Mixed-Reality game as a tool to explore vulnerability in father-son relationships

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Department of Graphic and Industrial Design
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Submitted in partial fulfillment for the degree of
Master of Graphic Design on April 30, 2020

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Abstract

Traditional gender norms impact women's and men's daily lives in different ways. While women are frequently labeled as sentimental, men are expected to perform as invincible superheroes - always confident and secure, never showing a sign of weakness or fear, never letting a tear fall. Restricting emotionality has serious consequences not only for their health but for their partners as well, as recent studies have shown a strong association between the difficulty to express vulnerable emotions and aggressive behavior in men.

The pressure to behave according to traditional gender norms starts early in childhood. As this pressure increases in adolescence, parents have the difficult task of educating boys about the importance of positive emotion expression while watching out for their own behaviors. In order to facilitate this process, I propose the design of a mixed reality system that engages a father and their child in meaningful play. The play activity addresses expressing vulnerable emotions in a lighthearted way while providing continuous engagement. During gameplay, father and child engage in the exercise of identifying difficult situations and feelings in a judgment-free environment. Playing the game encourages father and child to experience constructive emotional expression and shapes positive behaviors at home so that both parent and child are better equipped to face daily challenges.

"You can't get to courage without walking through vulnerability."

BRENÉ BROWN

Acknowledgments

I want to thank my chair, Helen Armstrong, for her outstanding guidance and support, which moved me to believe I was able to deliver a great project.

My classmates for the laughter, feedback, and emotional support (In special Victoria for making me feel like home was right here!) provided during studio time and later on, our Zoom work meetings.

My father, sister, and especially my mother, who have always had faith I could make it despite all hardships.

My godmother, who always stepped in when my family couldn't, making sure I continued my studies. I bet you are happy to see what I've accomplished (wherever you are up there in Heaven).

I also want to thank my life partner, Garrett, who gave me the courage to take such a big step out of my comfort zone, and his entire family for making sure I had food, shelter, and love.
This whole experience was definitely blessed by their constant support and prayers.

If there's one thing I could say to that girl of two years ago, who came to a different country without any money and full of self-doubts, is that I'm glad you took the chance. Thank you for being brave.

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Introduction

The ability to understand and express emotions in ourselves and in others is developed early in childhood and is one of the skills we use the most, allowing us to navigate the world. Because feeling and responding to emotions is instinctive, we rarely consider all the agents that influence this learning process and the seriousness of the consequences of a restrictive experience. Restrictive emotionality is the name given to the difficulty of understanding and expressing emotions such as fear, guilt, shame, and sadness and is a phenomenon that has been identified as one of the most perceptible product results of traditional masculine gender norms.

Often, when we hear about gender, we think about women's rights, career gaps in leadership positions, and violence against women. With so much focus on the inequalities that limit and harm women, would we ever consider that, to help women, we need to help men first? When it comes to emotions, expectations around how men should behave encourage the expression of aggressivity over vulnerability (Cohn & Zeichner, 2006; Cohn et al., 2008), i.e. these expectations lead to violence as an appropriate outlet to express negative emotions if individuals have no familiarity expressing those emotions in a more positive way. As a result of this kind of cultural expectation, among other factors, the vast majority of Intimate Partner Violence perpetrators are male.

This investigation focuses on preventing the appearance of restrictive emotionality in young boys by encouraging the expression of vulnerable emotions in a safe and playful environment alongside their parents. I explore the potential of a mixed reality game to motivate and engage children, teaching them to associate vulnerability with courage and adventure rather than weakness.

Context

Problem Statement

Gender norms (or gender roles) are defined by the World Health Organization as preconceived ideas about how women and men are expected to speak, dress, and conduct themselves based upon their assigned sex. Different from gender identity—a person's perception of having a particular gender - gender norms are defined by larger societal groups and are highly influenced by culture. From an early age, children can incorporate the specific gender norms that reflect the expectations of their family and societal group (Klein et al., 2007). By early adolescence, the expectations to behave according to specific gender norms increase. This is when the perpetuation of harmful behaviors such as sexism, stereotypes, and, later on, gender-related violence begins (Kågesten et al., 2016).

The norms that shape human socialization affect boys and girls differently. Even though inequality persists, great focus has been placed on acknowledging the existence of bias and working around interventions to free girls from limiting gender norms by increasing their involvement in traditionally male areas such as the STEM sector or competitive sports. For instance, of all competitions taking place at the Rio 2016 Olympics, 47.5 % had female competitors, as opposed to only 20% at its earlier 1980 edition (Women in the Olympic Movement - International Olympic Committee, 2018). On the other hand, little attention has been given to boys in areas where masculine gender norms restrict their development, specifically in the socio-emotional sphere. Studies have consistently shown that boys and men are socialized by parents, teachers, and peers to restrict experiences and expressions of vulnerable emotions such as sadness, fear, and guilt (Eisenberg, Cumberland, & Spinrad, 1998; Denham, 2007). A more recent study highlights how vulnerable emotions, when expressed by males, are often punished or penalized (O'Neil, 2008). This repression of emotions associated with vulnerability is called restrictive emotionality and has been studied as a consequence of traditional male gender norms (Eisler & Skidmore, 1987).

Restrictive emotionality (RE) can lead to discomfort with emotional states (Levant & Pollack, 1995), causing Emotional Dysregulation over time, which is the inability to acknowledge, understand, and tolerate emotional states, and is a risk factor for problem behaviors in children (Wong, Pituch, & Rochlen, 2006). RE has also been continuously linked to the use of physical aggression (e.g., pushing, yelling, and shouting) later in life (Cohn & Zeichner, 2006). In a national report about school crime and safety conducted by the U.S. Department of Education in 2016, numbers revealed that from grades 9 to 12, boys engage in physical violence at school twice as often as girls (28% compared to 16%), where 79% of incidents that lead to suspension are related to violence. In addition, 25% of boys and 7% of girls reported carrying weapons to school. In public schools, across all races and ethnicities, males are significantly more likely to be suspended than girls.

Long term consequences of RE and emotion dysregulation in men are associated with Intimate Partner Violence, or IPV (Berke et al., 2016). Specialists often explain IPV as one context in which men attempt to express socialized masculine norms (Connell, 2005). When it comes to numbers, in the annual report on hospital-treated Intimate Partner Violence in Minnesota, U.S. released in 2019, of all IPV related ED visits and hospitalizations for the previous year, 83% were female. Nevertheless, the same specialists who study RE and its relation to violence also reinforce the importance of emotion-focused prevention efforts to dissociate "constructions of masculinity from psychopathological outcomes" (Berke et al., 2018). If gender norms start to affect boys early in childhood, it is during childhood that such interventions hold particular promise.

"Emotion-focused interventions hold particular promise for decoupling constructions of masculinity from psychopathological outcomes."

BERKE ET AL., 2018

Justification

Playing is defined by Rubin (1982) as an enjoyable built-in tool that allows children to exercise skills needed during adulthood. Still, when restricted by gender norms, play can also be a platform for the propagation of RE in boys. Studies have found that typical female play promotes verbal, nurturing skills, providing a high level of play complexity when compared to neutral or male play activities (Cherney et al., 2003). The result of the differences in play preferences can be easily seen when we talk about emotions. A study conducted by López-Pérez and Pacella (2019), that evaluated children's emotion recognition and regulation using a serious online game called EmoDiscovery, showed that when engaging with a virtual character that reported having a problem, boys performed significantly worse than girls in recognizing and using adaptive strategies for anger and fear. However, the ones who accurately recognized the emotion of anger in the first step of the scenario chose adaptive strategies significantly more.

While playing, a child is exposed to an array of "experiences and new possibilities of physical and mental activities for dealing with the world" (Piaget, 1976 p.22), which means play can also work as a training platform from an early age. The concept of applied games (also called deep games or even games with a purpose) is well known among different medical professionals due to its capability to teach new concepts, improve or even modify behaviors. Among these, there are a large number of tools designed to teach young children to identify basic emotions, such as the previously mentioned Emodiscovery. Most of these aids focus on children who already have diagnosed disorders that affect their social-emotional development, such as ASD (Autism Spectrum Disorder), or have difficulty controlling tantrums. As a result, current tools are broad and introductory, restricted to basic emotions and generic coping strategies. Therefore, they do not promote the identification, acknowledgment, or expression of vulnerable emotions specifically, neither do they often engage parents to explore such emotions with their children. This investigation focuses on filling this gap, combining well-known approaches to experiencing vulnerable emotions (Brown, 2008) with gamification, to encourage long term engagement while fostering a safe environment during parent-child playtime.

Assumptions & Limitations

First, I assume that young boys want to be able to healthily express vulnerable emotions in a safe environment, and their parents are interested in developing children's socio-emotional skills. I assume there are diverse family structures where other family members take on the role of the father figure, such as a step-father, grandparent, uncle, or older sibling. However, for the purpose of this investigation, I will use the terms father or parent to refer to any number of possible father figures. I assume that the fathers in this investigation are within the "ready to know '' phase of the idea receptivity gradient, this means they have some baseline knowledge about the topic and are curious to learn more.

Although the outcome of the project could be useful for both males and females, I am focusing on fathers and sons due to the negative influence masculine gender norms have on boys and fathers in their relationship with emotions, as explained in previous chapters. Still, the project can be extended to children of other ages or who might not identify as male or female (nonbinary) and children whose biological sex does not align with their gender identity (transgender).

For this investigation, I am not focusing on children already diagnosed with disabilities that affect socio-emotional skills such as ASD (Autism Spectrum Disorder). However, these populations could interact with the outcome, knowing that verbal communication, sight, and basic reading skills are necessary for interaction with the final product. I understand emotional dysfunction is a complex and serious condition with many possible sources and, therefore, cannot be fully eliminated with preventive interventions restricted to one source and scenario. I understand that the limitations of time and funding of this project will not allow for the construction of a fully functioning prototype. Instead, there will be studies with high fidelity prototypes of content, as well as, a few fully fleshed-out examples of what the final product is intended to look like.

Annotated Bibliography

Gender identity development

From an early age, our behaviors are modeled by parents, peers and societal groups, due to the high plasticity of the infant brain that captures these hints of behaviors and transforms them into norms which we are later expected to follow in order to please and conform. This process constitutes what we know as gender norms (Eliot, 2009).

Gender norms and societal expectations are also highly responsible for health disparities between genders observed throughout life and this is true for most societies around the globe. (Saewyc, 2017).

Even though gender norms affect all of us independently of culture or geographic location, these societal expectations differ greatly for boys and girls. (Kågesten, Gibbs, Blum, Moreau, Chandra-Mouli, et al., 2016).

A Global Perspective on Gender Roles and Identity.	Saewyc, 2017
Pink Brain, Blue Brain: How Small Differences Grow Into Troublesome Gaps - And What We Can Do About It.	Eliot, 2009
Understanding Factors that Shape Gender Attitudes in Early Adolescence Globally: A Mixed-Methods Systematic Review.	Kågesten et al., 2016

Masculine gender norms of emotion expression

When it comes to emotion expression, boys are often socialized by parents, teachers, and peers to restrict experiences and expressions of vulnerable emotions such as sadness, fear, anxiety, and guilt (Eisenberg, Cumberland, & Spinrad, 1998; Denham, 2007).

If boys challenge traditionally masculine gender norms, punishment takes place, and this punishment is far more significant when compared to girls who do the same for feminine norms. (Yu, Zuo, Blum, Tolman, Kågesten, Mmari, De Meyer, Michielsen, Basu, Acharya, Lian & Lou, 2017; O'Neil, 2008).

The restriction of vulnerable emotions is established more often by fathers than mothers, and causes young boys to lessen the expression of said emotions later in life. (Chaplin et al., 2005).

Restrictive emotionality is the condition resulting from traditional male gender norms around emotion expression (Eisler & Skidmore, 1987).

Masculine Gender Role Stress: Scale Development and Component Factors in the Appraisal of Stressful Situations.	Eisler & Skidmore, 1987
Marching to a Different Drummer: A Cross-Cultural Comparison of Young Adolescents Who Challenge Gender Norms.	Yu et al., 2017
Summarizing 25 Years of Research on Men's Gender Role Conflict Using the Gender Role Conflict Scale: New Research Paradigms and Clinical Implications.	O'Neil, 2008
Parental Socialization of Emotion.	Eisenberg, Cumberland, & Spinrad, 1998
Parental Socialization of Emotion Expression: Gender Differences and Relations to Child Adjustment.	Chaplin et al., 2005

Emotion regulation & Restrictive Emotionality

Children are capable of using emotion regulation coping strategies to modify their emotions from a very early age, with great increase in the variety of strategies used after age 5 (López-Pérez et al., 2016).

