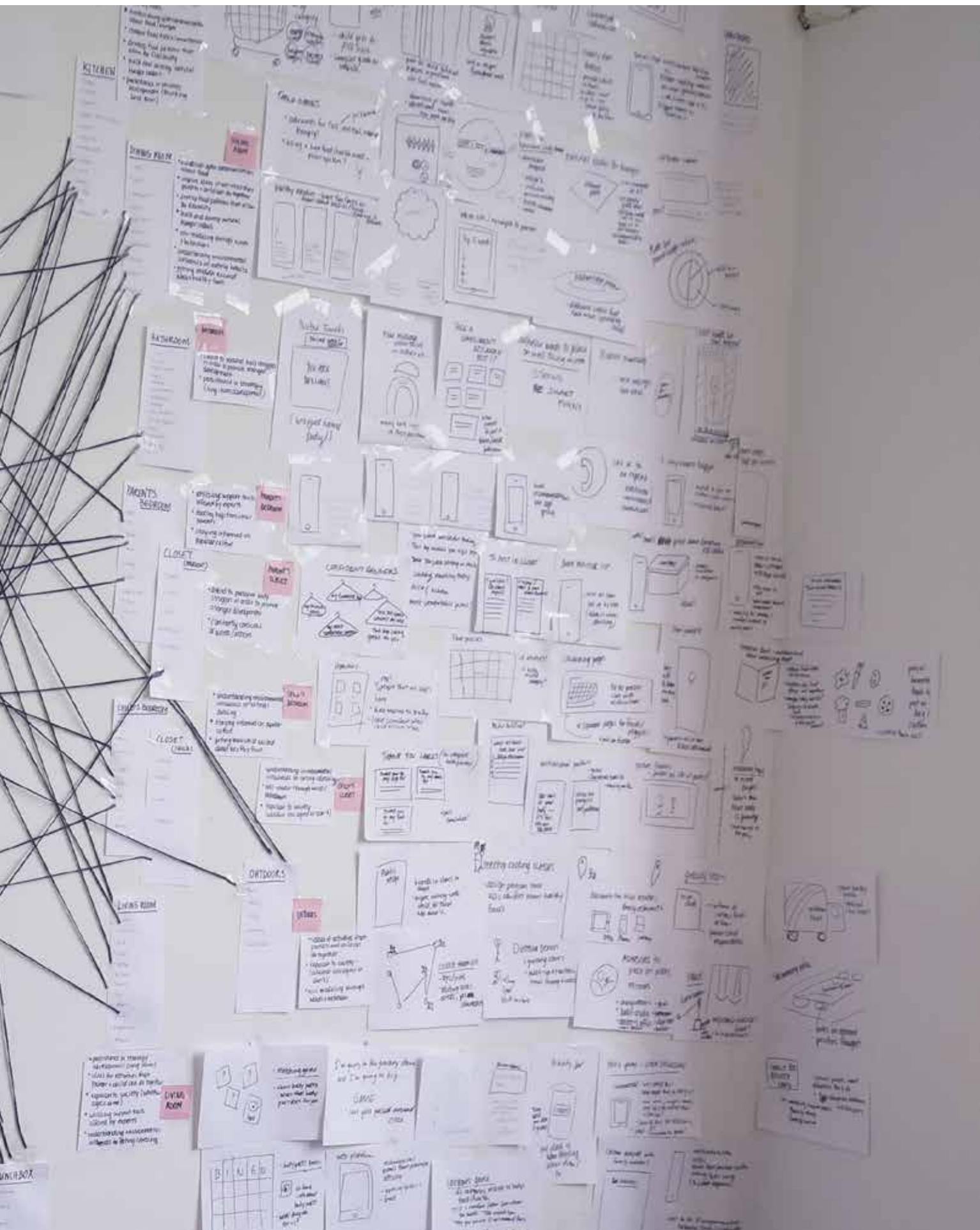
Emotions: disappointed, worried

Every Sunday evening, Keith plays in a men's baseball league at the park near home. It's a great group of guys, many who have children around Steven's age. The games are generally pretty late, but this Sunday the game is at 6pm. Keith is really excited that Steven can watch him play, and hopes that he will enjoy himself. Prior to leaving the house, he notices that Steven grabs his iPad.

Emotions: concerned, unhappy

PERSONAS Developed stories to represent a deeply committed user, frequent/casual users, and a casual user.





Design Outcomes

The transformation design process involves synthesizing multiple perspectives and generating ideas on how collected data could be implemented into a real life context. The synthesis of this project led to the designed outcome of The Healthy Heroes system; a system of tools that promotes a healthy lifestyle for Canadian families in an entertaining way. The system encourages healthy behaviours through shared parent-child experiences, providing children with the education and agency to develop lifelong resiliency skills.

4.1 BUILDING SUPERHEROES

Within the idea generation phase of the project, came the possibility of 'building superheroes', or bridging people's real-life natural powers into those of superheroes. This conceptualization space focused upon the parasocial experience an individual has when interacting with a superhero, and created a narrative context to deliver the key research insights to Canadian families.

To develop this narrative, it was important to recognize the fundamental food nutrients that bodies ultimately need to sustain a healthful existence. These nutrients (and their associated benefits) were previously identified as the food group categories in Canada's Food Guide:

- 1 Fruits and vegetables: Help reduce the risk of cardiovascular disease and some types of cancer;
- 2 Meat and alternatives: Benefit cardiovascular health;
- 3 Whole Grains: Help people feel full and satisfied; and
- 4 Milk and alternatives: Develop strong bones.

(Health Canada, 2015)

The four groups were associated to simplified word elements: protection (fruits and vegetables), strength (meat and alternatives), energy (whole grains) and balance (milk and alternatives). When combined with activity, this commixture formed the beginnings of a conceptualization space for this project. Looking past the notion of sustenance, these terms were a simple way to understand the innate power that can be attributed to a balanced lifestyle. Further, as depicted in the research insights, this power could lead to a higher level of self-esteem and a positive self-image within long-term development.

A key word to accentuate within the last paragraph is *power*. The word itself means “a natural skill or ability to do something” (Cambridge Academic Content Dictionary, 2016). Throughout the course of this project, the word *power* has been frequently pondered over, and even more so over the attachment of the word *super*. Superpowers, often associated with superheroes, have made an indelible mark on popular culture. A formal definition has been difficult to uncover, with superpowers often exemplifying a superior human ability. These abilities range substantially, from exaggerated human traits to fantastical complexities adapted from external sources.

Popular culture is also fond of those superheroes that lack superhuman abilities, such as: Batman, Iron Man, and Anna (Disney’s *Frozen*). Each of these characters exemplifies natural, intrinsic traits that surface when called upon by the hero or the needs of others. Their origin stories speak of lives that are filled with an abundance of positive and negative moments, allowing audiences to connect with the raw emotions that they feel. It is important here to recognize the discourse surrounding the superhero genre, and its possible unfavorable effect on gender-related factors (Rosenberg, 2013). Author and Clinical Psychologist, Dr. Robin Rosenberg recognizes these exaggerated ideals: “women in superhero stories generally conform to what is called the curvaceously thin female body ideal, and male superheroes are portrayed with the ideal V-shape (broad, muscular chest and shoulder with a trim waist) that is so prevalent in mainstream media... these are exaggerated versions of the ideal male and female bodies that are not found in many other media” (Rosenberg, 2013, p.87). To counterbalance this, she also emphasizes the need for developing media literacy skills (Rosenberg, 2013). In spite of this debate, the parent participants in the primary research phase of this project showed strong acceptance of the superhero concept; as discussed in further detail in section 5.3.2.

4.2 EVERY SUPERHERO HAS A STORY

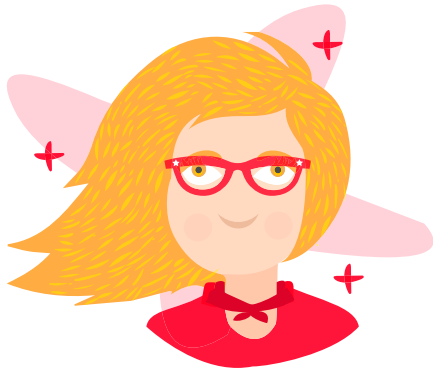
Every superhero team has a compelling back-story, revealing the origin of their superpowers, and how they became the people that they are. These stories are usually emotionally driven, creating a parasocial experience for the audience through effective communication practices. The positive benefits of these relationships have been linked to identity formation, and desires to emulate the character in

which the individual identifies with (Giles, 2002; Cohen, 1999). Dr. Rosenberg (who specializes in eating disorders, depression and anxiety) has recognized superheroes as a promising character in producing these positive self-feelings (2013). She writes that these emotions are likely to occur when:

..audiences find superheroes to be inspiring figures with whom they can relate and emulate. The heroic nature of male and female superheroes and fan’s connections to these characters may inspire confidence in one own’s ability to help others and persevere in life.
(Rosenberg, 2013, p.)

The potential longevity surrounding this narrative approach sparked the creation of the *Healthy Heroes*; a team of four children who use their natural body strengths as superpowers within everyday life. As mentioned in section 4.1, this team originated out of the fundamental elements our body needs to sustain a healthful existence: protection, strength, energy, and balance. The names of the heroes similarly hold the first letter of each of these elements (ie. Peighton for protection, Sarah for strength, Eli for energy, Brandon for balance), which parallel associated meanings to the research insights. In addition, the final hero names, Peighton, Sarah, Eli and Brandon, were selected based on their popularity and representational range within the target demographic. In keeping with traditional storytelling elements, the plot is focused upon the Healthy Heroes quest in finding a fifth (and healthy!) member to join their team. This fifth hero refers to the child that has been identified (by a parent, family member, teacher or health professional) as an individual that may be struggling with weight related body issues.

