

Master of Fine Arts Thesis Project
Liberty University



Designs for Coping



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Integrating Coping Strategies in Children's Medical Picture Books

School of Communication & the Arts
Department of Studio and Digital Arts



Designs for Coping

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Final Signatures

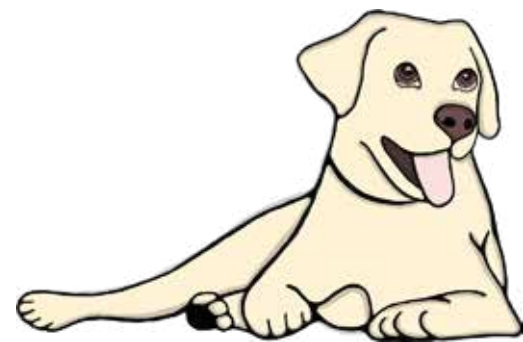
Designs for Coping: Integrating Coping Strategies in Children's Medical Picture Books is a Masters of Fine Arts thesis prepared by Elizebeth Jones for Liberty University Department of Studio and Digital Arts School of Communication and the Arts with a concentration in Graphic Design.

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The personal, religious, philosophical, or political positions found this project are solely that of the student, and do not necessarily reflect the views or opinions of the committee or Liberty University.



Acknowledgments

Following one's dreams takes more than inspiration. It takes determination, endurance, strength, courage, resilience, and most importantly people. People sent to me by God, who care about me, and my dreams. Who have encouraged me when I am unsure of myself. Who spend endless hours teaching me. Who inspire me to be the best person I can be. People who are willing to tirelessly listen to my plans and endless ideas.

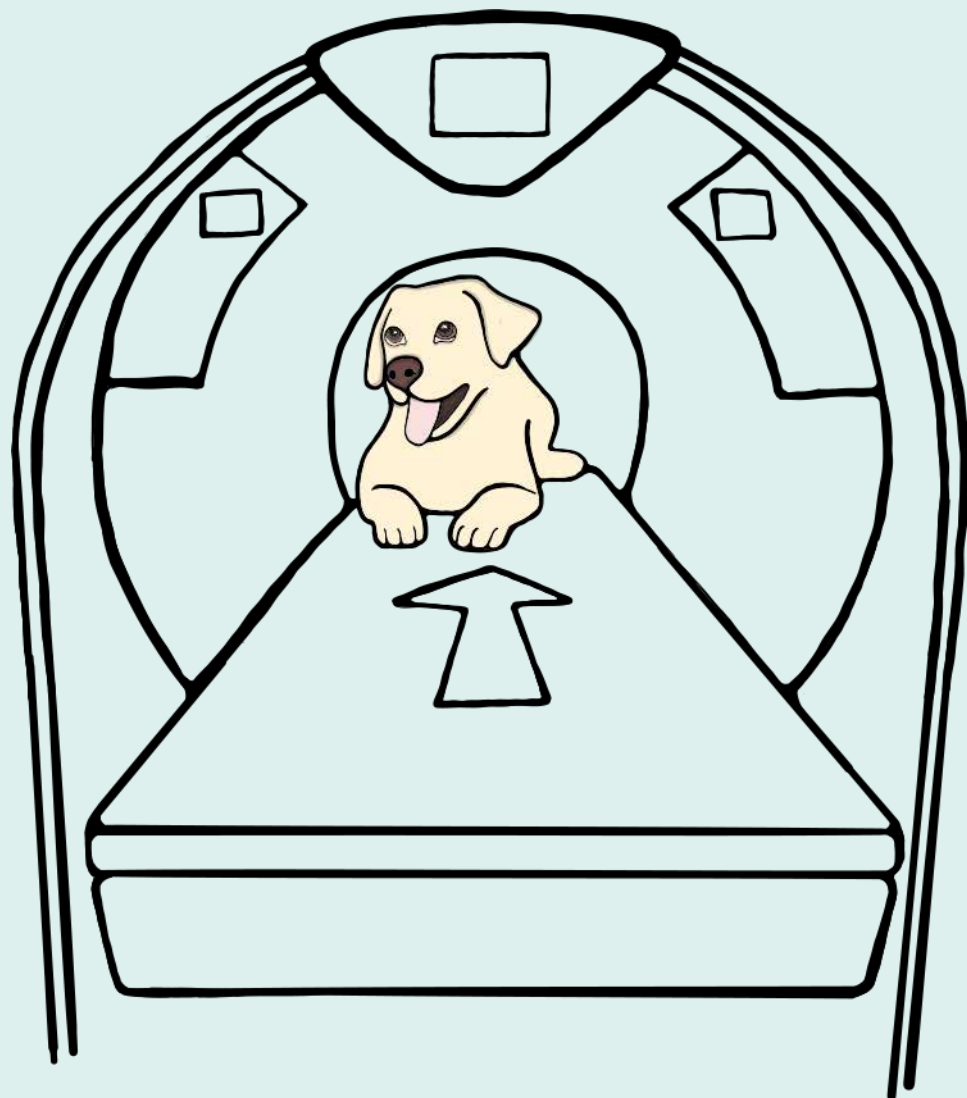
These people endure challenges every day, understanding that it will be an arduous and worthy journey. These people are called teacher, friend, family, coworker, and student. It is their choice to take on such a challenge and I am blessed because of their gift. I thank each and every one of you.