These emotion regulation strategies used by children to cope with negative emotions vary according to the emotion elicited: younger children use less positive strategies than older ones, and boys usually less than girls, especially for fear and anger (López-Pérez & Pacella, 2019).

Male's restrictive emotionality is characterized by the inability to identify, understand, and tolerate emotional states, and is a risk factor for problem behaviors in children due to the barriers imposed by gender socialization (Wong, Pituch, & Rochlen, 2006).

Interpersonal emotion regulation in children: Age, gender, and cross-cultural differences using a serious game.	López-Pérez & Pacella, 2019
Studying Children's Intrapersonal Emotion Regulation Strategies from the Process Model of Emotion Regulation.	López-Pérez et al., 2016
Men's restrictive emotionality: An investigation of associations with other emotion-related constructs, anxiety, and underlying dimensions.	Wong, Pituch, & Rochlen, 2006

Emotion dysregulation & Aggression

It is male's non acceptance of specific emotional experiences, and not so much their inability to regulate internal emotions, that dictates how restrictive emotionality evolves to aggression (Cohn et al., 2010).

This means that both men who already conform to masculine gender norms and men who believe they should model their attitudes to conform with norms are at higher risk of becoming Intimate Partner Violence perpetrators (Berke et al., 2016).

Therefore, emotion focused prevention efforts targeted to young boys fail when they don't acknowledge the role masculine gender norms take in this process. (Berke et al., 2018).

Masculinity, Emotion Regulation, and psychopathology: A critical review and integrated model.	Berke et al., 2018
The role of emotion dysregulation in the association between men's restrictive emotionality and use of physical aggression.	Cohn et al., 2010
Masculine Discrepancy Stress, Emotion regulation difficulties, and Intimate Partner Violence.	Berke et al., 2016

Play

Play should be taken seriously due to its important training role in children's development, when children freely exercise skills needed later in life. If some skills are not exercised during play, children might perform worse than those who exercised the same skill consistently (Rubin, 1982).

Play can also be used to introduce gender norms and limit children's play experiences. (Jacklin, DiPietro & Maccoby, 1984).

Even though same gender kinds of play stimulate masculine gendered behaviors in boys, traditionally female kinds of play help boys improve their ability to express emotions (Coyne et al, 2016).

Play that promotes verbal, nurturing, and comforting skills provide the highest level of play complexity, essential for the full development of social-emotional abilities in children (Cherney et al., 2003).

Early play theories revisited: Contributions to contemporary research and theory.	Rubin, 1982
Sex-Typing Behavior and Sex-Typing Pressure in Child/Parent Interaction.	Jacklin, DiPietro & Maccoby, 1984
Pretty as a Princess: Longitudinal Effects of Engagement With Disney Princesses on Gender Stereotypes, Body Esteem, and Prosocial Behavior in Children.	Coyne et al., 2016
The Effects of Stereotyped Toys and Gender on Play Assessment in Children Aged 18-47 Months.	Cherney et al., 2003

Research

Conceptual Framework & Research Questions

Restrictive Emotionality System

This adapted framework combines work from various authors and explains how gender norms around emotion expression contribute to the appearance of aggressive behaviors. However, my focus lives in the first part of the framework, promoting understanding and expression of vulnerable emotions in a safe space to reduce RE's chances of limiting a child's expression, as well as the development of emotion dysregulation over time.

Stressor situation happens -
Emotions are triggered

Thesis Focus Area

Emotional Expression Masculine Gender Norms:

Suppressed emotions

Allowed emotion

Fear **Guilt** **Sadness** **Anger**

Vulnerable emotions

If expressed *If suppressed*

=
Masculine status reinforced

=
Social Punishment

Brief alleviation of gender-linked stress

O'Neil, 2008

Chaplin, Cole, & Zahn-Waxler, 2005; Eisler & Skidmore, 1987; Grossman & Wood, 1993.

Constant repetition of these behaviors leads to

Avoidance, Denial and suppression of vulnerable emotions

Expression of allowed emotions

Over time

Tull et al., 2007; Ohira et al., 2006.

Psychological inflexibility

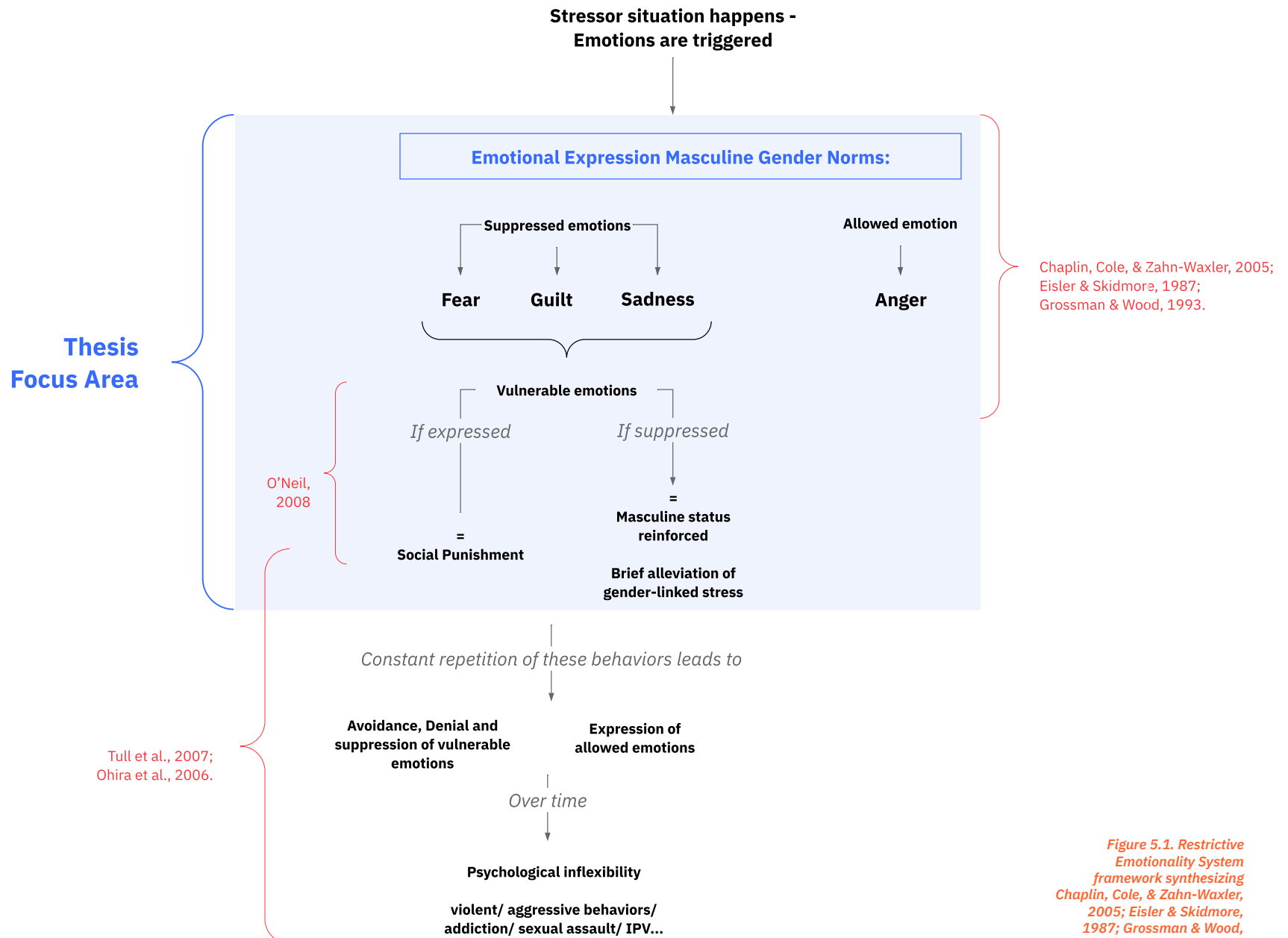**violent/ aggressive behaviors/ addiction/ sexual assault/ IPV...**

Figure 5.1. Restrictive Emotionality System framework synthesizing Chaplin, Cole, & Zahn-Waxler, 2005; Eisler & Skidmore, 1987; Grossman & Wood, 1993; O'Neil, 2008; Tull et al., 2007; and Ohira et al., 2006.

Receptivity Gradient

After researching literature, I selected different theories to understand my problem area in a more concise way—since its content is dense and intricate—ranging from the field of Clinical Psychology to Neuroscience.

This adapted version of David Rose's receptivity framework contextualizes the specific point of view of parents, as they are the ones with the decision-making power for accepting or rejecting the designed product initially. The framework shows the current stage of the father, and the expected stage in which they would be after exposure and constant use.
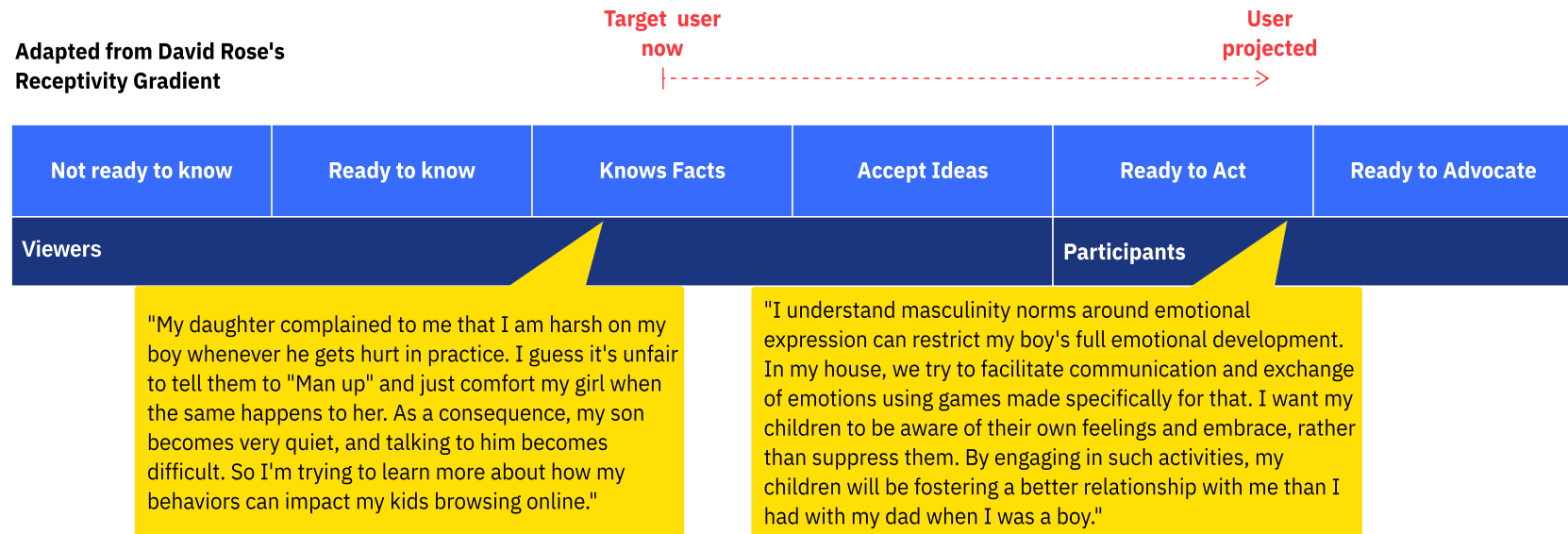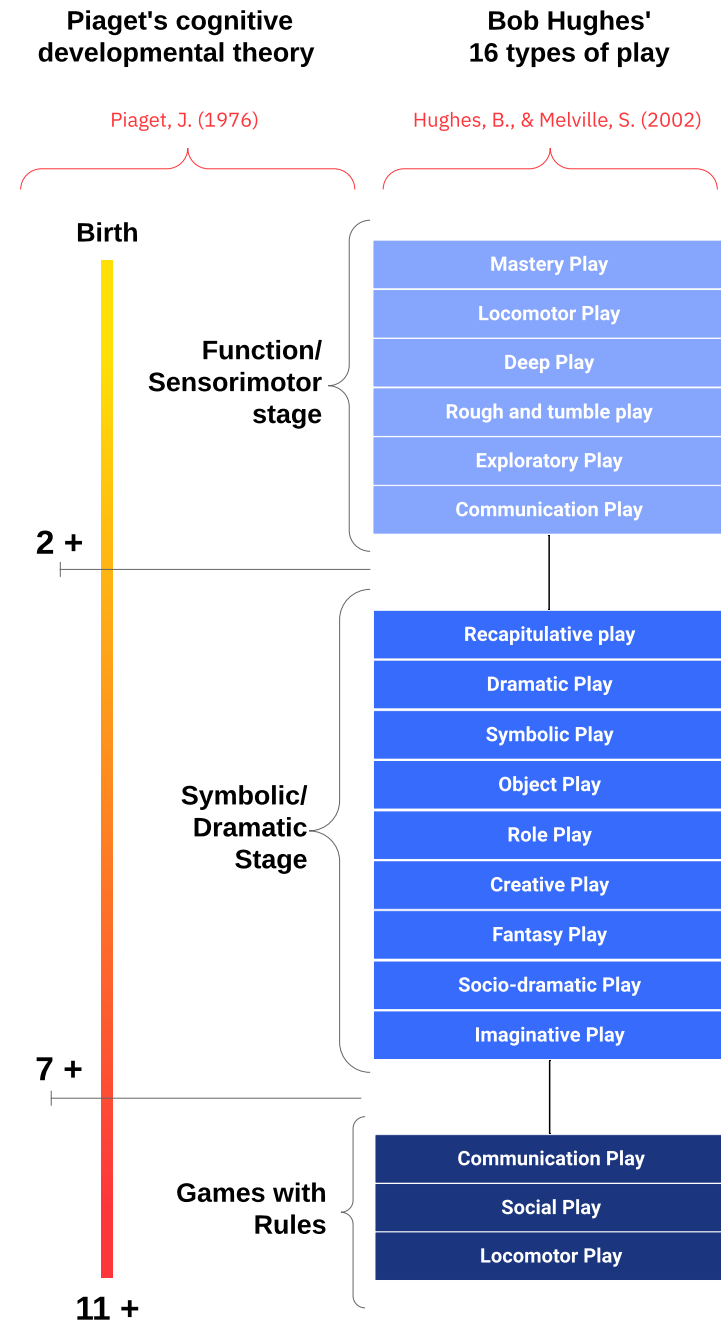
Adapted from David Rose's Receptivity Gradient