As this project considers two very different demographics (parents and their children), the benefits of storytelling in design may provide a favorable approach in disseminating research insights. IDEO, an award-winning global design firm, has promoted the benefits of this format, identifying that “research shows the human brain is better at retaining and recalling information and concepts when they are presented in a story format” (2015). The Healthy Heroes system utilizes this format as a process and method to highlight the research insights to each demographic. For the parent, the process of sharing the Healthy Heroes story may educate and inspire healthy changes within their parenting role. As a method, the story



PEIGHTON

Peighton (PROTECTION) is one of the most considerate and honest people you will ever meet. She loves colourful clothes and often mixes different outfits. When shopping at the mall, Peighton used to feel down if the popular trends did not always fit her. She grew to realize that by expressing her creativity in her choices, she was able to conquer the sad feelings. Peighton's favourite red glasses strengthen these powers everyday, and often inspire others to find their own!



SARAH

Sarah (STRENGTH) is extremely tough, and has incredible mind strength. She is a very tall girl, which used to make her feel very shy when talking to others and left her with few friends. One day, Sarah built up her courage and asked to join her classmates during playtime. To her surprise, everyone was extremely nice! Sarah knew that when she put her superstrength to anything in the future, she would be able to persevere.



ELI

Eli (ENERGY) loves to learn and is very determined in everything he does. When trying to play basketball for the first time, he felt really nervous and did not think he could keep up with the rest of the team. Although he was not the fastest, he enjoyed the challenge of trying something new. From then on, he used his shape-shifting energy to improve his body's abilities with every new adventure.



BRADLEY

Bradley (BALANCE) is a very optimistic person, even with his busy schedule! Between playing with his brothers, attending tennis practises or doing homework, Bradley enjoys every moment. He is hyper sensitive to how his body feels, knowing when it needs its energy and rest. Being a very generous person, Bradley uses this power to not only keep his body at its best, but to help others feel more balanced with their own.



is a driver for positive body satisfaction, advocating healthy behaviour changes to a struggling child in a friendly and entertaining way.

In addition, the key insights from the 'traditional sciences' (health and social) have been consciously woven into the Healthy Heroes story. The system is cognizant of a child's preoperational thinking (*Piaget's theory*) and how this stage sets the foundational roots for understanding and applying logical strategies in real experiences (Kail and Barnfield, 2007, p. 192). It also consolidates theory from Fishbein and Yzer's *Integrative Model for Behaviour Change*, placing importance on an individual's intention in changing their behaviour within a particular environment (2003).

4.3 THE HEALTHY HEROES SYSTEM

Healthy Heroes is a behaviour change system that supports Canadian families in communicating and engaging in positive health behaviours. Delivered through the context of the parent-child relationship, the system is made up of tools centered around the

narrative of the *Healthy Heroes* superhero team; a set of four children who use their natural, intrinsic traits as superpowers within everyday life. These educational tools promote the foundational impact of a parent's role in their child's development, emphasizing the importance of role-modeling positive health messages and behaviours in early childhood.

Primarily created for use in the home environment, *Healthy Heroes* provides families with entertaining ways to build resilience; developing lifelong skills that have may result in leading healthier lives.

The system is comprised of three types of support tools. The first is a guidebook that explains a parent's role in facilitating the system within their family. The second is the physical tools for a family to use within their home environment; these tools are associated with traditional rooms in a house, providing the flexibility to adapt to all families. The third is an online tool for the parent to seek support through knowledge transfer from health experts and other parents.





PARENT GUIDEBOOK An interior spread depicting the Routine Power Plan tool.

4.3.1 Parenting Guidebook

The parenting guidebook introduces the Healthy Heroes team to a parent, identifying their role in facilitating the system tools within their home environment. Designed to simulate a comic book, the guidebook presents the physical tools in a fun way, guiding parents through the optimal methods for use with their family.

The messaging of this tool is non-prescriptive, providing parents with supportive approaches rather than direct commands. Following the introduction, each spread of the guidebook introduces a physical tool, placing emphasis on the research insights and psychological principles at work. It also discusses the short and long term health benefits that the tool may have on their child's development.

4.3.2 Physical Tools for the Family




The physical tools introduce activities that families can primarily engage in within their home environment. Each of the tools is associated with traditional rooms of the house (ie. kitchen, dining room, living room, child's bedroom, bathroom, closet), allowing for flexibility when considering adaptability to various family homes.

The tool activities are interwoven with educational messages and behaviour change techniques, providing families with entertaining ways to engage in positive health behaviours. The following explains the purpose of each tool, the room of the house they are associated with, and their value in a child's healthy development.

Tool:	Healthful Labels
Location:	Kitchen
Purpose:	The Healthful Labels allow families to simplify the food intake process and label foods by 'always', 'sometimes' or 'once in a while' categorization. The labels have been created in various sizes, allowing families to place them on shelves, foods or a child's lunch box.
Value:	This tool promotes a simple measure for balancing food intake and the development of a natural, stomach 'radar'. This radar may be a valuable method for parents to explain proper food balance to their family, and allow their child to understand the role of particular foods within their healthy development.

Tool:	Healthful Grocery List
Location:	Kitchen
Purpose:	Working in conjunction with the labels, the Healthful Grocery List tool engages families in creating their weekly shopping list together. The activity involves the planning of a well balanced grocery cart, meeting the 'always', 'sometimes' and 'once in a while' categorization. A laminated list provides families with the space to write,



 <p>ALWAYS</p>	
 <p>SOMETIMES</p>	
 <p>ONCE IN A WHILE</p>	



HEALTHFUL GROCERY BAGS A representation of the three sizes of grocery bags, corresponding with the 'Always', 'Sometimes', 'Once in a While' categorization.

draw, and erase words, allowing for modification with each visit to the grocery store.

Value: This tool re-iterates the importance of balancing daily food intake, providing children with responsibility in family meal planning. This agency may inspire excitement towards the cooking process or trying new foods.

Tool: Healthful Grocery Bags

Location: Kitchen

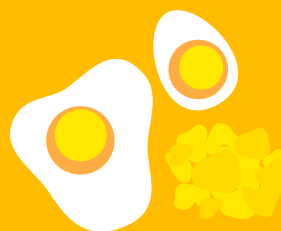
Purpose: As an additive to the first tools, the Healthful Grocery Bags physically engage children in selecting and carrying foods within the grocery store. The bags have been created in three different sizes, quantifying their values within 'always', 'sometimes', 'once in a while' categorization.

Value: Through these responsibilities, children may become more conscious of the food balancing process, and enjoy the challenge of selecting foods for the whole family. In addition, the bags may also open discussions about new foods, and their associated benefits.



Carrots help us to see better at night.

Yay for night vision!



Sunny side, hardboiled or over easy,
eggs comes in all shapes and sizes
and are friendly with all foods.

*They are your perfect partner
in building a strong body.*



The red in apples
keeps your heart healthy.

What other foods do
you think do this?

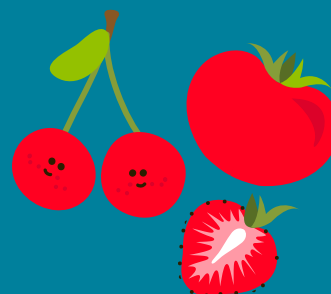


TABLE TALK NAPKINS A visual representation and samples of conversation starters.

Tool: Table Talk Napkins

Location: Dining Room

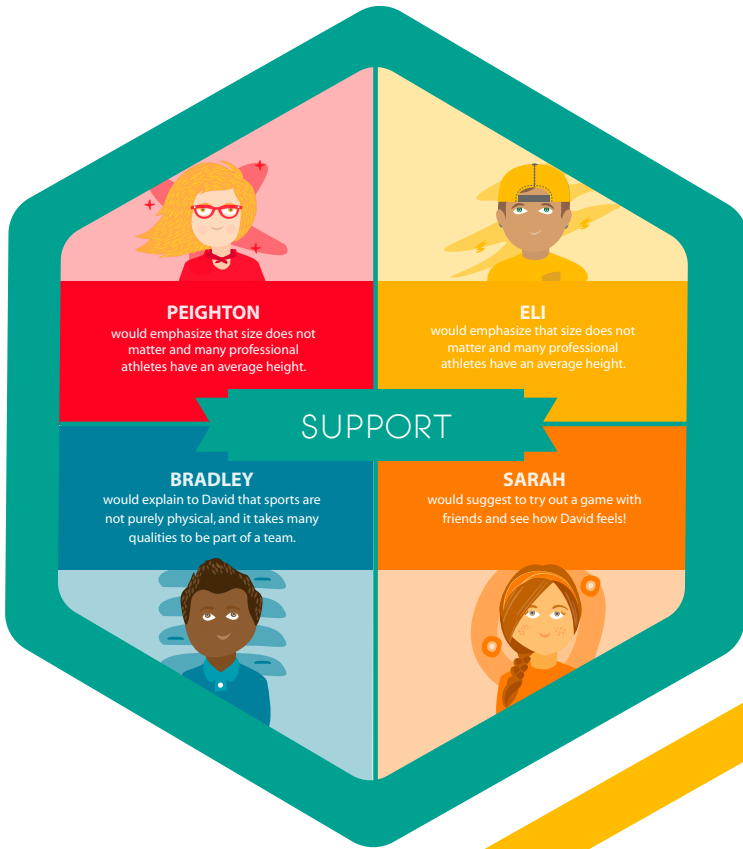
Purpose: The Table Talk Napkins strive to initiate family conversations about nutritional health. Categorized by themes, the napkins engage families in fun facts and question/answer activities during meal time.