One of these people is my husband. Who encourages me to follow my dreams. Who teaches me - a lot about grammar and so many other things. Who loves me even when I get frustrated – with grammar. Thank you for going on this journey with me to follow our dreams.



Dedication

This thesis is dedicated to my daughters. You inspire me to write wacky and fun books about all sorts of amazing things. You fuel me to keep going. One day, I hope our journey will pave the way for a legacy that is worth sharing with the world.



Max going into the MRI Machine.



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Blowing bubbles are one way for children to cope with the stress of visiting a medical facility.

Abstract

This study uses design to create a children's medical picture book that is presented in first-person perspective through illustrations and text that teach children coping strategies for going to a medical visit. Many children fear what they do not understand. Children's medical picture books are a useful tool to teach children coping strategies as well as what to expect from a visit to a doctor.



Problem

Introduction

Every year children visit multiple medical doctors. Each of these visits are comprised of different exams and tests that can cause anxiety, fear, and in some individuals a phobia. Coping strategies and techniques are essential for children to learn how to manage the stress of medical visits.

By integrating positive coping strategies and techniques into children’s medical pictures books through the use of first-person perspective, it may be possible to teach children essential ways of coping with stressful situations throughout their lives. The problem statement, purpose statement, and proposed visual solution seek to empower stakeholders with lifelong coping strategies.

Problem Statement

Parents and medical professionals struggle to educate children about medical exams, tests, procedures, and coping strategies, which causes unnecessary stress and anxiety in children as well as adults during medical visits.

Research Questions

- 1 What is the best approach to embed coping techniques into children’s interactive medical picture books for children and parents?
- 2 What is the best approach for writing and illustrating a story that includes coping strategies?
- 3 What coping strategies work best for children who are going to a medical visit?
- 4 What is the best way to design a book with first-person writing and illustrating?
- 5 What is the best way to educate children about medical visits and make it engaging through interactivity?

Outlined Objectives

Research will be conducted on children’s medical pictures books to reveal features that are engaging, educational, first-person perspective illustrations and text, and integrated coping strategies that are helpful for children to learn lifelong coping strategies.

Knowledge Gap

There is a lack of literature regarding first-person perspective illustrations in children’s medical picture books. Not only is there a lack of research on the topic, but there are little to no first-person perspective illustrated children’s picture books on the market. Research shows that first-person perspective imagery, such as in video games and photographs, can be used for exposure therapy to desensitize the viewer from a fear or phobia. By utilizing first-person perspective illustrations in children’s medical picture books, children may benefit from similar results.

First-person perspective illustrations have other added benefits. Most children’s medical picture books do not provide coping strategies and techniques built into their content. First-person perspective illustrations and content allow for easy-to-understand examples of these coping strategies and techniques.