Target user now ┤- -→ User projected

Not ready to know	Ready to know	Knows Facts	Accept Ideas	Ready to Act	Ready to Advocate

Viewers ... **Participants**

"My daughter complained to me that I am harsh on my boy whenever he gets hurt in practice. I guess it's unfair to tell them to "Man up" and just comfort my girl when the same happens to her. As a consequence, my son becomes very quiet, and talking to him becomes difficult. So I'm trying to learn more about how my behaviors can impact my kids browsing online."

"I understand masculinity norms around emotional expression can restrict my boy's full emotional development. In my house, we try to facilitate communication and exchange of emotions using games made specifically for that. I want my children to be aware of their own feelings and embrace, rather than suppress them. By engaging in such activities, my children will be fostering a better relationship with me than I had with my dad when I was a boy."

Figure 5.1.2. -Adapted version of David Rose's Receptivity Gradient.

Children's play stages

I utilized this adapted framework by combining the work of Piaget (1976), and Hughes & Melville (2002) to better lay out the age groups my project could serve. According to Piaget, around 7 to 11-year-old children enter the Concrete Operational Stage, when they become more aware of external events, demonstrate logical reasoning, and realize their own thoughts and feelings are personal and not common sense. It is also during this stage that children start understanding rules and the meanings behind activities they engage in. They are able to imagine, make associations, and role play. Around 11 years old; however, parents start getting substituted by children's peers when it comes to modeled behavior. For that reason, I am going to focus on young boys from 7 to 10 years old as my age group during this investigation.

Figure 5.1.3. Framework synthesizing Piaget, 1976; and Hughes & Melville, 2002.

Piaget's cognitive developmental theory

Piaget, J. (1976)

Bob Hughes' 16 types of play

Hughes, B., & Melville, S. (2002)

Birth

Function/ Sensorimotor stage

- Mastery Play
- Locomotor Play
- Deep Play
- Rough and tumble play
- Exploratory Play
- Communication Play

2 +

Symbolic/ Dramatic Stage

- Recapitulative play
- Dramatic Play
- Symbolic Play
- Object Play
- Role Play
- Creative Play
- Fantasy Play
- Socio-dramatic Play
- Imaginative Play

7 +

Games with Rules

- Communication Play
- Social Play
- Locomotor Play

11 +

The Shame
Resilience Process

According to Brown's Shame Resilience Theory (2008), shame and fear are the main components of the feeling of vulnerability. Brown groups the different ways people resist vulnerability under four categories. These categories include anger expression (acting out); diminishing a person in order to feel power, such as bullying (control); denying or invalidating the existence of these feelings (withdraw); and performing according to the expectations of your gender (please). These are also the ways in which RE tends to manifest in boys and men. These components illustrate in a straightforward way the undesired behaviors users should combat, while providing future interventions with ideas of how vulnerability can be practiced.

Also according to Brown's research, vulnerability for men is specifically translated as weakness. It encompasses feeling physically, mentally, or emotionally weak, or demonstrating any behavior that, according to traditional male gender norms, are perceived as a form of weakness. Some examples are: losing a job, asking for help, getting picked on at school, performing badly at sports or group activities, engaging in activities traditionally linked to females, being rejected, crying, demonstrating physical affection, and admitting one's not emotionally okay.
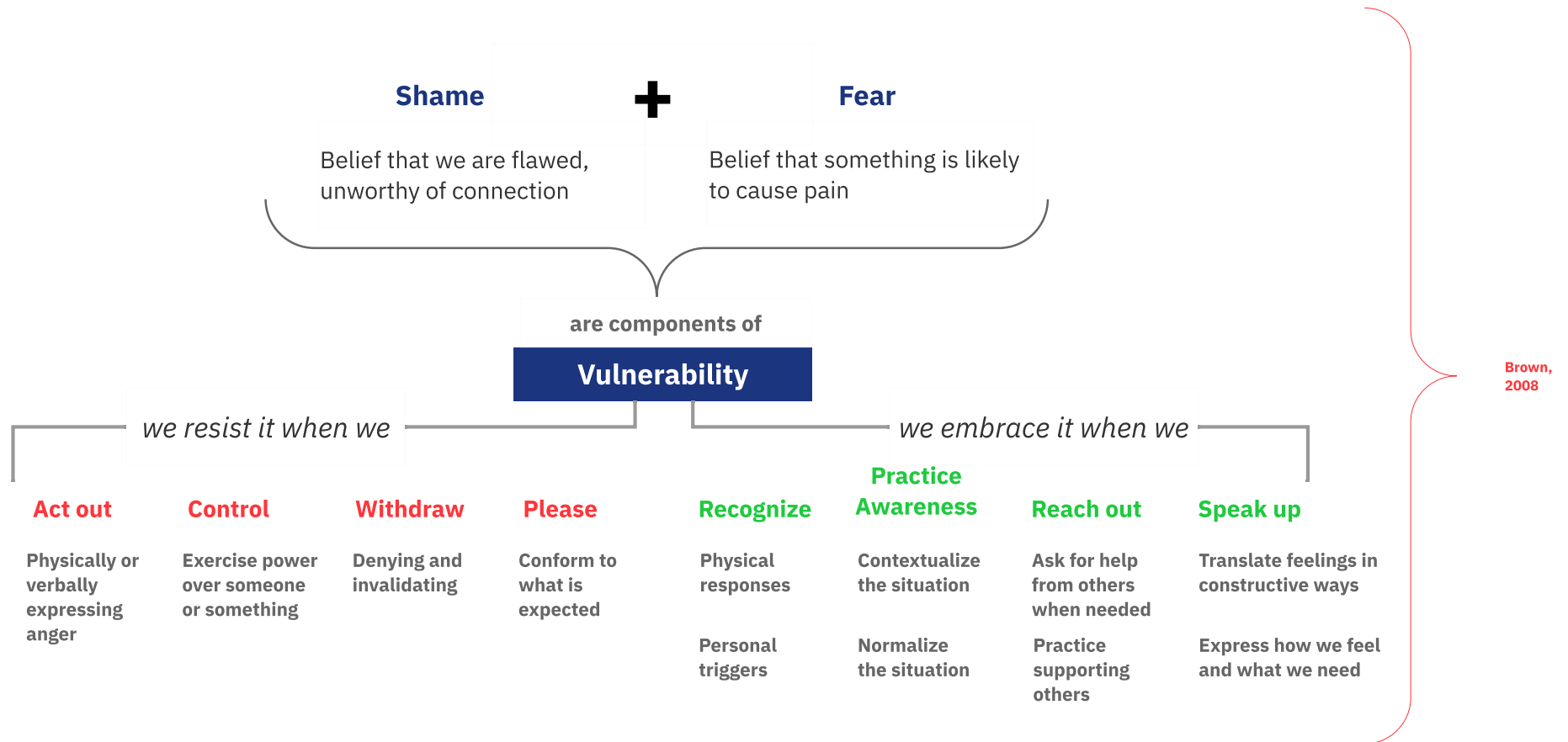
The Shame Resilience Process

Shame **+** **Fear**

Belief that we are flawed, unworthy of connection

Belief that something is likely to cause pain

are components of

Vulnerability

we resist it when we

we embrace it when we

Act out	**Control**	**Withdraw**	**Please**	**Recognize**	**Practice Awareness**	**Reach out**	**Speak up**
Physically or verbally expressing anger	Exercise power over someone or something	Denying and invalidating	Conform to what is expected	Physical responses	Contextualize the situation	Ask for help from others when needed	Translate feelings in constructive ways
				Personal triggers	Normalize the situation	Practice supporting others	Express how we feel and what we need

Brown, 2008

Figure 5.2. Framework adapted from Shame Resilience theory - Brown, 2008.

How can the design of a Mixed Reality game during father & son playtime encourage a positive mindset towards vulnerability to prevent emotion-dysregulation in boys?

Primary research question

SQ1 *How can characters in a narrative illustrate coping mechanisms to facilitate conversations around emotional reactions?*

SQ2 *How can puzzles help identify bodily responses to vulnerable situations, in order to promote awareness of personal triggers?*

SQ3 *How can challenges in a narrative support the act of sharing to normalize constructive emotion expression?*

Definition of Terms

Gender identity	A person's own perception of having a particular gender.
Gender norms	Socially constructed roles and behaviors typically associated with males and females.
Social/emotional development	A child's development in terms of experience, expression, and management of emotions, establishing positive relationships with others. Includes intrapersonal and interpersonal skills.
Intrapersonal skills	Communications that occur within a person's own mind.
Interpersonal skills	Behaviors and tactics a person uses to interact with others effectively and positively.
Masculinity	Socially constructed attributes, behaviors and roles associated with boys and men.
Adaptive behavior	Age-appropriate behaviors that allow people to get along in the environment with higher success and minimum conflict with others.

Definition of Terms

Maladaptive behavior	Behaviors that inhibit a person's ability to adjust to situations, such as drinking and gambling.
Restrictive Emotionality (RE)	Difficulty expressing feelings and basic emotions, specifically said vulnerable emotions.
Vulnerable emotions	Emotions traditionally associated with weakness such as sadness, fear, guilt, anxiety, and shame.
Emotion Regulation (ER)	Strategies used to change how one is feeling.
Gamification	Applying elements of playing games (competition, progression, scorekeeping, etc.) to a task to encourage engagement.
Emotion Dysregulation	The inability of a person to control or regulate their emotional responses.
Intimate Partner Violence (IPV)	Violence by a current or former partner in an intimate relationship against the other partner.

Methods

Precedents analysis - Precedents of purpose:

I conducted a systematic analysis of existing creative aids and gamified tools to better understand what is currently offered. These tools are mostly focused on teaching children about basic emotions and coping strategies. By listing their qualities and limitations, I could find a focused problem space in which my project could live.

Precedents of technology:

Once I decided on the shape my project would take, I listed the best evaluated existing games and interactive storybooks that use AR. By doing so, I could better understand how this technology can bring new possibilities to playtime.

Questionnaires:

I conducted a questionnaire with the general public using Google Forms to find more about memories of family playtime and the feelings it evokes. Participants of all age ranges called attention to the unique child-parent bond that flourishes during play, informing my focus on parent-child playing together.