Value: The value in this activity is that it educates families on the nutritional value of particular foods, and the balance of macronutrients that a body requires to maintain good health. As the napkins are disposable, families are able to engage in different themes during each meal, sparking new conversations and knowledge.

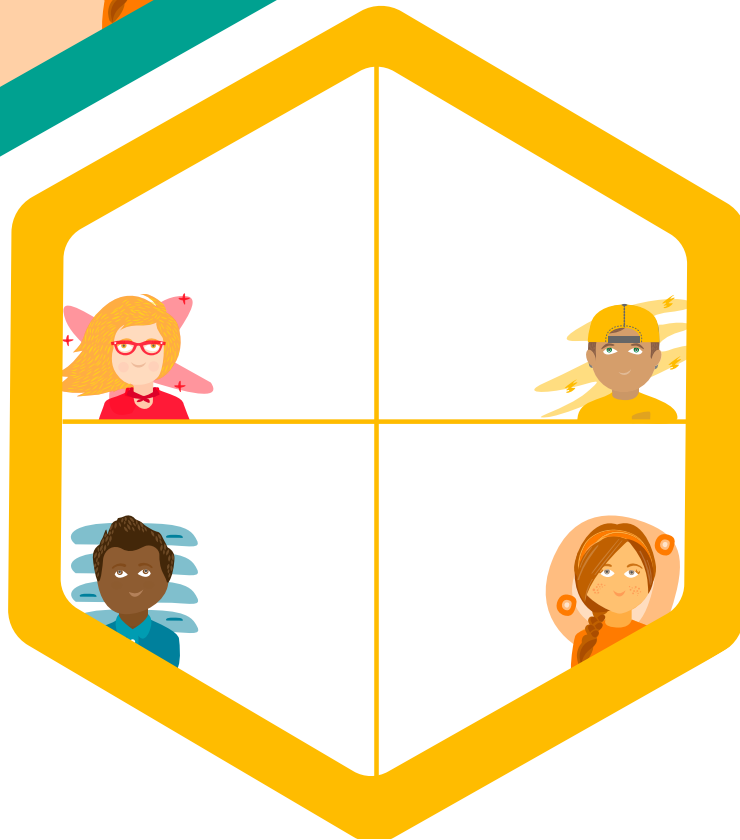
-
- Tool:** Conversation *Challenges*
- Location:** Living Room
- Purpose:** The conversation *challenge* cards assist parents in engaging in conversation with their child about body dissatisfaction. This activity asks parents to select an appropriate scenario (organized by age) from the challenge cards and present it to their child from the view of the Healthy Heroes. This narrative may focus on the Healthy Heroes request for assistance with one of their missions. The response cards provide space for children to assist the heroes, encouraging them to draw or write what they believe each hero should do. To support the parents, the back of the challenge cards outline what each hero would most likely do in that scenario.
- Value:** The value of these “challenges” is that it provides an opportunity for families to discuss difficult scenarios outside of personal context. Through practicing these problem-solving skills, children may also personally reflect upon on how they would solve scenarios, building confidence in their own abilities.



CHALLENGE CARDS Samples of 'challenge' questions brought forward by the Healthy Heroes.



PARENT SUPPORT CARD A representation of the support parents would receive in discussing the Hero characters.



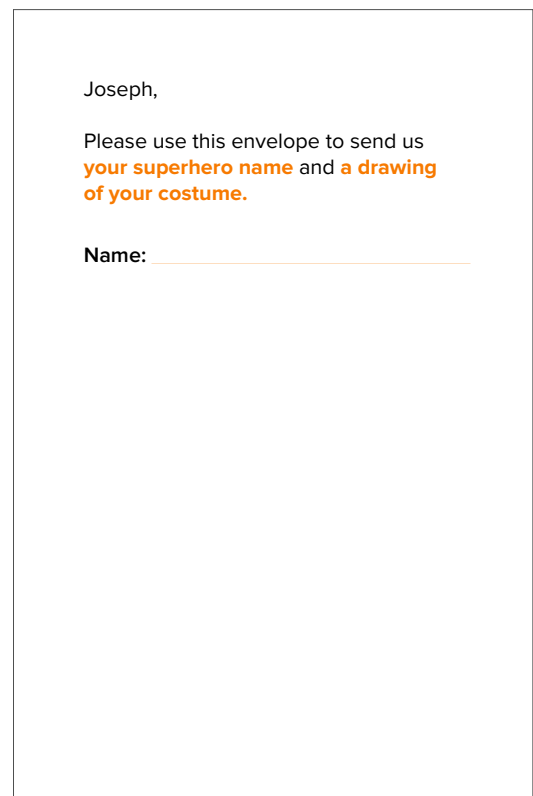
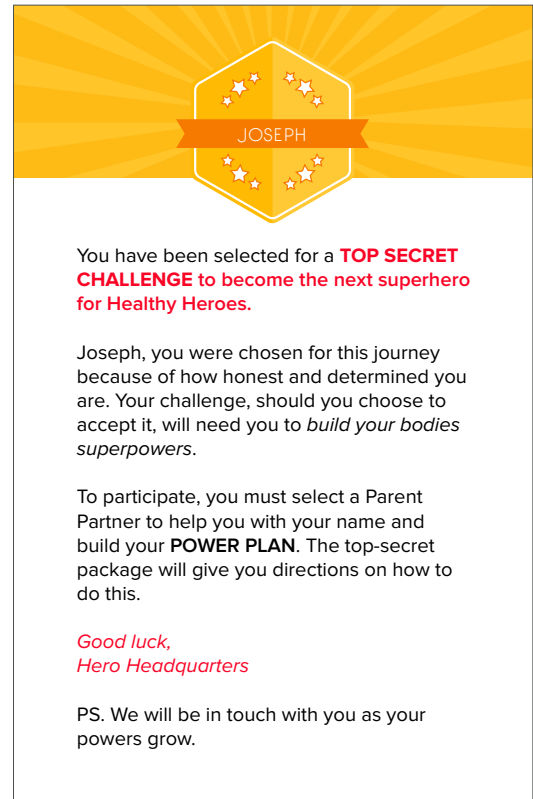
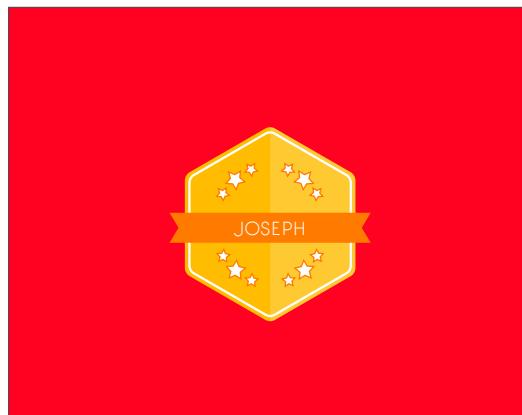
CHILD ANSWER CARD A sample card of where the child would write/draw their answers to the 'challenge' questions.

Tool: Routine *Power Plan*

Location: Bathroom

Purpose: The *Power Plan* activity supports parents in teaching their children the benefit of establishing healthy habits. To inspire motivation within their child, parents are asked to provide them with a personalized letter from the *Healthy Heroes*. This letter details the need for a fifth member to join their team, with hopes of it being the selected child. The Heroes requests that the child develop a *Power Plan* (or a set of sequenced tasks), to build their body's powers. This routine can be completed each morning when waking, and in the evening before bedtime. Children will then have an opportunity to create their *Power Plan* on the adjustable sheet, selecting from the provided activities or establishing their own.

Value: The value of this activity is that it educates children on the importance of personal body care. Through this care, we as individuals provide our bodies with the nutrients it needs to stay healthy, and develop personal inner strength, or resilience. This resilience works to strengthen our self image, building a trust and confidence within us.



LETTER TO CHILD The personalized letter that a child would receive from the Healthy Heroes team.

Wash my hands and face to keep my skin clean, and protect my body from getting sick.



Brush my hair to keep it strong, which helps it to grow and shine.

Make healthy choices for my lunch that will give me the energy to keep going all day.



Get lots of sleep to help my body balance and give it the energy I need to grow.

Practise my superhero stance in the mirror and think of two of my extraordinary talents.



Dress in comfortable clothes that make me feel confident and protect me from the weather.



Brush my teeth to make them very strong and to make my smile happier.



POWER PLAN TILES AND CARD A representation of the Power Plan adjustable sheet (right) and the tiles (top) that a child would use to build their 'Power Plan'.

JOSEPH'S EVENING POWER PLAN

Stick a power builder activity here!

Stick a power builder activity here!

Stick a power builder activity here!

Stick a power builder activity here!

Stick a power builder activity here!

Stick a power builder activity here!

Stick a power builder activity here!