“Why do picture books matter? Of course part of the reason is because they’re books, but the heart of the matter is right there in the name; it’s the pictures. Before they read words, children are reading pictures. In picture books, the illustrations work in concert with the text in a way that is unique among art forms.

Picture books tell stories in a visual language that is rich and multileveled, sophisticated in its workings despite its often deceptively simple appearance. It is through the book’s images that a child first understands the world of the story – where it is set, when it takes place, whether it’s familiar or new. They read the characters’ emotions and interactions in facial expressions and body language. They may notice secondary pictorial storylines happening alongside the main action, like a secret for them to follow.”

(David Wiesner as cited in Marcus & Wiesner)



Bringing a teddy bear to hold is a coping strategy children can use while visiting a medical facility.

Research

Research Rationale

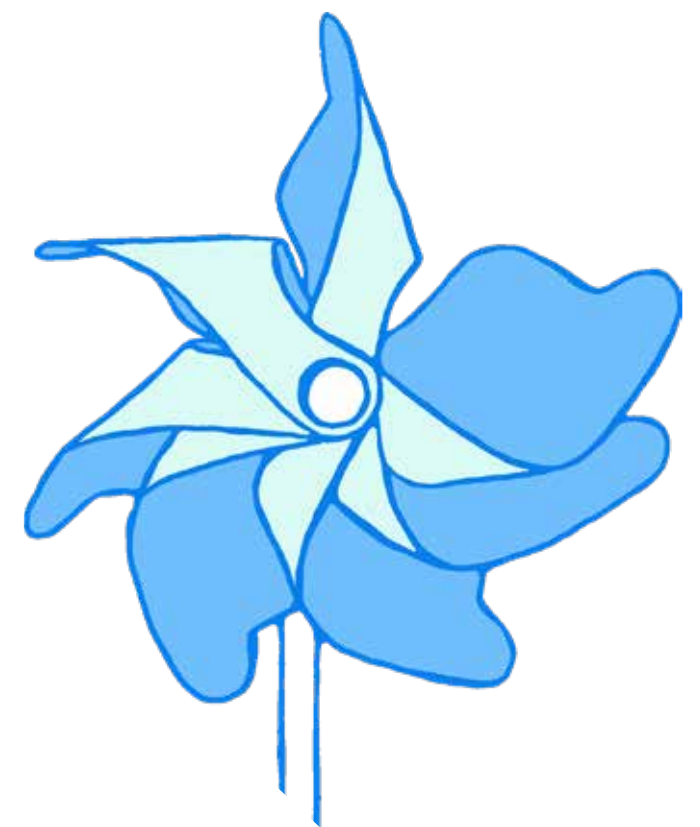
The topic of my research, Designing Children's Medical Picture Books: Integrating Positive Coping Strategies and First-Person Perspective, has many factors within it to meet the stakeholders' needs. The information gathered in the research component of this thesis will include data about the stakeholders to identify their needs. Ideas on how to bridge the stakeholders' needs together in a cohesive design by exploratory examples in a mood board will be created. Throughout this process an investigation about coping strategies, book interactivity, writing, and illustration design will be conducted.

Collecting this information will provide useful insight into how to design the interactive medical picture book as well as what needs to be included in the design. The research methods will be a stakeholder map, personas, scenarios, mind mapping, image boards, visual analysis, content analysis, and case studies. The stakeholder map will include the personas and scenarios of the stakeholders to see how to meet each of the stakeholder's needs. It will include personas for two children, a parent, a nurse, and a doctor. Scenarios will be linked to each persona to provide an outline of what each stakeholder will need for the book to be effective for them.

The mind mapping and image boards will be used to gather all the information together visually and to see how all the components relate to each other to complete the book design. The image board will be created to identify specific design elements that meet each of the stakeholder's needs. The image board will help with ideation and a mind map will help to link the various components to understand how they will function in a complete design.