Visual studies & Research through Design:

I started my research through design by conducting rapid ideation sessions that provided me with a large number of initial design ideas, which were then systematically analysed and refined, eventually informing my final studies.

Interviews with experts:

I conducted in person semi-structured interviews with three psychology experts whose work focuses on family relations, children and emotions., as well as a virtual interview with a game design expert who specialised in games with a purpose other than entertainment. These professionals provided important feedback that informed personas, scenarios, current pain points and design decisions pertaining to the final shape of the project.

Methods

Personas, Scenarios & Stakeholders Map:

I developed a multiple persona scenario informed from real life situations that interviewed family counselors and clinicians encounter in their daily lives. I then created a simplified stakeholder map to lay down how each component of this system relates to each other and the final product.

Comparative analysis of AR platforms:

In order to understand better the availability of the technology chosen in the current market, I analysed existing software development kits, their functionalities, hardware requirements, and costs. This analysis suggested the viability of an open source option for the event of future production.

Prototyping & Usability Testing:

Low fidelity prototypes were used to conduct Think-aloud Protocol usability testing sessions with classmates during the initial stages of the project. These prototypes took the form of paper cards and boards, with the objective of understanding how players feel when talking about emotions during a game. My final studies were done with classmates, parents, and children ages 7 to 11, and utilized higher fidelity prototypes in the form of digital cards and illustrations. These were used to conduct virtual sessions of usability testing resembling the Wizard of Oz technique; the only difference was that, due to the nature of the situation, players were aware of my presence, but not of how I was stimulating the system's responses. Testing sessions were followed by feedback sessions - focusing on the experience of playing and whether or not players understood what message the game is trying to convey.

Results

Precedents

There are a number of aids designed around children and emotions; however, most focus on helping children already diagnosed with disabilities that affect social-emotional skills identify basic emotions in others and learn generic coping strategies. There is no precedent found during the course of this investigation focused on identification, acknowledgement and expression of vulnerable emotions in children. Precedents presented here were divided into two sections: Precedents of Purpose—selected based on their relation with the main topic— and Precedents of Technology—selected based on their use of similar technology and interaction. All precedents were evaluated according to for whom each is built; what it does; relevant qualities that could be embedded in future studies; and specific limitations.

Precedents of Purpose:

1 - Emodiscovery App

Who: Children 8 to 12 years old.

What It Does: This digital game trains children's Emotion Regulation skills by asking them to identify the emotion expressed by a virtual character and which strategy they believe is most appropriate to deal with the problem reported.

Relevant Qualities: The use of a virtual character promotes deeper engagement and empathy. The use of informal language and narrative helps children believe that they are offering effective advice to a virtual friend. Situations presented are divided by emotions elicited.

Limitations: This game focuses on understanding children's current patterns; therefore, it does not offer motivation for choosing most appropriate regulation methods. Whatever strategy is chosen by the child, the virtual agent reports to be feeling better. Does not promote parent-child interaction or exchange.

figure 7.1. - Emodiscovery App screen.

2 - I Choose Self Control Board

Who: Children ages 4 to 12.

What It Does: This analogic board helps children identify their own emotions with the use of face images located at the top. Children are prompted to choose a regulatory strategy from the bottom part of the board. They can also select one of the goals on the back of the board to reflect on how they want to modify their feelings.

Relevant Qualities: Easy to carry around; velcro parts easily attach and detach. The board comes with extra blank components that can be personalized for each one of the three sections. Visuals and language used are appropriate for children's understanding. By selecting a strategy method and a goal, children then compromise to take steps towards the goal and feel accomplished when the goal is achieved. Comes with an instruction guide.

Limitations: Focuses exclusively on identifying and modifying current emotions; however, the board itself does not offer explicit room for the expression of emotions nor does it acknowledge the validity of said emotions depending on the situations that triggered them.

figure 7.1.2. - Front side of I Choose Self Control Board

3 - Social Problem Solving Board game

Who: Children ages 5 and up

What It Does: There are over 80 scenario cards with this board game, divided by themes such as school, home, activities and friends, and real life situations. Children roll the dice and the color they land on will determine which real life situation they get. After reading each card, children spin the wheel to see which one of the options they will do: act out the situation, discuss consequences, give options, identify what they would do in that situation. The first to get to the end of the board wins.

Relevant Qualities: This game can be printed at home in full color or black and white. Real life situations adequate to the age range get children thinking about appropriate responses ahead of time. By explaining the consequences of their chosen response to a situation, children reflect about who is impacted and how.

Limitations: The game has to be played in groups of 3 or more, where one is the moderator. It doesn't offer an opportunity for a deeper engagement with emotions, focusing on broad and hypothetical situations. There is also no motivator for choosing appropriate responses to each situation. Does not support parent-child interaction or exchange.

figure 7.1.3. - Components of the Social Problem Solving Board Game

4 - Feelings Bingo

Who: Children ages 3 and up

What It Does: This game is composed of 20 bingo cards, 6 featured feelings cards, and card markers you place as you fill in your bingo cards. The one who completes their set first wins. The objective is to teach children to recognize and quickly express different emotions.

Relevant Qualities: This game can be downloaded and printed at home; the card size is compact and easy to carry. Each time one featured feelings card is pulled, the children who have that emotion on their set are invited by the mediator to act the emotion out, or to share a time when they felt the said emotion, promoting healthy discussions about real life events. Manufacturer advises the mediator to reward the winner for sharing emotions. This could be done with immaterial things such as extra time playing with friends, or doing an activity they desire.

Limitations: Feelings Bingo can only be played in groups of 3 or more, where one is the moderator. As it brings only 6 featured emotions, the game can become repetitive after a while and wouldn't keep older children engaged. It does not explicitly suggest parent-child exchange, unless the parent decides to participate fully. Does not offer motivation for continued use.

figure 7.1.4. - Card components of the Feelings Bingo.

5 - The Coping Skills game

Who: Children ages 7 to 12

What It Does: The objective of this game is to teach children to identify and apply appropriate coping strategies in different situations. This game is composed of cards, tokens and a board and can be played with 2 to 4 people.

Relevant Qualities: This game is pretty straight forward on its main message: learn 9 positive coping skills. The skills taught during the game can later be applied by parents when children have to deal with real life problems, which makes The Coping Skills Game good to be played by the whole family. It also brings a wide variety of situation cards which are based on real-life.

Limitations: While the board seems visually attractive at first sight, the cards are restricted to plain paragraphs of text children have to read every round, which becomes a problem for younger players or those with literacy difficulties. According to users, the game is more successful at a therapist's office than in a family home, as it focuses on memorizing when to use each coping skill. It also doesn't explicitly promote opportunities for light hearted conversations or funny moments to occur among players.

figure 7.1.5. - Components of the Coping Skills Game

Precedents of Technology:

6 - Wonderscope for Story Explorers

Who: Children ages 4 and up

What It Does: This interactive storytelling app uses Augmented Reality to bring stories to life. It features 3 different stories that are told by the characters in them. It utilizes the real physical space to introduce scenarios that go beyond screen limits.

Relevant Qualities: Wonderscope allows children to interact directly with characters, by responding to questions they ask or saying action words to give continuity to the story. The app features sensors that can identify where the user's voice is coming from, allowing characters to change posture to face children directly, making children believe characters can really see them. Tutorial instructions are kid friendly and intuitive. The digital quality of the tool permits new stories to be introduced from time to time, allowing for it to be used many times.

Limitations: To explore scenarios, users have to hold and move the phone or tablet during the whole time. To interact with characters, children can only say pre determined words shown on the bottom of the screen, making the experience less organic. The app is only available for iOs and is paid, as well as specific new stories added, making it a continuous expense.
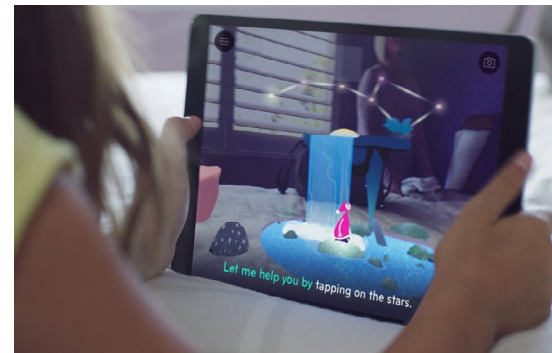
Figures 7.1.6. - Screens of Wonderscope for Story Explorers

7 - Garden Friends

Who: Children and adults

What It Does: In this building game players help the character build a beautiful garden using their voice. By saying nice words, AR flowers and trees start appearing, growing strong and beautiful. Plants react to bad words said by players by getting weaker and looking uglier.

Relevant Qualities: In this app, characters always call players by their name, and the system is able to understand loose words players say, quickly recognizing it as nice or bad words, perhaps with the help of an internal catalog. These qualities allow for a more organic engagement with the virtual character. Produced using Google's open source SDK, ARcore.

Limitations: This game brings features with big potential for creation; however, it lacks narrative to involve players, acting as a quick game adults and children can enjoy alone or with others.
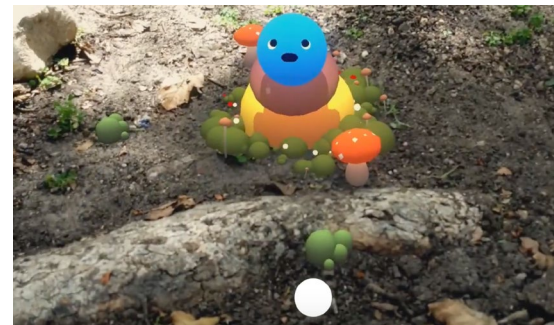
Figures 7.1.7. - Screens of Garden Friends

8 - Draw and Dance

Who: Children and adults

What It Does: This project of an app created using the open source Google ARCore allows users to create their own stick figure, which will then respond to any sound played by dancing. It also responds to sounds such as a baby crying or a dog barking, as well as loose words you say, allowing the character to dance to a broad range of music styles - played using the app, or another external gadget, like Google Home.

Relevant Qualities: The character created by users is completely controlled by voice, and can recognize the style of music being played by dancing to the correct rhythm or adding specific elements such as a guitar— when the user says "rock music." These qualities transform the user-character relationship into a much more interactive and engaging experience.

Limitations: Right now, as Draw and Dance is an ongoing experiment, the character can't be customized with a more interesting visual than a simple stick figure. Still this project is a great example of how organic the interaction between virtual characters and users can be with AR.

Figure 7.1.8. - Screens of Draw and Dance

Studies

Studies

A brief overview of process work

My initial design ideas were ideated quickly during wild ideation sessions, and then systematically analysed in a matrix, using Hamari and Tuunanen Key Motivational Orientations for Engagement in Games (2014) which are: Achievement, Exploration, Sociability, Domination, and Immersion.

Figure 7.2. - Matrix synthesizing Hamari and Tuunanen Key Motivational Orientations for Engagement in Games (2014) used to evaluate my initial ideas.