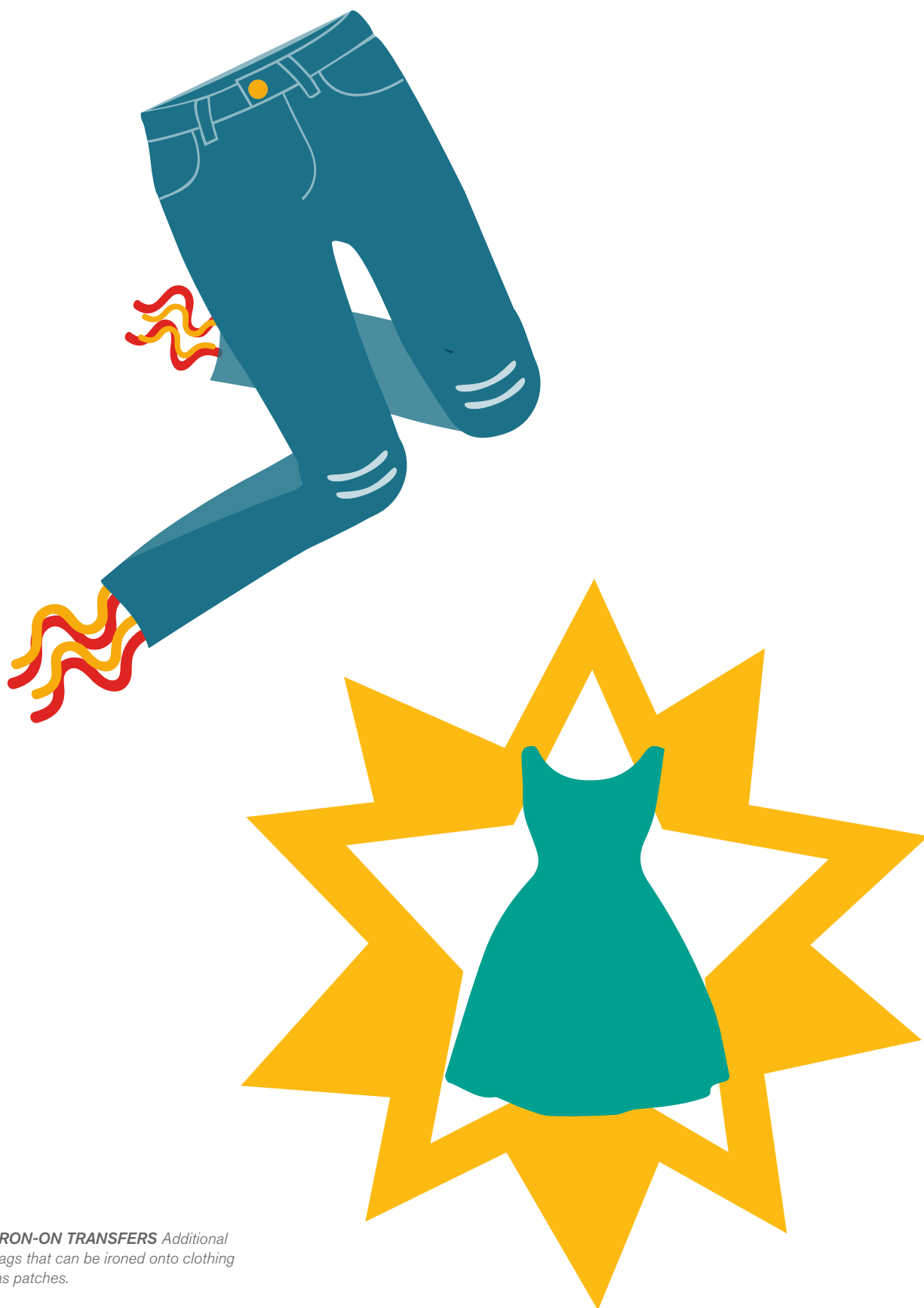
CLOTHING TAGS Sample messages that characterize positive connotations to a child's wardrobe.

Tool: Clothing Tags


Location: Child's Bedroom

Purpose: The clothing tags characterize positive connotations to common articles of a child's wardrobe. Created in a variety of sizes, the tags/iron-on transfers can be personalized with a name and sewn/ironed on to many different materials.

Value: The value in this activity is that the tags consciously ask children to think about how clothing can make them feel, versus how it makes them look. This cognitive process and physical attachment of the tags to the clothing articles may evoke the associated feelings when dressing in the future.



IRON-ON TRANSFERS Additional tags that can be ironed onto clothing as patches.



Wouldn't it be wonderful if a parent, or even a grandparent could use the simple messaging of the heroes as a way to teach their child skills in everyday life? Lifelong resilience could be built by simply saying the phrase: *what would Peighton do?*

Janice Morgante, 2016

Expert Participants

JANICE MORGANTE

Executive Director of the York Region's Riverwalk Eating Disorder and Wellness Centre

SARVIE RIAHI

Clinical Social Worker

SAMANTHA SARRACINI

Certified Teacher, experience working ages 3-14

CHRISTOPHER STERIOVSKI

Certified Teacher, experience working with ages 3 -11, with a placement completed in special education

KRISTINA CHESTER

Registered Dietitian at Fortinos (National Food Chain)

DR. ADÈLE LAFRANCE ROBINSON

Associate Professor in the Department of Psychology at Laurentian University

Parent Participants

Four Co-creation participants

4.4 User Testing

After developing the Healthy Heroes system, the design outcomes were presented to parents and interviewees to gather additional feedback. Each of the follow-up conversations were extremely valuable for highlighting potential areas of concern and further development.

4.4.1 Experts

The system received various forms of feedback from interviewed experts. Overall, the experts felt that the Healthy Heroes tools would be a beneficial resource to suggest to various audiences (ie. families, health professionals, teachers). Morgante noted that the tools were flexible, and provided a much needed support for demographics within this problem space.

Two concerns were brought forward throughout the conversations. The first was noted by Chester, observing that the size of particular tools were too small, and needed to be larger to accommodate for children's drawings (ie. grocery list). The second was brought forward by Sarracini and Steriovski, noting that the designed scenarios may be too



GRANDFATHER, FATHER AND SON *Representational image of a family within the project demographic.*

advanced for a four year old to understand. Dr. Robinson also agreed with this concern, highlighting that a child's linguistic and cognitive skills are much different at age four, then at age six. The system's activities should be conscious of these inter-developmental stages within early childhood, and be adaptable to them.

The feedback also focused on additional tools that would assist the child in developing their individual hero character. Steriovski felt that an interactive component would be entertaining for children, and be flexible in altering their characterization as they grow. Morgante agreed with this addition, and suggested that the tool could also be analog (ie. a children's colouring book).

4.4.2 Parents

Many of the parents enthusiastically accepted the superhero concept as a method for approaching weight-related body issues with their child. They felt that the friendly appearance of heroes was relatable and culturally represented a diverse demographic. Many were excited to utilize the tools within their

own homes, noting that the activities had the longevity to create lifelong habits.

The colour palette was also well received, with many parents lending advice on the technical specifics of the tools (ie. a larger grocery list, re-arranging the colours of the kitchen labels to reflect a stop light). This input was very valuable and incorporated into the final design outcomes.

Each of the parent's feedback also focused on the role of the fifth hero, emphasizing that children would enjoy additional options to characterize themselves. Suggestions included providing children with a colouring book, drawing activities or a technological platform to submit their depiction.

4.4.3 Next Stages

The next stage of user testing would involve gathering feedback from children within the project demographic. This research could potentially be acquired through two different methods: semi-structured interviews and observational study.

Interview discussions with the children would be largely centred around their engagement with the tools, illuminating the efficacy of the designed prototypes. Observational study may depict a child's enjoyment levels while engaging with the tools—over short and extended time frames. This research activity may need to be moderated by the parent, as it may be more adequate for them to classify their child's enjoyment.

As this testing lays outside of the project scope (See Appendix D), it would require further approval from the Research Ethics Board before proceeding.

4.3.3 Online Tool for the Parent

The online tool provides parents with readily accessible, emotional forms of support for approaching body image with their families. This service strategy was constructed from insights collected during primary research, identifying that parents predominantly access online platforms for information. A parent's initial experience with the tool would most likely derive from their own research, conversations with other parents or a referral from a health expert (as identified in section 6.1).