Game-focused engagement features

	Platform	Achievement	Exploration	Domination	Immersion	Sociability
BOO IS...	Cards + Tactile pieces + Book and/or digital app	Figure out the different elements of Boo's mysterious story, as well as how to make him feel better.	Different emotions, causes, locations and consequences through cards and imagination. Different face and body pieces to build Boo's unique avatar.	Train the mind to think about all elements involved in a situation and how they provide different outcomes of body language, behavior and feelings.	Wear the "Detective's hat" to spot clues and draw conclusions. Rich graphics. Props and wearable elements to enrich experience.	Caregiver and kid work together - non competitive. Minimum 2 players - Cooperation needed to complete game.
TRUST CHALLENGE	Board game with tokens and cards + QR code reader on phone or tablet.	Gain trust points and pass levels, defeat other players. Give good advice.	Explore challenges main character (explorer) has to win by giving good advice so you can progress to gain character's trust as ultimate wise mentor.	Defeat other players by getting to the end of the board first, while collecting the larger number of trust points for giving adequate and sensible advice.	Character's reaction and feedback to your advice card can be seen using a phone or tablet to read the QR code in each card. Props and wearable elements.	Caregiver and kid compete to earn the post of ultimate mentor (like a wizard character) 2 to 4 players.
HOW BRAVE ARE YOU?	Cards + Badges + Virtual App (or web page) for virtual character interaction.	Choose correct answer to the questions about each character (X,Y, Z) each round, collect theme badges as you win each round. Get to know X, Y & Z's struggles.	Explore real situations in the life of X,Y and Z - virtual characters, using their personality traits to guess which situation would require more courage from them.	Defeat other players by winning more rounds of a specific theme, conquest the badge for that theme and win the game once you achieve 3 badges.	Rich graphics, digital characters "judge" each response players give using voice reader. Character's visual feedback to players imput. Wearable badges.	Caregiver and kid compete to win each round around earound ach theme and then conquest more badges. 2 to 4 players.
DIAGNOSTIC	Mobile application	Guess what happened to the character by the physical responses (symptoms) he's expressing (body image - verbal cues - dry tongue - tight chest)	Explore different possibilities for why the character is expressing this behavior using imagination and audio/ video clues. Exercise thought process.	Win the game by entering more correct guesses (voice responses)	Virtual character moves and responds with basic reactions to your guessings. Game narrator releases clues here and there. Winners are saved in history.	Work together to discover what happened to the character - but only the one with the most correct responses wins. 2 to 4 players. Could work remotely.
KIND KINGS	Board game or Video game (use phone as remote with Chromecast)	Finish the journey helping people along the way to gain empathy points and reduce the impact the villain has on you if you fall on one of his pranks.	Explore different scenarios and ways to help people along the way - including other players.	Get to the end of journey with the maximum of empathy points and before other players. (even though you have to help them to become stronger)	Rich graphics - sound and video response to actions.	Caregivers and kid play against and also with each other. 2 to 4
GUESS IT	Easy-erase boards + Feelings cards	Fill in the blanks of a story on a board to determine what could've happened to get the character feeling that way. Guess from mimics from other players.	Explore what the other players associate with each feeling, as they create the story, mind reflection on how situations affect us	All win if the story is guessed correctly by the guessing team. Choice to play with a timer?	Feelings cards have graphics. Users mimic situations.	Work in 2 pairs. one creates the story, the other guesses as a team. Also works for 2 players, where one creates story and the other guesses.
THE KNIGHT IN SHINING ARMOR	Board game or Video game (use phone as remote with Chromecast)	Fight challenges and gain honors as you go, losing a diferent piece of armor each time you win a challenge. Fight extra challenges when naked to get extra honor.	Explore medieval like scenarios and challenges that mix fantasy and real life situations. Embodied experience.	Get to the end of the course first, without a single armor piece and maximum honor points.	Rich graphics, tokens, avatars with different armor pieces and styles that you wear and remove.	Caregivers and kid play against and also with each other. 2 to 4
ACHIEVEMENT SYSTEM	Personalized Journal - magnetic wall board - trophies (achievement marks)	Enter in journal different elements of situations that happened over the course of the week. Gain bravery points. Collect points to win trophies.	Explore writing down your own life situations with a different eye, analyzing the different actors and feelings involved and planning reactions to it.	Win trophies by collecting bravery acts - which are real acts of vulnerability you demonstrated over the week on your journal.	Personalized journal, rich graphics on board wall, tokens for the bravery points, trophies that can be hung on walls or exhibited.	Caregiver as mediator, helper, advisor, mentor. Help revising the journal acts with the child to make sure they took correct notes. Grant points and trophies.
EXPECTATIONS BOX	DIgital Game - mobile - desktop - chromecast	Hit the bars to bounce back on the walls and break the box, Avoid the obstacles to stay strong and scape the box on time.	Explore a metaphorical representation of how the gender expectation box works and how it feels like to try to escape it.	Crack the walls and break the box before time is up with as many bars collected as you can. possible to score high.	Motion graphics - sound and video - real time response.	Caregiver and kid play together to escape the box. 2 players.

Early testing

From the game-focused engagement features'matrix, the initial ideas which showed the most potential for opportunities were refined and quickly tested with classmates in the shape of low fidelity paper prototypes. Classmates then provided their instinctive feedback about the setup and the experience of playing a game that asks players to share their emotions and past experiences.
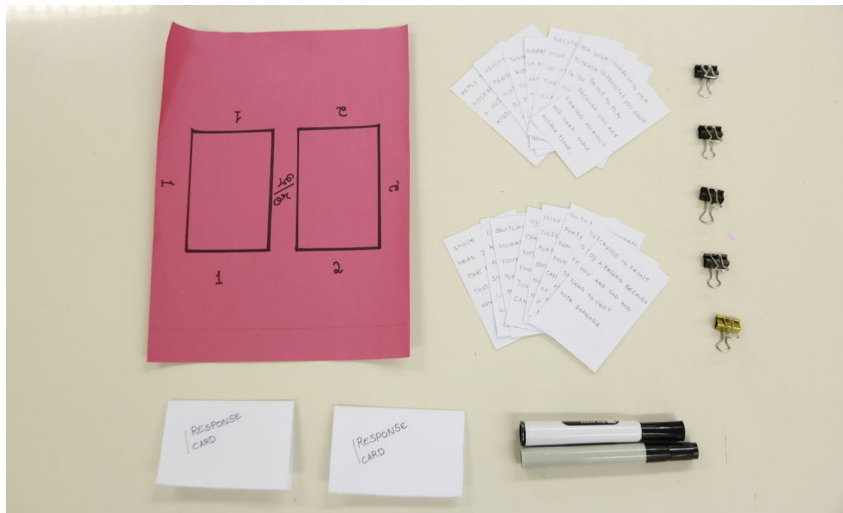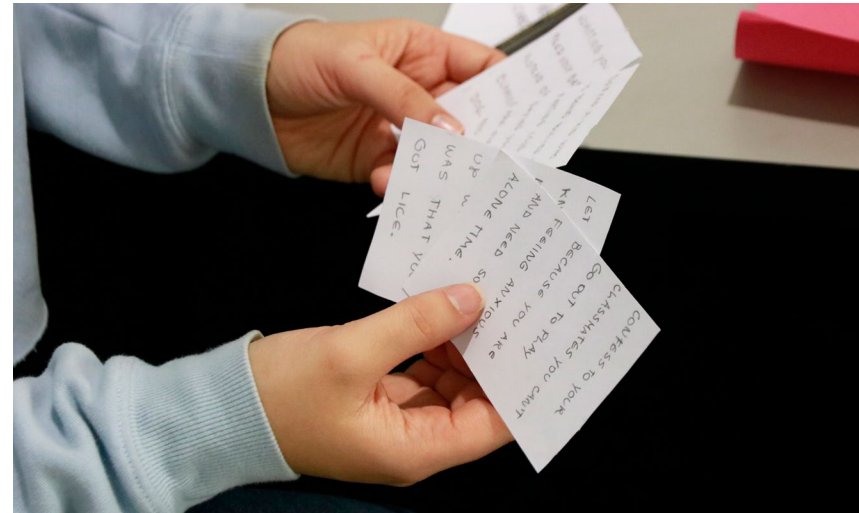
Initial storyboards

After multiple iterations and feedback provided from colleagues and thesis committee members, I landed on a system that would address all my sub questions as different features, while incorporating Augmented Reality to provide more engagement with players, specifically children. The system proposed utilized a board and cards that when read by an AR app on a mobile device, bring characters and situations to life.

With the initial system visually layed out, I showed my storyboards to Bob De Schutter, a senior Game Design professor and developer at Miami University, to get professional feedback in regards to the platform chosen and game design approach. Incorporating the feedback provided allowed me to make changes that bring a better experience for the final user, paying special attention to replayability and portability. To encourage replayability, I adapted the design of the cards so all content is generated by the application. This allows the same card to be read as different thematic situations during different play sessions, providing new and improved stories as the app updates, or as children grow. In terms of portability, I eliminated the necessity of a physical game board, so the cards can be easily stored and carried anywhere inside a pocket or hand bag.

Figures 7.2.4. - Initial digital storyboards of the game system unifying all three sub questions.

Virtual user testing

User testing sessions had to be conducted virtually because of the Covid-19, the novel coronavirus pandemic, which caused people all over the globe to stay socially isolated in their homes for undetermined time. Therefore, temporary adaptations were made to the initial storyboards to accommodate the new format. Below is the digital prototype utilized during these testing sessions. The content of the cards were refined enough to allow for players to engage in at least 5 rounds, enough to let players know if they win or lose the game. I utilized Adobe Illustrator's boards and layers features to organize game elements as if players were actually engaging in a finished digital game. Participants of user testing sessions engaged in video calls that permitted them to see the canvas on the right.

Different testing sessions occurred with a total of 4 adults and two boys ages 7 and 11. Players engaged in many rounds of the game, stopping to comment on the situations they picked and the character's reaction. Players also engaged in conversations with each other about the prompts they had to respond to, even when it wasn't their turn, linking those to similar situations in their lives. These behaviors track with the game's main goal of generating conversations about emotions and providing players the opportunity to bond with each other; however, it makes the total play time vary greatly. In the testing session with a parent and the two boys, the total time was 30 minutes for them to play the 5 rounds and provide additional feedback. It is important to mention that for the testing, the situations and outcomes were read manually—theoretically taking more time than the game would in its proposed final form. In the proposed final form narration, spoken by the accompanying AR interface, would be complemented by a brief animation.
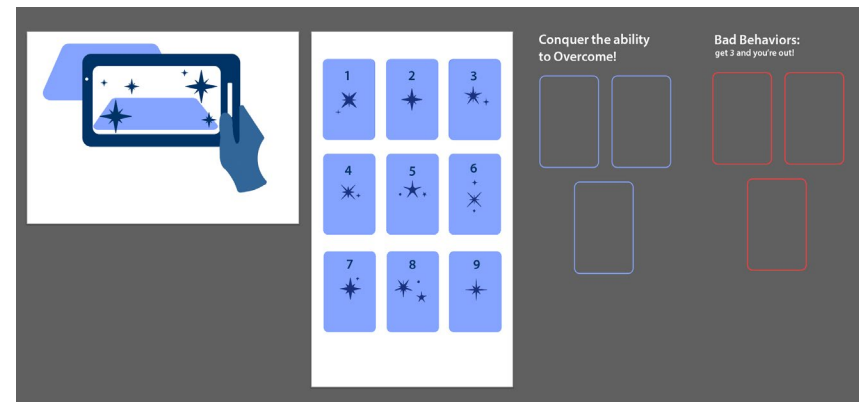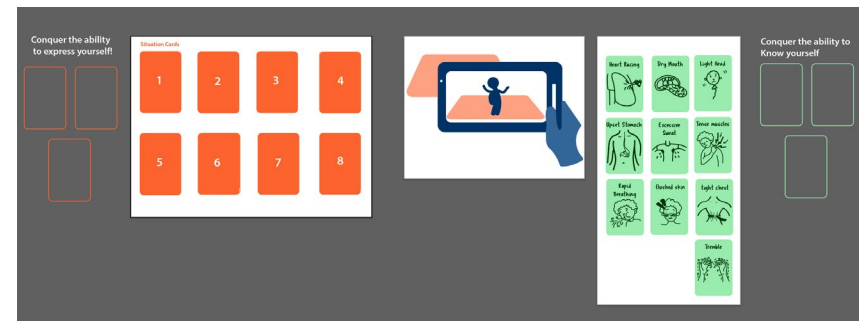
Figures 7.2.5. -
Set up of the game adapted
for online testing.

Personas & Scenario

For my studies all sub questions are addressed by different features of the same complex system; therefore, all the studies happen in the same scenario with the same personas. The final system takes the form of a mixed reality game composed of a cell phone or tablet; mobile application; and three decks of tactile cards. The final studies demonstrate key screens and digital prototypes of physical elements that compose the system.

John is a 36 years old manager at a local Best Buy in North Carolina. He is a present and active father who lives with his two children and often likes to bring in new games for them to play together. Lately, his younger son, Billy, has been worrying John, as he isn't communicating well and misbehaving often. John has tried, unsuccessfully, to talk with his son, but Billy's responses are monosilabic. The boy shifts the focus of conversations by showing aggressive behavior towards his sister.

John searches for help online and comes across Dr. Lilian's blog where she posts about family, gender, and emotions. One of her applied game reviews gets his attention, as it explores shame and resiliency in a ludic way for young boys and their parents. John thinks this could be a good way to start conversations about feelings with his son in an indirect way. He acquires the game online from a non-profit organization focused on positive masculinity.

A week later, a small package arrives and he follows the instructions to download the app. John waits until he is alone with Billy at home to introduce the game. They sit together across a small coffee table and begin playing.

Figure 7.2.6. - Personas: John and his son Billy.

Different agents
& the final system

The final system proposed in this investigation takes into account a series of collaborators with different, but equally important roles. In order to keep the availability of the final solution aligned with its social principles of helping children and fathers, I wanted to make sure a family's economic status would not impede their access to this tool. In this case this means including non profit organizations as catalyst agents. Organizations such as The Representation Project; The Good Man Project; and A Call to Men— which are focused on spreading awareness about healthy masculinity online and offline— have the potential to spark attention from financial partners and potential users.

Health workers—such as therapists, counselors, family coaches, and social workers—often utilize resources similar to my proposed game to stay up to date, so they also have the potential to bring the solution to the hands of the final users. Ideally this could happen by recommending it to families, as this game was initially designed to be used in the privacy of the home. Nevertheless, I don't discard the possibility of these professionals utilizing the game in their office visits as well, as my interviews with Dr. Amy Halberstadt, Dr. Kate Norwalk, and Dr. Kimberly Allen— all practitioners and professors at NC State University confirmed. They all constantly look for games to help resisting clients stay engaged with therapy content.
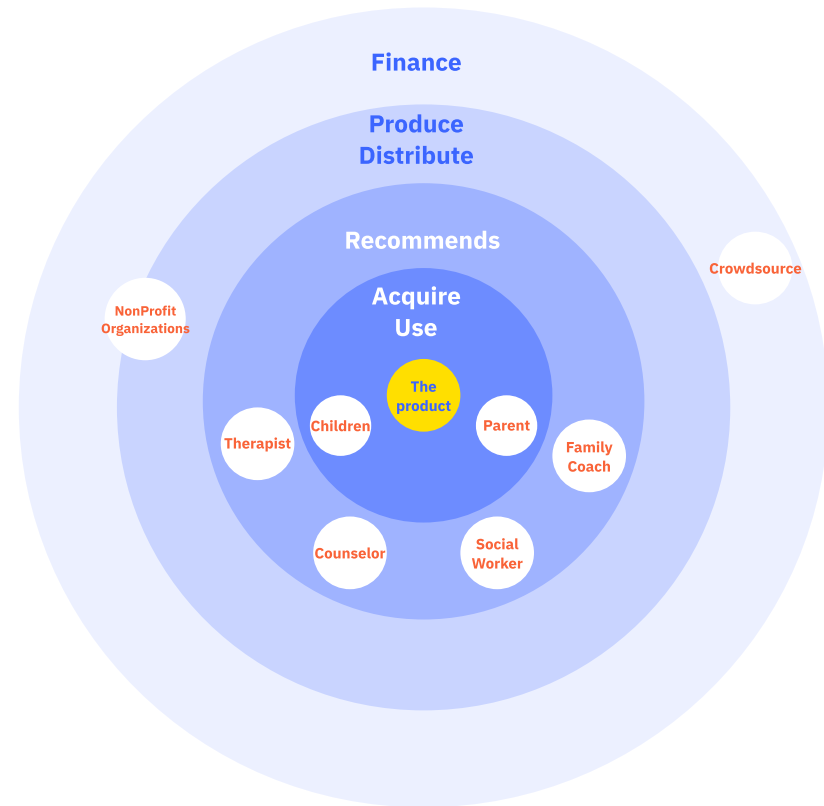

Figure 7.2.7 - Stakeholders Map.

The game
Cards + AR app

Players exercise vulnerability using 3 different types of cards:

Situation cards

Focus on
Constructive sharing of feelings, experiences and emotion expression

(SQ 1)

each round

Body response cards

Focus on
Identifying triggers of vulnerable situations and labeling physical responses

(SQ 2)

Magic cards

Focus on
Coping mechanisms
and behavioral reactions to emotions

(SQ 3)

Rapid Breathing

Are activated by AR app:

Last night, a kind elf offered me shelter from the rain.

When players:

Place it behind tablet:

Read it to app:

Figure 7.2.8. - Framework synthesizing how sub-questions were integrated into different features of the final game system.

Going back to Brown's Shame Resilience Theory, we can easily identify in our scenario that Billy is expressing different behaviors that illustrate resistance to vulnerability: Acting out (misbehaving or behaving aggressively), Control (exercising power over the conversation and his sister), and withdraw (invalidating and denying the situation by responding monosyllabically or refusing to communicate.) Therefore, the final system proposed addresses three main principles identified during the research phase as key to helping users embrace vulnerability. These are: The opportunity to express emotions constructively rather than suppress it; the awareness of one's body reactions to feelings; and the communication around behavioral reactions.
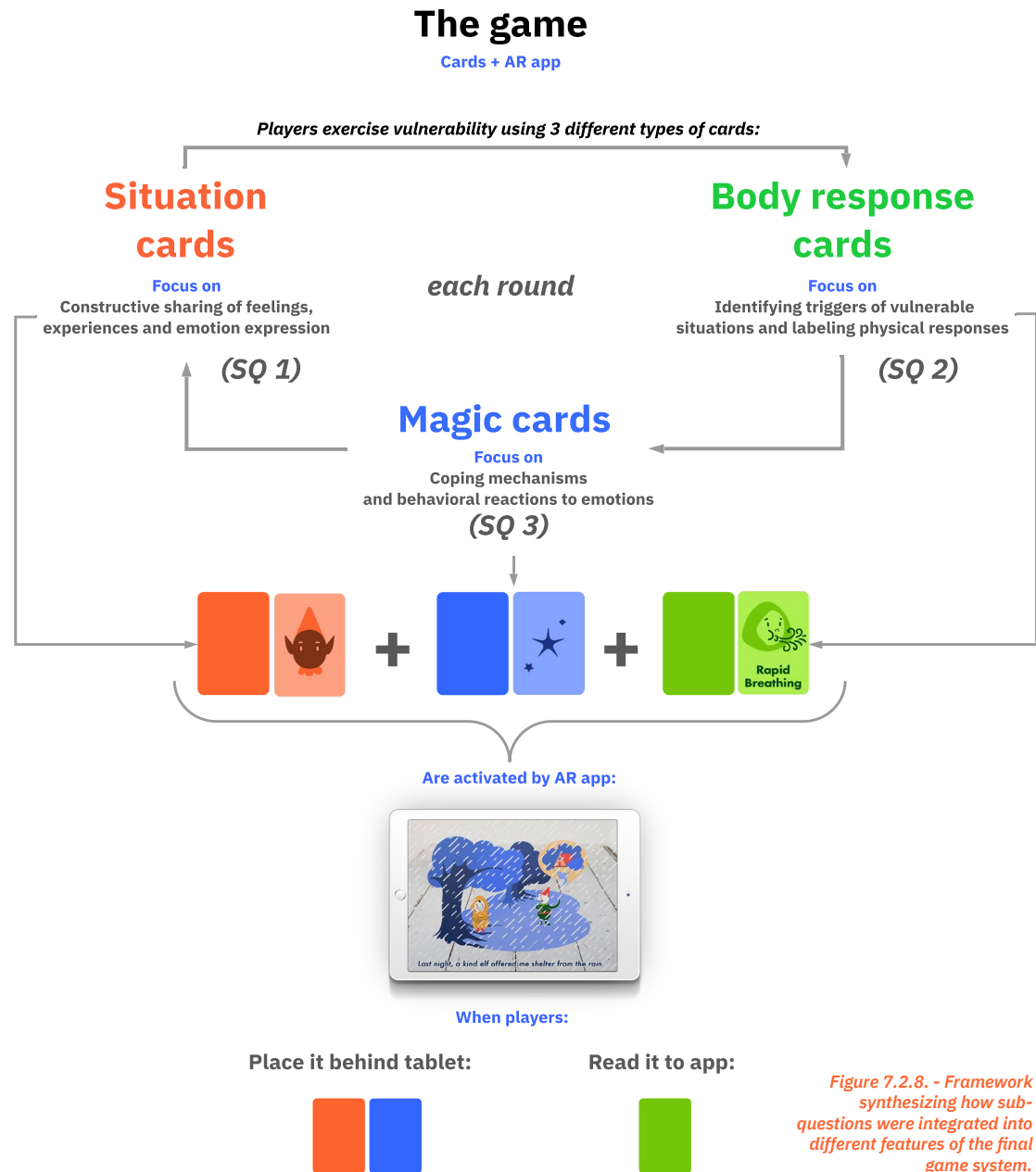
Concept

"I've heard a lot about heroes with superhuman strength or the ability to control the four elements. But in real life, none of this matters. Real heroes can control their own thoughts, feelings, and behaviors to survive the toughest challenges when they feel weak. Being brave is to have the courage to be ourselves no matter what! Even when we are afraid! The problem is that nobody can get there alone...

I'm Adam, a young explorer of magic lands. Through this journey, you can help me conquer the three abilities every real hero must possess. Collect three orange cards to earn the ability to express ourselves; three green cards to conquer the ability to know ourselves; and the blue cards, oh, these are magic! And, as with all magic, they can be tricky! They can give us the ability to make good decisions, but they might also show us some not so kind decisions that could make any journey fail.
Can you work together to help me become a real hero?"

This is the intro message players hear as they start the game for the first time. It offers a brief explanation of the context of the story and why the activities they are about to engage with are relevant to the character's journey.

The final studies

Study/ Feature 1
Situation Cards
& Constructive Expression

Refers to SQ1: How can challenges in a narrative support the act of sharing to normalize constructive emotion expression?
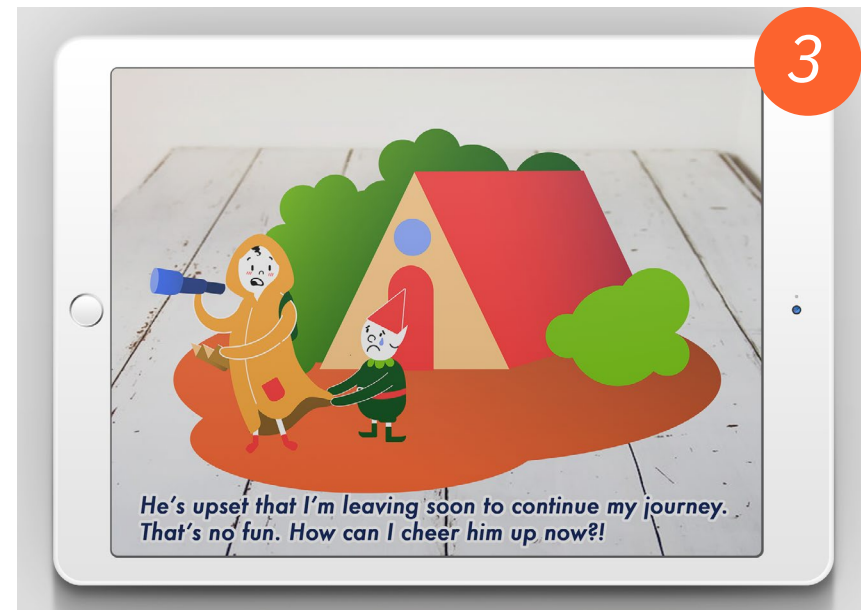
In this study players observe vulnerable situations with the eyes of an outsider while reflecting on similar circumstances present in their own lives to later respond to prompts. These prompts give them a neutral outlet to voice opinions and past experiences. Even though players' main objective is to get points in the game, in doing so, they exercise critical thinking about their own feelings.

How it works:

Players take turns each round so, starting the first round, a player chooses a situation card. The app then reads the card by playing an animated clip narrated by the virtual character. The virtual character then asks players for help using prompts that are directly or indirectly related to the situation. Prompts are specifically worded to make players feel like they are in fact helping the virtual friend in need by providing suggestions, experience, or engaging in activities. This removes the focus on players themselves and places the focus on someone else—the virtual explorer— facilitating the engagement of participants in the narrative.

See the animation at:
https://college.design.ncsu.edu/thenfinally/
pereira-de-souza/Situation_Animated.mp4

Last night, a kind elf offered me shelter from the rain.

He's upset that I'm leaving soon to continue my journey. That's no fun. How can I cheer him up now?!