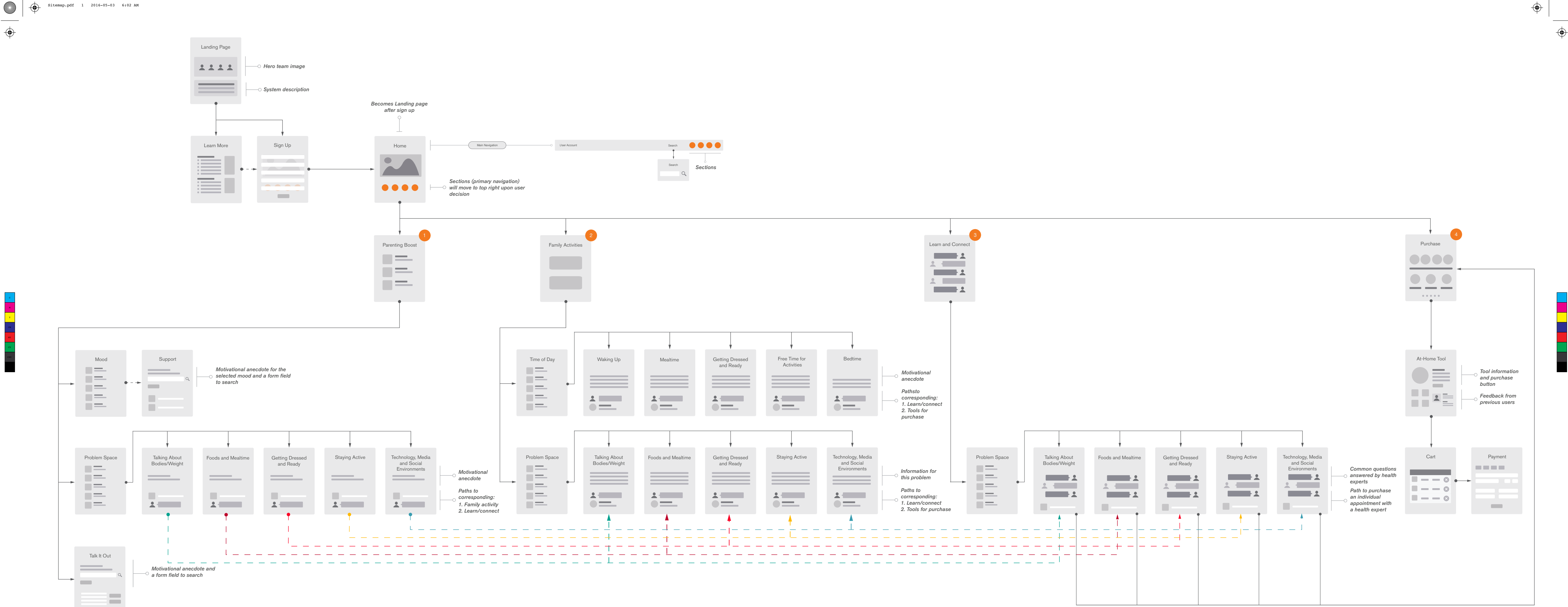
When first engaging with the platform, users would be introduced to the Healthy Heroes team and provided further options to learn more or sign up for access. The Learn More page would discuss the components of the the Healthy Heroes system, focusing on how the online tool, parenting guidebook and at-home tools work together to instill positive behaviour changes.

In choosing to sign up, the primary navigation of the platform provides users with the option to receive a parenting boost, discover family activities, obtain advice from health professionals or purchase the Healthy Heroes at-home tools. The descriptions below define these sub-sections in further detail:

- Parenting Boost**
Positive anecdotes that may emotionally support the parent in their situation and motivate. A form field is also provided, to allow the parent to browse in all sections of the online tool (ie. Family Activities, Learn and Connect).
- Family Activities**
Activities that promote healthy behaviours for anytime of day.
- Learn and Connect**
Answers to a parent's common questions from health professionals and an option to connect for an individual appointment.

- Purchase**
Descriptions and the main point of purchase for the at-home Healthy Heroes tools.
- After choosing to register, users are able to personalize their rest of their experience with the online tool, navigating based on their mood, problem space, or time of day.

HEALTHY HEROES SITE MAP The hierarchical structure and content components of the online tool.

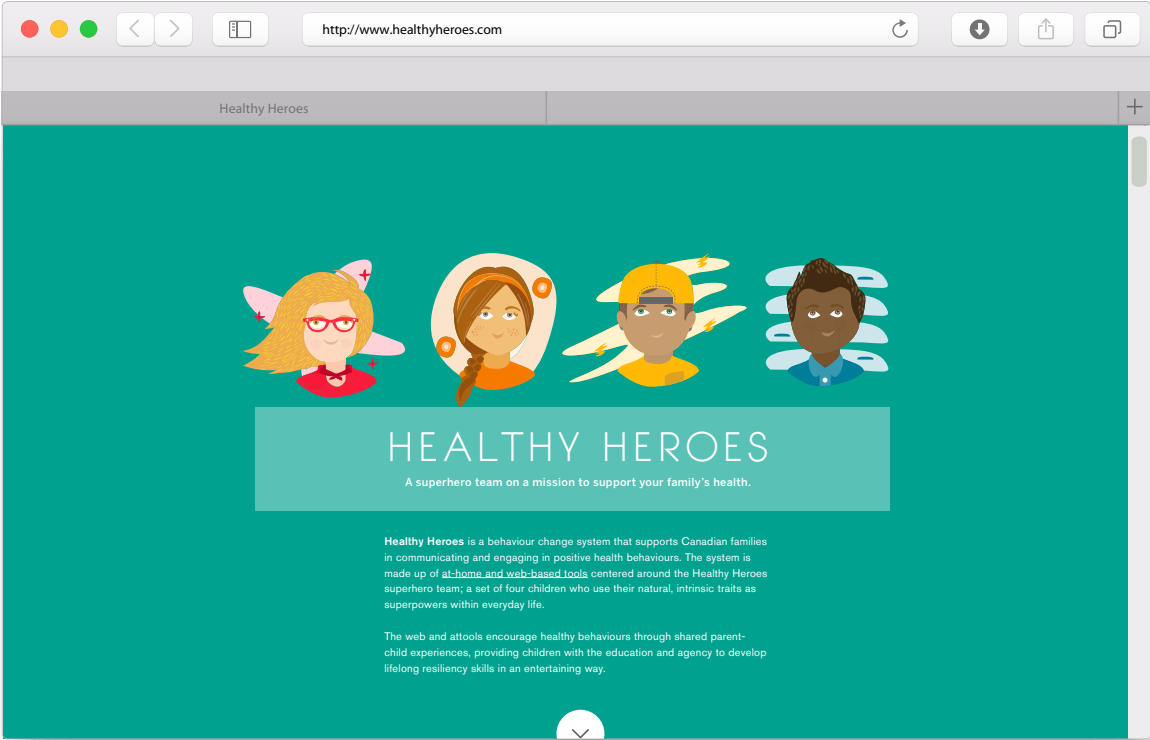


STAGES	Onset of Issue/ Initial Research	First visit	Create account	Evaluate Tools	Use Tools	Next Visits
Healthy Heroes Website	The first contact may come from online research or a referral from a teacher/family doctor/other parent.	Learn more	Sign Up Parenting Boost Family Activities Learn and Connect	Purchase	Provide feedback	Primary navigation: Parenting Boost Family Activities Learn and Connect Purchase
Doing	Having Conversations: Family Doctor Friends/Families Other Parents Child's Teacher Searching the internet: Parenting sites Government resources Reading books/ magazines	Reading online about the Healthy Heroes system and learning about the value of the web/at home tools	Signing up Their first name Their child's first name Child's age Email Trying out the website tool for the first time	Learning about the at-home tools Reviewing and selecting tools for purchasing/payment Customizing tools (where applicable) Receiving an email on their purchase delivery/shipment	Reading the parent manual to understand tool activities Using the tool with child/family Receive a follow-up email asking about their experience and if they are willing to share (optional)	Use the web tool to receive a parenting boost, ideas for family activities, and to learn and connect. Purchase additional tools Share the system with parent friends/family
Thinking	How do I approach this issue with my child? Is it severe enough to talk to a professional/ their teacher about it? Did I say/do something to make them feel this way?	What type of support does it provide? How often is this information updated? Have these tools been created by health professionals? Will they have tools that will work for my family? How much will this cost?	This is really helpful and looks like it provides a lot of support. Who created this information and how often does it update? What are the at-home tools and how can my family benefit from using them?	What is the value of this system/individual tool? How were others experience with each tool? Looking for purchase support (ie. account info, credit card, shipping, returns) I wish they made a tool for...	The manual is a comic book- how fun! If this works, I need to order the other tools. What an amazing/difficult experience! This tool could be improved by...	What type of support does it provide? How often is this information updated? Have these tools been created by health professionals? Will they have tools that will work for my family? How much will this cost?
Feeling	Worried - Saying/doing the wrong thing. Helpless - Can't control what happens. Guilty - May have caused this issue through their own behaviours.	Worried - My child may not enjoy. Unsure - That this will benefit my family. Open-minded - Willing to try anything that may help my child.	Relieved - Happy to hear my family isn't the only one struggling. Excited - This may be a great way to talk to my child about these issues for many years.	Learning - About the impact of body dissatisfaction, and how my behaviour affects my child's perception of their own body. Comforted - Sharing similar experiences with other parents/experts.	Optimistic - This looks like it will be fun and might get my child to open up. Relieved - We enjoyed the tool and I feel like we both learned really valuable lessons.	Empowered - The energy to put my best foot forward in my parenting role today. Disappointed - To see the same information as yesterday.

HEALTHY HEROES EXPERIENCE MAP A visualization of the customer journey in utilizing the online tool; a mapping method adopted from Adaptive Path.

The design of this platform considers the human experience of the parent, focusing on the emotions intertwined with their visit (as identified in section 3.3.1) and how this may affect their experience as a user. In employing *Adaptive Path's* service design mapping method, the experience map (left) depicts a parent's journey in utilizing the online tool; recognizing how a parent may be feeling, what they may be thinking and doing at each stage of their journey. In addition, this map highlights how the parent's relationship with the tool changes over time (ie. initial visit versus their fifth visit).