*Figures 7.2.9 to 7.2.11. -
Sequence illustrating situation
chosen.*

Content categories:

Literal weakness	**Showing Affection**	**Taking Responsibility**	**facing personal fears & phobias**
Being perceived as physically, intellectually, or emotionally weak.	*Helping others in emotional distress; giving hugs; letting others know you aren't ok.*	*Speaking up for others; admitting blame; asking for help in tough times.*	*heights; darkness; the ocean; thunderstorns, etc.*

Examples of situations developed for studies

Literal weakness		Showing Affection		Taking Responsibility		facing personal fears & phobias	
Oh no, there is a giant, poisonous snake on my way to the next challenge. The only way to walk past the monster is by hypnotizing it with dance moves! But I can't really dance...	A group of kind villagers invited me for a quick game of soccer before I leave, but I think I am terrible at soccer... ugh! What should I do? What if they make fun of me?	I just encountered a rare kind of dragon! Wow, how cool would it be if we could be friends?! But how do I get it to like me? I have no idea! This is stressful!	Last night, a kind elf offered me shelter from the rain. He's upset that I'm leaving soon to continue my journey. That's no fun. How can I cheer him up now?!	I just saw a vendor accusing a little girl of stealing some oranges, just like the ones I found and ate earlier today, Oh no! They are going to punish her! What do I do?!	A group of witches camped near me. They are preparing a strength elixir. If I had it I would be strong for my journey! How could I get them to help me?! What if they turn me into a frog instead?! Gosh!	At the top of the wild mountain I can find magic supplies for any journey ahead. There is just one problem. I am deeply afraid of heights! I don't know If I can make it!	Tonight I found shelter from the storm with a sweet family of gnomes. Still, thunderstorms sound terrifying in the forest! They see me as a brave explorer! Should I show or hide that I'm scared?

The content of situation cards is mostly inspired by Dr. Brown's research. According to Brown, men and women have different situations relating to their gender norms that can act as triggers of vulnerable feelings. For men, everything masculine gender norms reject can be understood as possible situation triggers. The North American men interviewed by Dr. Brown, for instance, mentioned losing their job and not being able to play the role of family provider as a common vulnerable situation. There were; however, common themes that emerged from her research as being specific to masculine gender norms, such as failure; being wrong or criticized; revealing your weakness to others; showing fear, and being ridiculed to cite a few. I analyzed these themes and adapted them to the reality of a child, coming up with four possible themes that can be used to generate more content over time.

Figure 7.2.12. - Framework showing situation cards and their respective content.

The situation depicted here falls under the Showing affection category, as the act of cheering someone up implies acknowledging their feelings and demonstrating empathy. After going through the context of the situation, the character then asks players to help with how his body is responding to said situation (Study 2); and invites players to play the magic cards to determine whether or not he will need help to deal with the situation (Study 3). If the player chooses a magic card that require players to help the virtual character, they receive a prompt:

The player of the round is the one to respond to the prompt. The system can use sound, voice, and word recognition to determine if players' engagement fulfills the prompt, conceding players 1 point towards the ability to express yourself. For each point, players get to collect the card and separate it from the deck. By collecting 3 cards of the same color, players conquer the respective ability. For the purpose of this investigation, rules establish that players win the game by conquering the 3 required abilities before collecting 3 harmful behaviors (Study 3).

Examples of prompts developed for studies

Oh, I need your skills with this challenge! Dance like a snake to help fool this creature! I will be forever grateful!	What is something that people have complimented you for, but you never felt very confident doing?	Please, show me how to sell my qualities! Share 3 of the best things that being friends with you can bring for those who befriend you!	Can you share a story of when you were sad and someone cheered you up? What did they do to make you feel better?	Am I brave enough to tell them it was me who ate the oranges? Please, encourage me! Share a story of when you could get in trouble for doing the right thing, but you did it anyway!	Can you tell me a story of when you got help with something difficult? What was it and who helped you?	Any mountain is easier to climb with some encouragement! Can you create and sing a quick motivating song containing any of these words: Hero, potato, mountain.	I know you are the bravest! But can you share a secret fear that you have and nobody knows? It would make me feel better...

Figure 7.2.15. - Content of prompts developed for the study.

58

The content for the prompts were designed to get players fact checking their assumptions and biases by reflecting on their past experiences and bonding with each other. The exercise of answering these prompts also promotes awareness of their own personal trigger situations while practicing empathy by helping the virtual character. It is important to remember that the content of all other situations and prompts is demonstrated in this document as short text to account for practicality. All situations and prompts are meant to be narrated by the main character, and presented to players as short animations.

Figure 7.2.16. - Final design of the situation cards developed for the study.

Study/ Feature 2
Body Response Cards
& Awareness of Triggers

Refers to SQ2: How can puzzles help identify bodily responses to vulnerable situations, in order to promote awareness of personal triggers?

In this study, players respond to hints with the objective of identifying how the main character is feeling about each respective situation. Visual cards with text and illustrations teach players to properly label physical responses while character's hints work as descriptions of those responses. It allows players to be more aware of their own bodies in real life, by identifying their own triggers, as well as enabling father and son to handle conversations with each other using vocabulary both can understand and relate to.

How it works:

After seeing what situation the character is facing, the virtual character will ask players to properly label how his body is reacting to it. Players look at the cards available on the green deck to find the possible correct answer within a set timeframe. The character gives players one hint at a time, replying to their oral responses and rewarding their correct response with the collection of the card, which counts as one point towards earning the ability to know oneself. If after three hints players aren't able to identify the proper body response, players don't gain any points and go to the next card drawing (Study 3).

Is it tight chest?

That's odd. My clothes feel weird on me... Can you take a guess of what it could be by searching through the body response cards?

Guesses taken:

No, it's not that, Billy! My shirt feels humid, but it was dry a minute ago!

Figures 7.2.17. to 7.2.23.
- Sequence illustrating
gameplay.

The content for the cards were based on the common body responses one might experience while feeling anxious, scared, or stressed, feelings that occur as the byproducts of vulnerable situations. For the purpose of this investigation, I developed a set of ten cards; however, other body responses can and should be added to the deck to allow for variation and replayability.
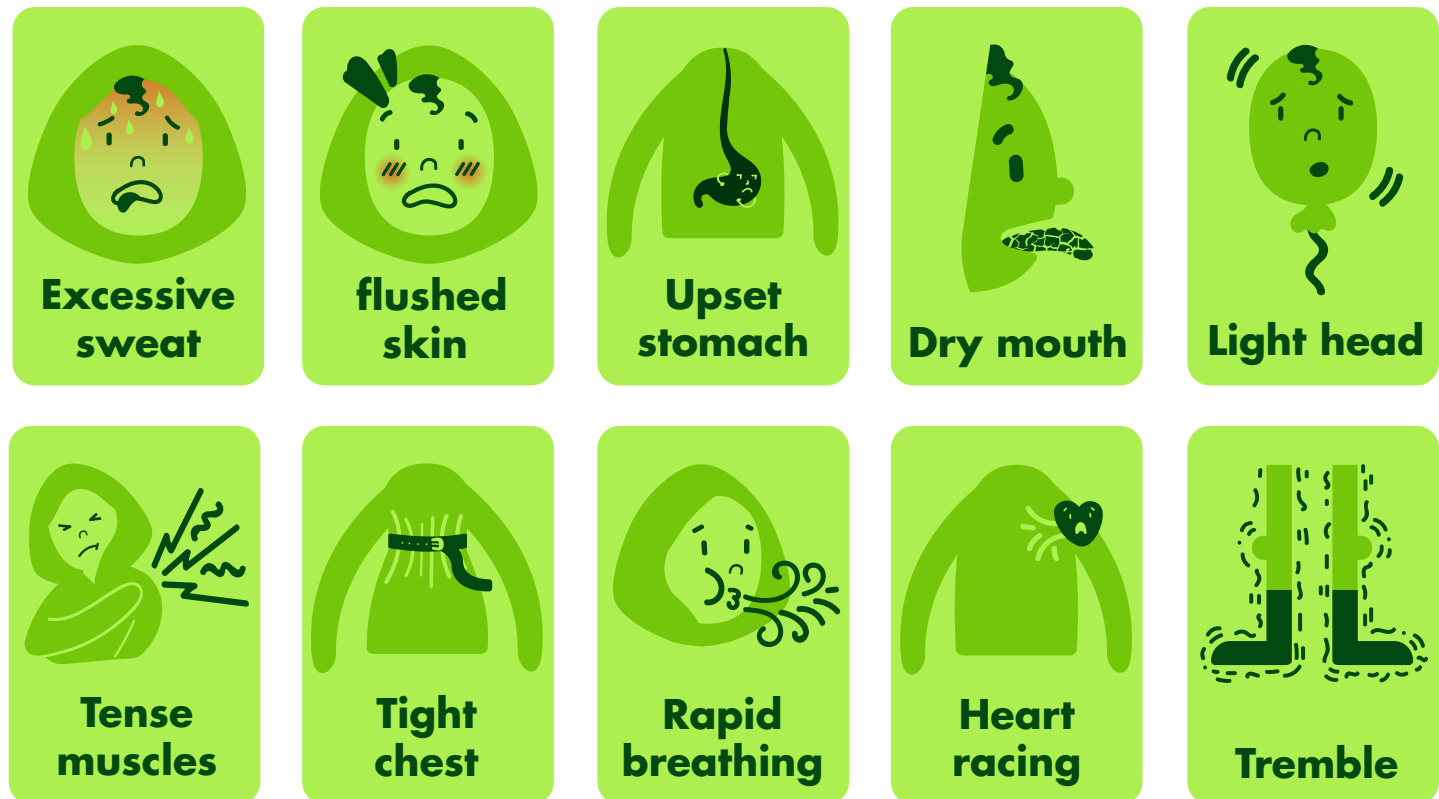

Excessive sweat	**flushed skin**	**Upset stomach**	**Dry mouth**	**Light head**
Tense muscles	**Tight chest**	**Rapid breathing**	**Heart racing**	**Tremble**

Figure 7.2.24. - Final design of the body response cards developed for the study.

Study/ Feature 3
Magic Cards
& Behavioral Reactions

Refers to SQ3: How can characters in a narrative illustrate coping mechanisms to facilitate conversations around emotional reactions?

In this study, players unconsciously decide the character's reaction to the vulnerable situations picked. In this feature, the virtual character might use either a positive or negative coping strategy to deal with situations. These coping strategies are referred to as "helpful" and "harmful behaviors" in the game, to account for children's understanding. By not having players control how the character will react directly, the game illustrates how real life plays out, sending the message that we can't forcefully control other people's behaviors; however, we can offer input, guidance, and suggestions. It helps children identify and properly label the behaviors they should be seeking or paying attention to. The activity also offers a safe platform for self reflection, potentially stimulating conversations around why and how misbehavior occurs, portraying these behaviors not as the source of their problems, but as a mere consequence of the vulnerable situations we are exposed to in our daily lives.

How it works:

After helping our virtual explorer identify his own reactions to vulnerable situations (study 2), players are invited to play the magic cards to discover the outcome of the situation they picked. This happens even when players are unable to collect a body response card in the previous activity. Players choose a magic card from the deck and place it behind the mobile device. The system reads each star pattern as a unique code for what the next step will be. Therefore, a magic card might reveal that the character is asking for the player's help to deal with the situation by answering prompts (study 1), or that he doesn't need any help. In the case of the character not needing help, the system randomly applies an extra code for "helpful" or "harmful" behavior, which is then applied to the situation chosen in that round.

The outcome is a short animation of the character narrating what was done to deal with the situation. Each character's good behavior allows players to collect the magic card as a point towards the ability to be resilient, whereas each time the main character misbehaves counts as a harmful behavior collected. For the purpose of this study, I established that collecting 3 harmful behaviors make players lose the game. These harmful behaviors refer back to Dr. Brown's research, illustrating the various ways in which we resist vulnerability: expressing anger; controlling others; denying feelings; and conforming to norms. After this activity, the second player leads a new round where new situations are picked and new outcomes are revealed. As mentioned previously, both players win together by collecting 3 cards of each ability before collecting 3 harmful behaviors.

I left a necklace of sentimental value with the elf, to prove I would come back to visit my new friend soon.
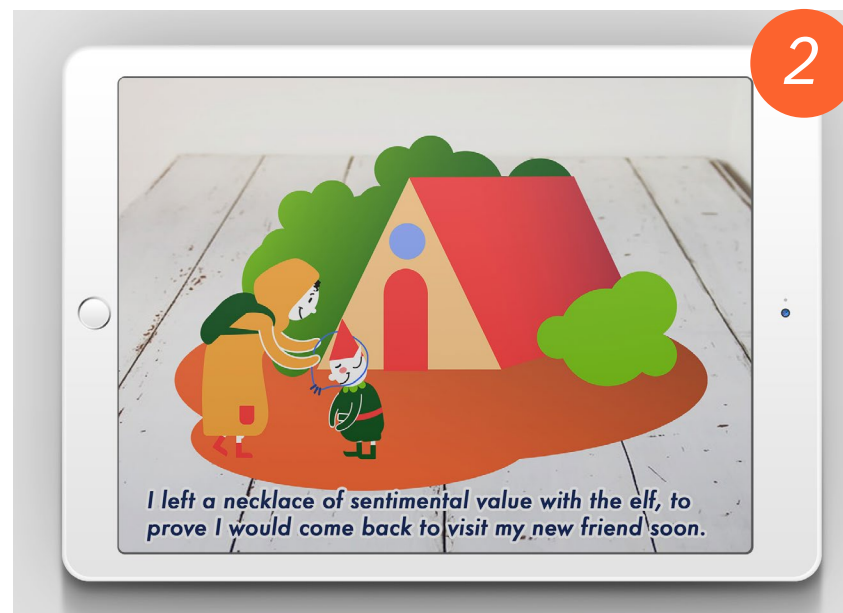
Figures 7.2.25. and 7.2.26. - Key frames of outcome animation illustrating a helpful behavior.
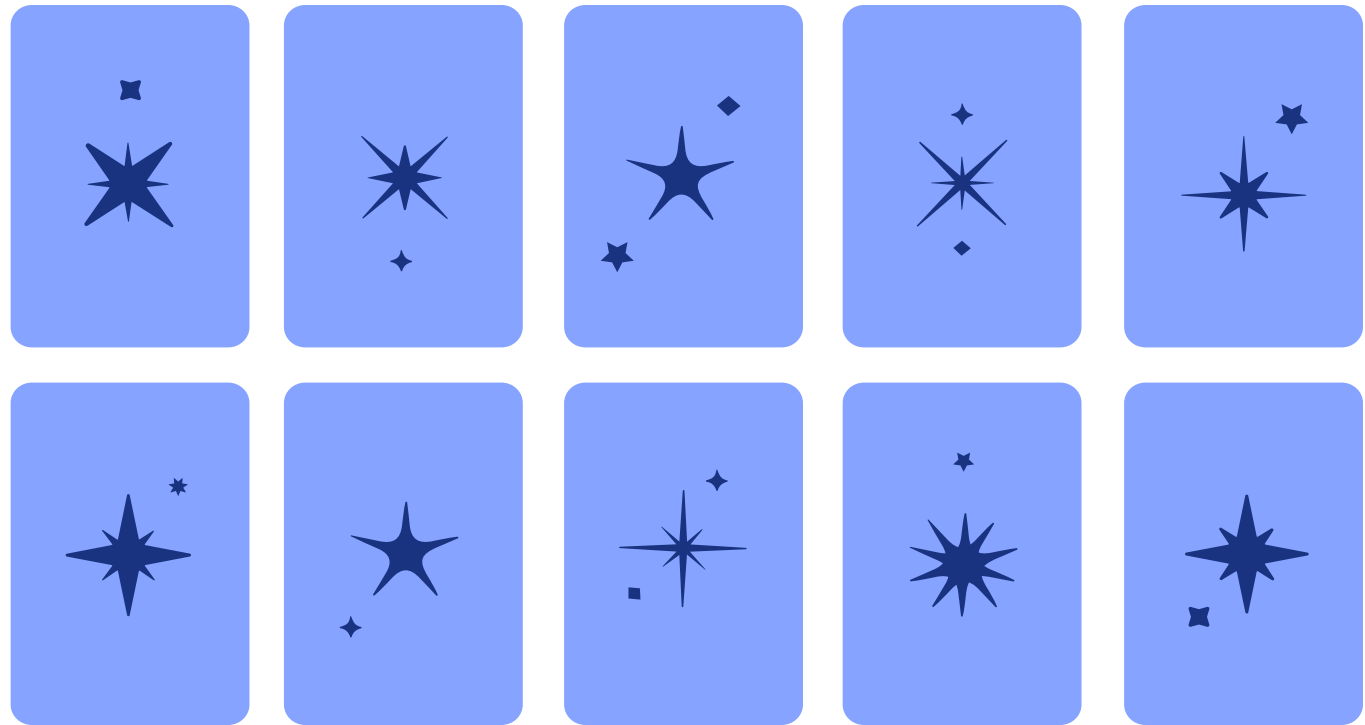
Game timeframe
& consistency:

The proposed duration of the game is around 30 minutes, but like most games that require players to converse, this time can vary (as discussed more in-depth below). The game should be played with some consistency, ideally every weekend, to help start conversations about what happened during the week, establishing a break from the parent's busy schedule to dedicate time to sit down and talk about their emotions and feelings. This sends children the message that their feelings are important and valued by their father. Making the act of playing a weekly tradition could potentially create a culture of open communication around feelings in the family, where the game acts as a facilitator to initiate and support difficult conversations. The more comfortable fathers and children become talking about vulnerable situations depicted in the game with each other, the greater the chances they will start talking about their own vulnerable situations and feelings to seek the help of others.

Discussion

Design Principles

During the course of this investigation, I worked on different ideas with the ultimate goal of creating a friendly environment where father and son could start exploring vulnerability by doing something fun and pleasurable: playing a game together. My extensive research led me to some important conclusions when designing activities, tools, or services around emotion expression for the male public—all of which I try to address in my three studies.

Learning through doing

Modifying behavior is a really difficult result to accomplish in a short study; however, we can model the behavior desired without users consciously knowing the total extent of it. This removes the worry of thinking something is "wrong" with them specifically and instead, focuses their attention on easy things they can do, say, and think in order to accomplish the goal.

Taking masculine gender norms into account

Make sure users feel comfortable with what is designed. This means working with visual or written content that is less likely to bring side connotations that could possibly discourage players engagement with the game. This includes colors, characters, narratives, activities, and elements traditionally associated with femininity.

Communication between father and son

Communication is one of the key aspects to address when designing for emotional development in boys. The parents are the main role models young children look up to. It is important that they fully participate in interventions designed for children, not only to walk children through the steps and answer their questions, but to model the positive behaviors we want to see in children.

Thinking outside of the box

Due to the stigma of seeking help, many health-related interventions focused on men, although visually attractive, fail by assuming their behavior patterns are similar to other populations. For instance, interventions that require users to be at a Doctor's office should understand that the probability of men utilizing health services compared to women is very low even across diverse groups of men (Good & Robertson, 2010). As well as their habits, creative solutions should pay special attention to the wording chosen to approach the topic. Interventions that don't focus on "problematic" profiles, but instead focus on specific desired outcomes are more likely to result in active engagement with male users.

Future Work

Difficulty levels

Having a digital game facilitates the possibility of adaptation of content to different users. My studies were designed to account for differences in children's age and development. By having the core content of the game only in the mobile application, it is possible for future iterations to support different levels of difficulty when it comes to hints given by characters, as well as the prompts players respond to.

Representation

It is important that children of all races and ethnicities have the opportunity to see themselves represented in the characters they engage with, even more in tools aiming to build empathy. Future development of the mobile application should allow users to choose the desired color and/or attributes of the main character before starting a game. Already with this possibility in mind, the physical cards I designed don't portray the main character in a realistic skin tone or with race-specific facial traits.

Parents

Although the persona I depicted represents an ideal scenario where the father is an active figure in his son's life, many children do not have a male figure in their lives. The studies I created were careful to avoid specific content that could exclude other kinds of male figures such as grandfathers, uncles, and step-fathers from the activities. However, future explorations could explore different combinations of child-adult relationships such as grandmother-daughter; mother and son; counselor and children, etc.

Immersion & engagement

One of the core values of my project was to maintain solutions accessible to families of different economic levels while providing some form of immersion and engagement with the story, which explains why AR was the best current technology available—easily accessed through smartphones. Yet, prospective studies can make use of less popularized technologies, such as VR, to increase user's engagement with content when playing in environments that aren't so private, such as a counselor's office.

Conclusion

My investigation explores how design can be used to enrich and improve emotion expression interventions in ways related medical fields haven't explored yet. Through the process of creative thinking and adopting a user-centered approach, I applied experts' best practices in a series of studies that later became the final system proposed in this document. These visual studies allowed me to reflect on how users can engage in active learning while cultivating healthy communication practices with one another. I am specifically interested in the idea of a father who, without actively seeking help for himself, ends up learning more about his own feelings and reactions to vulnerable situations by engaging in the simple task of spending time with his son.

There is, however, a lot more that design can do to facilitate the discussion about masculine vulnerability. In this investigation, I reinforce how important it is that we find creative ways to nurture, instead of restricting this vulnerability. Gender norms are far more complex than my investigation can comprehend since its effects are not limited to a small portion of the population, but the vast majority. It includes you and me, despite educational or economic status. Studying these topics has helped me see its influence in places I haven't noticed before, such as in academia, making this research difficult to conduct at times. Nonetheless, the goal of this project was not only to design tools to aid health professionals in their specific therapies, but also—and perhaps mainly—to use design to facilitate a change of mindset. A change that can only come if more designers are brave enough to approach the topic and carry it on without letting their own biases and preconceived opinions get in the way. The role of interdisciplinarity is crucial in this endeavor. Psychologists and counselors are important allies to help designers create accurate descriptions of personas, scenarios, and content that will not only be user friendly but talk to users in a language they feel comfortable with.

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Image credit

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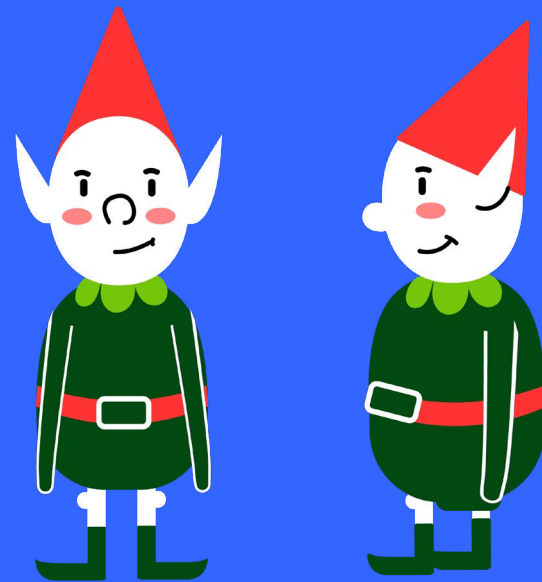
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Appendices

Oh no, there is a giant, poisonous snake on my way to the next challenge. The only way to walk past the monster is by hypnotizing it with dance moves! But I can't really dance...

A group of kind villagers invited me for a quick game of soccer before I leave, but I think I am terrible at soccer... ugh!
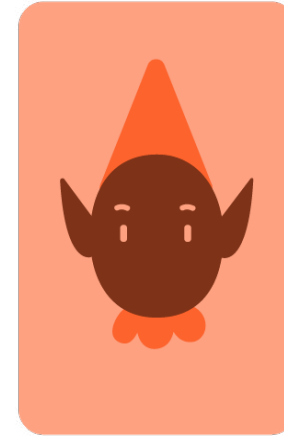What should I do?
What if they make fun of me?

I just encountered a rare kind of dragon! Wow, how cool would it be if we could be friends?!
But how do I get it to like me?
I have no idea!
This is stressful!

Last night, a kind elf offered me shelter from the rain. He's upset that I'm leaving soon to continue my journey.
That's no fun.
How can I cheer him up now?!

Oh, I need your skills with this challenge!

Dance like a snake to help fool this creature! I will be forever grateful!

What is something that people have complimented you for, but you never felt very confident doing?

Please, show me how to sell my qualities!

Share 3 of the best things that being friends with you can bring for those who befriend you!

Can you share a story of when you were sad and someone cheered you up?

What did they do to make you feel better?

I just saw a vendor accusing a little girl of stealing some oranges, just like the ones I found and ate earlier today, Oh no! They are going to punish her! What do I do?!

A group of witches camped near me. They are preparing a strength elixir. If I had it I would be strong for my journey! How could I get them to help me?! What if they turn me into a frog instead?! Gosh!

At the top of the wild mountain I can find magic supplies for any journey ahead. There is just one problem. I am deeply afraid of heights! I don't know If I can make it!

Tonight I found shelter from the storm with a sweet family of gnomes. Still, thunderstorms sound terrifying in the forest! They see me as a brave explorer! Should I show or hide that I'm scared?

Am I brave enough to tell them it was me who ate the oranges? Please, encourage me!

Share a story of when you could get in trouble for doing the right thing, but you did it anyway!

Can you tell me a story of when you got help with something difficult?

What was it and who helped you?

Any mountain is easier to climb with some encouragement!

Can you create and sing a quick motivating song containing any of these words: Hero, potato, mountain.

I know you are the bravest! But can you share a secret fear that you have and nobody knows? It would make me feel better...