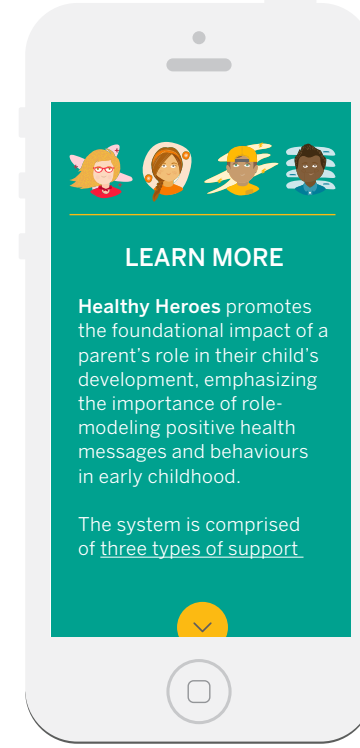
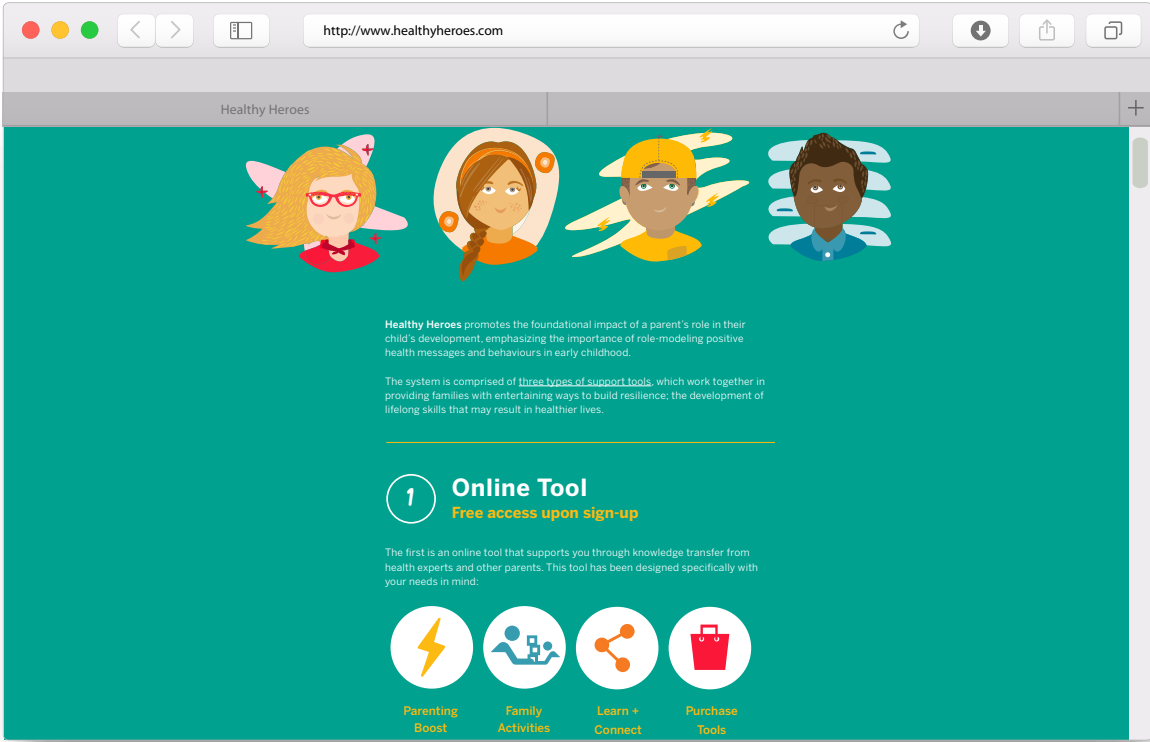
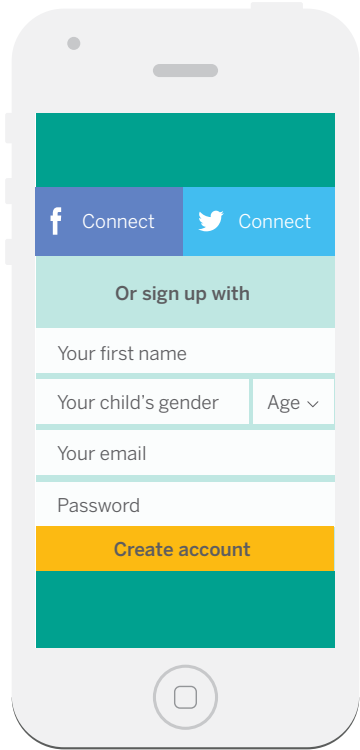
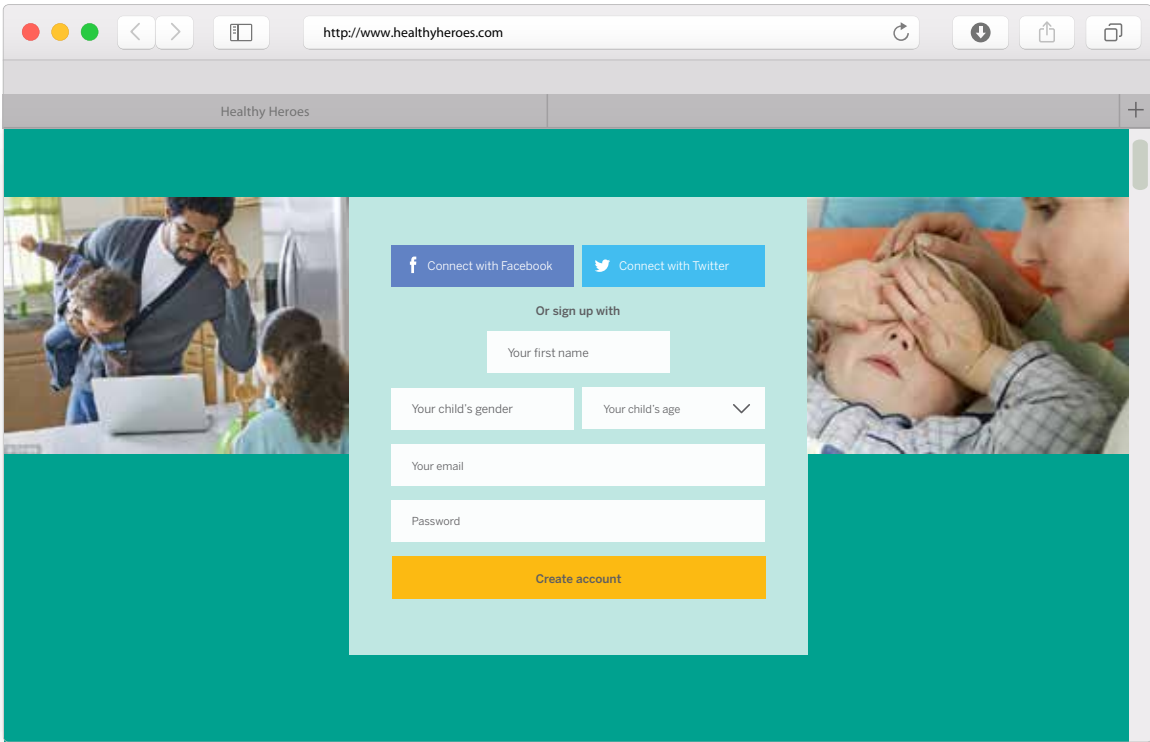
Primary research findings identified that parents often engage with online resources during their free time. As this time of day differs for each parent, the tool has been crafted for optimal viewing on computer monitors and mobile phones— the devices that were recognized as most preferable amongst users. Online content offers responsive interactions depending on the user's technology choice.

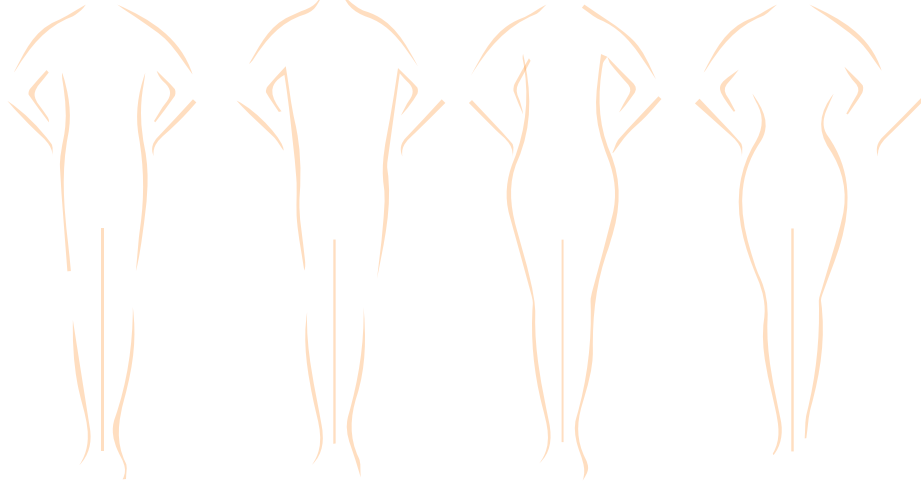


HEALTHY HEROES LANDING PAGE The initial landing space when the user first visits the Healthy Heroes online.

SIGN UP PAGE (TOP RIGHT) The details that will be asked of the user to access the online tool.

LEARN MORE PAGE (BOTTOM RIGHT) Introduces the components of the the Healthy Heroes system: the online tool, parenting guidebook and at-home tools.





The Healthy Heroes system is dependent on a parent's persistence in order to receive a successful outcome. As each of the activities are solely directed by parents, it is imperative that they feel empowered when utilizing the tools with their families.

The strength of the system lays within its entertaining approach to the topic of body dissatisfaction, reflecting educational and functional methods for families to engage in positive health behaviours. Through participating in these experiences, families may foster a greater connection to the subject matter, resulting in positive long-term body behaviours. The story associated with the Healthy Heroes team may also keep children intrigued as they grow, providing parents with an ongoing narrative for discussing the topic with their child.

It is possible that natural growth may also have an effect on a child, causing a loss of interest towards the Healthy Heroes team. This scenario can be identified as an opportunity for continuous system development, focusing on the innovation of new tools. The careful integration of new system tools could address the narrow age range of the research (4-6) and be presented to the parent throughout their child's development (6+).

As the Healthy Heroes system is rooted in the superhero genre, it has the potential to exclude families who are uninterested in this form of culture. The superhero genre is known to have various representations within different cultures, which may limit an individual's identification with the Healthy Hero characters. It is important to note that this project reflects the insights of fairly prototypical, white Canadian families. Most of the participants reflect an educated, middle class background and the results may not be as successful among participants of other cultures. A deeper follow up study is required to test the effectiveness of the system with various family demographics.

As detailed in section 4.3, each family engages with the Healthy Heroes system through the web and physical tool activities. These educational tools promote the impact of a parent's role in their child's development, emphasizing the importance of role-modeling positive health. To further support parents in engaging with their child, the content of the system will need to be generated by health and psychological experts. Their professional training and techniques are outside of the scope of this project and would be beneficial in enhancing the designed outcome.

5.1 CHILDREN AS THE AUDIENCE

This project has focused on the parent-child relationship, with emphasis being placed on how the Healthy Heroes system could primarily support parents in communicating and engaging in positive health behaviours. To gather accurate results of the system's efficacy, it would be necessary to understand how the Healthy Heroes would manifest in the real world of a child. As one of the primary users, the success of the system is highly dependent on their response to the tools. Further, it may be beneficial to create marketing collateral or a campaign that specifically targets children, understanding their role as the primary audience.

Over time, a parent may also lose momentum in facilitating the system's tools with their child. The system may then naturally rely on the child as a stakeholder for its delivery. Secondary research has identified two precedent projects that hold a similar model, these include: *The Elf on the Shelf* and the PBS Kids Website. A brief description of each has been detailed below:

The Elf on the Shelf: A Christmas Tradition
By: Carol B. Aebersold and Chanda A. Bell
(Author), Coe Steinwart (Illustrator)

The Elf on the Shelf: A Christmas Tradition is a children's Christmas story describing how Santa's "scout Elves" hide in people's homes to watch over events between Thanksgiving and Christmas. The story is packaged in a keepsake box, featuring the physical book and a small toy elf for the family to place within their home. In purchasing the package, families are able to select from Elves with various characteristics and generate a name together.

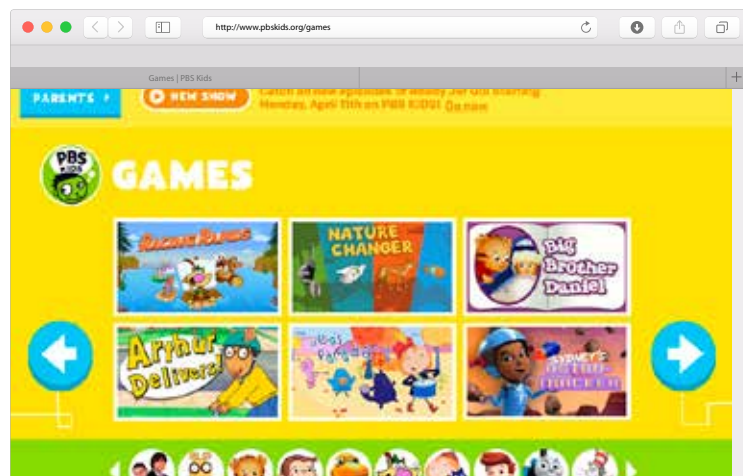
The Elf of the Shelf would primarily be facilitated through the parent (ie. reading the story, shifting positions of the toy throughout the home), but would also rely on the child for sustained engagement with it's meaning. For additional engagement, features of the story have also been extended to an online platform, which includes a separate section (The North Pole) specifically for children. This section includes colouring pages, games, fun facts and an opportunity to write a letter to Santa.

PBS Kids, Children's Website
<http://www.pbskids.org>

PBS Kids, is a children's programming brand aired by the Public Broadcasting Service in the United States. This non-profit organization represents many of North America's most well known children's characters, including: Curious George, Arthur, Thomas the Tank Engine and Bob the Builder. The PBS Kids website is dedicated to providing entertainment and support for families with a child in early development. Its navigation speaks to these two audiences, offering separate sections for parents and for their children.

The website has been created for optimal viewing on multiple platforms, which allow for children to easily access videos and games categorized by theme (ie. feelings, problem solving, healthy habits). Each of these options holds valuable educational messages, with many including character narrations from the programming brand.

THE ELF ON THE SHELF (BOTTOM LEFT)
PBS KIDS WEBSITE, GAMES (BOTTOM RIGHT)



5.2 FUTURE THINKING

In analyzing the present landscape of resources available to parents, the Healthy Heroes has the potential to live within four existing healthcare systems. The first, through the Public Health Agency of Canada, funds and promotes resources created by the Canadian Association of Family Resource Planning. Their current programs (Mother Goose, Parents Matter, and Nobody's Perfect) are rich in information and access points, but differ in target age demographic and/or delivery structure.

The second, The Canadian Mental Health Association, offers a support program specifically for parents struggling with mental illness/mental health disorders within their families: Parents for Children's Mental Health. This program is parent-led, assisting families through peer to peer support groups, moderated discussions online, and providing access to an emergency kit for severe situations. With many benefits, this program is specific to the province of Ontario, with programs focusing on

The next access point is through the Centre for Addiction and Mental Health (CAMH); Canada's largest mental health and addiction teaching hospital. As one of the world's leading research centres in the area of mental health, CAMH supports parents through The Incredible Years Parenting program. This educational program is offered to parents of children ages 6-12, running weekly/bi-weekly over the course of 15 sessions. The subject matter differs from the Healthy Heroes system, in that the program aims to "improve the parent's skill and confidence at managing their child's aggression and problem behaviour and to improve the parent – child relationship" (Centre of Addiction and Mental Health, 2012).

Finally, The Hospital for Sick Children, also known as SickKids, is a world-renowned paediatric hospital located in Toronto, Ontario.

Divided by Centres, the Centre for Healthy Active Kids is dedicated to improving child health through "innovative interdisciplinary research and transformative approaches to clinical care and education" (SickKids, 2014) Their clinical program, STOMP (SickKids Team Obesity Management Program) provides care to children and adolescents (age 12-18) with complex obesity. The Healthy Heroes system may support healthy messaging in the current development of their early years program.

In conducting this analysis and through conversations with professionals in the mental health fields, it is evident that the Healthy Heroes would require professional roles of support to maintain its upkeep. These would include:

Project Leader

Develop and follow through on implementation plan; act as the main point of contact between team members.

Health Team Liasons

A team of health experts to act as liasons for project content.

Web Developer

Produce and update the online tool.

Content Manager

Responsible for generating tool content on a daily/weekly basis.

Implementation Strategy

A strategy delivered by stakeholders that encourages parents to engage with the Healthy Heroes system.

Appendix





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APPENDIX C: PRIMARY RESEARCH MATERIALS

Cultural Probe

A cultural probe is a research methodology that works as a tool to understand the experience of others. Probes are generally contained within small packages, and have materials (ie. camera, map) that allow participants to record events, feelings or interactions. Designers utilize probes as means for a deeper understanding of the user and as a form of insight within the design process.

The probe functioned as visual diary, allowing the parent to:

- 1 Note the amount of time that they spent with their child on a daily basis, and what activities they engaged in together.
- 2 Observe and reflect upon any shared experiences with their child that may have involved body image (ie. When I was reading a book with my child, my child made a comment about the main character's body image. This led to a conversation about...)

DAY 1		FILL IN THE DAY OF WEEK:
	M	T W T F S S
PART A: GENERAL ACTIVITIES	PART B: BODY IMAGE	
Please note when and what activities you and your child engaged in together today:	Did any of these experiences with your child today involve body image?	
7:00	Please describe the experience and how you responded . Feel free to reflect upon as many as you want.	
8:00		
AM 9:00		
10:00		
11:00		
12:00		
1:00		
2:00		
3:00		
4:00		
5:00		
PM 6:00		
7:00		
8:00		
9:00		
10:00		
11:00		

FEEDBACK

THANK YOU so much for participating in the probe this week!

This final entry allows you to provide feedback on your experience and discuss tools that can be utilized in the future.

Did you find it useful to track your engagement with your child this week? Were any insights gathered from writing down the body image experiences?

Are there any activities that you are consciously promoting or in engaging in with your child that support a healthy body image?

List the top three methods/people that you would seek advice about parenting from. Explain when you would use each one.

1.

2.

3.

How would you like to learn about new ways of parenting? Please mark all that apply, or fill out the other section if a preferred option is not listed.

<input type="radio"/> Book	<input type="radio"/> Magazine	<input type="radio"/> Support Group	<input type="radio"/> Mobile Application
<input type="radio"/> Website	<input type="radio"/> Email/Text	<input type="radio"/> Community Centre	<input type="radio"/> Other:

activity 1

Building on the initial layout of the activity, refinements were made to the types of information collected. The top right depicts the updated activity board. The new instructions direct parent participants to select activities that they enjoy engaging in together as a family from a pile. The parents would then be asked to place them on the activity board, and note how the activity allows for potential teaching opportunities within their child's development. This information will provide valuable insight into how and where design can support parents in daily engagement with their child.

activities

I'm really interested in learning about activities that you enjoy participating in with your child.

To begin, please paste images in the boxes of the activities that you enjoy engaging in together. Beside each of the images, note how the activity allows for potential teaching opportunities within your child's development.

Sample images

Co-creation Materials

Co-creation is a research methodology that enables people who will be served by a designed outcome to participate in designing solutions. The purpose of conducting this session were to acquire a greater understanding from parents on how they engage with their children around the development of body image.

During this session, parent participants were introduced to the design process and distributed co-creation materials. The research materials were largely centred around collecting information on the daily interactions between the parents and their children. Qualitative data was collected through three different activities:

- 1 Image based- understanding which activities that the families enjoyed engaging in together;
- 2 Word associations- understanding the developmental traits that are of value to parents in their child's development;
- 3 Scenario-based- how desirable traits are implemented by the parents in the daily interactions with their child.

Tools such as figures, large pieces of colored paper and pencils were provided to the participants to express, ideate, communicate and think about the issues presented by myself, and other participants.

activity 2

Refinements for this activity focused on alternate ways to divide the information provided by the participants. The new approach asks the participant to paste the traits into the boxes, and beside each write a few words or ideas of how they might instill that trait within their child. In addition, the amount of traits within the pile were minimized to avoid overwhelming participants.

This refinement also allows for the parents to discuss their methods in groups after completing the activity.

traits

I'm really interested in learning about traits that parents are actively trying to instill in their children's development.

Please paste the traits in the boxes that you feel you are actively trying to instill. Beside each of the boxes, note a few words or ideas of how you might try to instill this trait in your child.

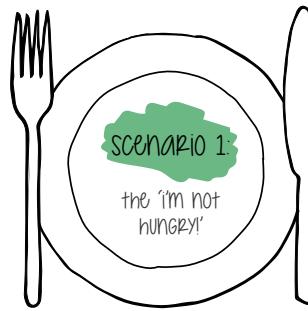
ADAPTABILITY	CONFIDENCE	CONCERN
ATTENTIVENESS	CONSIDERATION	COURAGE
APPRECIATIVE	CONSISTENCY	CREATIVITY

activity 3

This activity developed quite substantially from the third to final week. To begin, an obvious change was to the graphic appearance of the cards. Each scenario card now had a friendlier appearance, with a graphic representing the scenario depicted.

Next, the main question was refined to ask "how would you normally react?". This change allows for a direct understanding of how parents would react in the provided situations.

Finally, the results section was added to get a sense of how the parents method would usually work in the scenario.



You notice that your child has not been eating their usual amount. When asked, they respond that they 'are just not hungry'.

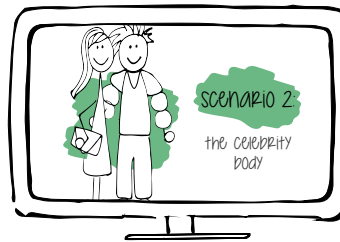
How would you normally react?

WORDS _____

ACTIONS _____

RESULTS _____

How well does it work? _____



You are watching a television show with your child when a celebrity comes on the screen. You're clearly fix the celebrity's stereotypical media type: unemotionally teen.

How would you normally react?

WORDS _____

ACTIONS _____

RESULTS _____

How well does it work? _____



You overhear your child make a negative comment about their body image.
How would you normally react?

WORDS _____

ACTIONS _____

RESULTS _____

How well does it work?

Semi-structured Interview Questions

The following questions were created prior to conducting interviews with experts in the health and social science fields. Interviews were conducted in a semi-structured format, allowing for new ideas to be presented as a result of the interviewee's answers to these questions.

Registered Dietitian

- 1 What are your professional accreditations within the field, and how long have you been practising?
- 2 From your experience, how often do parents consult with you for information?
- 3 What would your ideal encounter with parents look like?
- 4 What information would you provide to parents to support in the development of a healthy body mindset?
- 5 From your professional expertise, where are the best places for parents to look for information in regards to nutrition?
- 6 What advice would you provide to a parent who is dealing with the extremes in their child's eating habits (ie. a child who is over-eating, or a child who is under-eating)?
- 7 What words or actions can parents use to instill positive long-term eating habits in their child?
- 8 As most families are quite short on time, what tips can you provide that are adaptable to meet the needs of the modern parent?
- 9 Are there any other resources you would recommend for learning about positive nutrition habits?

Social Psychologist

- 1 What are your professional accreditations within the field, and how long have you been practising?
- 2 What advice would you offer to an parent client who has a negative body image perception?
- 3 How would this advice differ if the client were a child?
- 4 What expertise would you provide to a parent whose child is struggling with their body image?

- 5 How would this advice differ based on various family compositions (ie. single parent/sexual orientation)?
- 6 Are there any other resources you would recommend to parents to empower healthier body images?
- 7 Research suggests that the primal age for parents to influence a healthy body image within their child is during the ages of 5-8. Is there any advice you can provide in creating stronger educational materials for parents with children in this age range? Do you foresee any potential barriers?

General Practitioner

- 1 How do you engage with parents around their child's body image?
- 2 What are your protocols in discussing body image with children? Is there a particular age that you would introduce the conversation?
- 3 What advice would you give to a parent who is struggling with his or her own body image?
- 4 What advice would you give to a parent who has a child struggling with their body image?
- 5 What positive words or actions within the family setting can assist in motivating healthier body images?
- 6 Are there any other resources you would recommend for learning about positive nutrition habits?

Executive Director, Eating Disorders of York Region's Riverwalk Eating Disorders and Wellness Centres

- 1 As an Executive Director, what are your primary responsibilities? What led you to take on this role?
- 2 What is the role of the Eating Disorders of York Region's Riverwalk Eating Disorders and Wellness Centres, what services are provided? Is there a cost for these services?
- 3 My project focuses on empowering healthy body images in children between the ages of 5-8. Is there a primary age group that you tend to assist?
- 4 What would an ideal encounter with a parent look like to you? Are they often sent to you from elsewhere?

- 5 What advice would you provide to a parent who is dealing with the extremes in their child's eating habits?
- 6 From your professional expertise, are there any other resources you would recommend for learning about positive nutrition habits?
- 7 Is there a tool you would want to be designed to further assist you in supporting families?

APPENDIX D: RESEARCH ETHICS APPROVAL

Prior to conducting primary research, it was important to obtain a participant's voluntary approval before proceeding. From an ethical standpoint, this documentation explained the intentions of the research and an understanding that the activities were low risk; comparable to experiences one may encounter in everyday life.

The following memorandum represents this project's Full Research Ethics Approval from the Emily Carr University Research Ethics Board (May 5, 2015, ECU-REB #2015022507):

Office of the Director of Industry Research

**Emily Carr University of Art and Design
Research Ethics Board**

May 5th 2015

MEMORANDUM TO:

Jonathan Aitken
Jessica Baratta

Re: Application for Ethics Approval (File #2015022507)

Thank you for providing the requested clarifications and changes to the research ethics application for, **'Designing Educational Prototypes for Parents to Foster Parent-Child Conversations about Body Image'**. These were reviewed by the Chair of the Emily Carr University Research Ethics Board, Dr. Glen Lowry, on May 5th 2015. As a result of that review, this project **has full approval to proceed with participant research.**

The dates for this approval are May 5th 2015 to May 4th 2016.

Please note the following:

- This approval extends for one year, after which time renewal is available. To ensure timely renewal, you are invited to use **FORM 204.1 Annual Review / Request to Amend Approved Research** to communicate the progress of the research and to request any required changes. This form is provided with this letter.
- If you need to make any changes to any aspect of the approved application, you are required to inform the ECU-REB *prior* to the implementation of changes. **FORM 204.1 Annual Review / Request to Amend Approved Research** should be used to communicate changes. This form is provided with this letter.
- In the event of an adverse event associated with the participant research, the applicant must notify the ECU-REB within five (5) days. **FORM 204.2 Adverse Incident Report** is available for you to use to communicate these incidents. This form is provided with this letter.
- At the conclusion of the project, please complete **FORM 204.3 Research Ethics Completion** so that the file can be closed in an appropriate manner. This form is provided with this letter.

This signed Approval Status Letter is an official ethics status document. Please keep it for reference purposes. If you have not received a signed paper copy of this letter please contact me at ethics@ecuad.ca. The approval status listed above, the date of this letter, and the ECU-REB file number should all appear on materials that are circulated to the participants in this way: "This project has Full Research Ethics Approval from the Emily Carr University Research Ethics Board (Date, ECU-

REB #). If you have any comments or concerns about ethical issues in the research, you are invited to contact the Emily Carr University REB Coordinator at ethics@ecuad.ca or (604) 844-3800 ext 2848."

- For multi-site or partnered research, researchers must adhere to the research ethics protocols or procedures at the other sites of research, where they exist. Thus, the researcher is expected to share notice of this approval with partners or sites of research that have their own research ethics protocols. If further ethics approval is required or new partners or sites of research become part of the project, the ECU-REB should be informed.

On behalf of the ECU-REB members, I wish you much success with this research.

Sincerely,

Dr. Glen Lowry, Chair ECU-REB

Cc: Deborah Shackleton, Interim Dean, Faculty of Design + Dynamic Media
Dr. Maria Lantin, Director, Research
Dr. Glen Lowry, Chair ECU-REB