The content analysis will be used to examine a variety of children's medical picture books that are currently on the market to identify which books meet the following categories: interactivity, educational, first person-perspective writing, first person-perspective illustrations, third person-perspective writing, third person-perspective illustrations, and positive coping strategies. The most important categories for the proposed design of this thesis are interactivity, educational, positive coping strategies, and first person-perspective writing and illustrations. These are the components that the literature review identified as being the most effective for children to learn about a medical visit. A spreadsheet will be used to compile the information, and the books that most closely fulfill the above criteria will be used in the visual analysis.

The children's medical picture books that meet the most categories in the content analysis will be used in the visual analysis to further identify how to create a children's interactive medical picture book about a child going to the hospital for a surgery. The visual analysis will examine three specific children's medical books to determine how effectively they communicate the above criteria through their use of design. The case studies will be used to investigate the three concept areas for the design of the book. These areas will include writing and illustrating from the first-person perspective, identifying specific coping strategies and techniques to integrate into children's books, and how to create interactive children's books. The best designs will be used to investigate how to create a new design of children's medical picture book.



Blowing on a pinwheel is another coping strategy for children to use while visiting a medical facility.

Overview of Research Methods

Stakeholders

The stakeholders or the individuals who would benefit from a children’s medical picture book that integrates coping strategies and techniques with first-person perspective narrative and illustrations would be primarily children. Secondly, parents would benefit from having a resource to assist them with teaching about coping strategies and techniques. Children and parents who are prepared for a medical intervention are more likely to cope better during the visit. Healthcare providers all over the world would benefit from the design of a book that prepares children and their parents for medical visits through education. The preparation reduces stress, anxiety, and provides coping strategies and techniques for children and parents. Educators could also use these books to teach children coping strategies because the strategies are useful for any stressful situation.

Children who are prepared for a medical visit are better at coping with the stress of the situation, they need less medication during hospitalizations, and have better relationships with their healthcare providers. These factors make their visits to a medical provider more beneficial for their health. It also costs healthcare facilities and insurance companies less in preoperative education, medications, and length of stay. All children, parents, healthcare providers, around the world, would benefit from an inexpensive way to educate children on coping strategies and techniques for medical visits.

Stakeholder Map

The stakeholder map will be used to understand the individuals who will be using the product as well as those individuals who have a vested interest. The map will outline the characteristics of each stakeholder. An exhaustive list of stakeholders will include children, students, adults, parents, doctors, nurses, counselors, child life specialists, hospital/clinic workers, insurance companies, teachers, publishers, editors, illustrators, and writers. The stakeholders will be organized into categories and design elements will be used to identify individuals with significance to the book design. It will also identify the relationship between individuals and how they use the design. The information compiled by completing the stakeholders map will direct the design of the children’s interactive medical book.



Fictional Personas

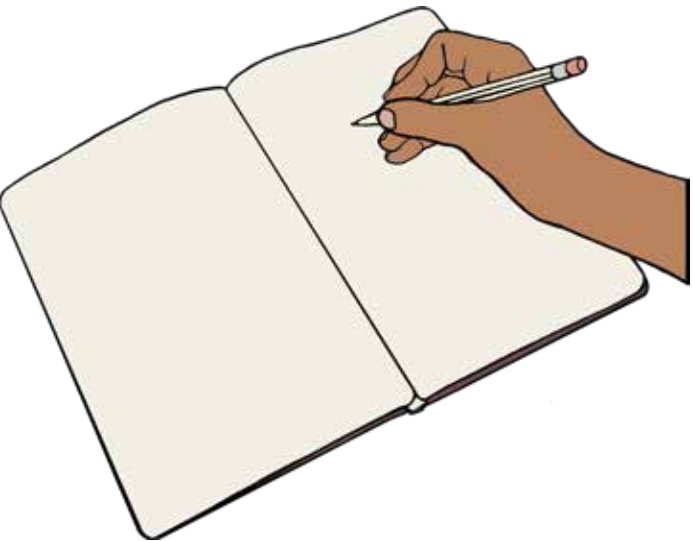
Personas are used to describe the user with the end goal of creating a better user experience. Unique personas can be used to identify the key characteristics needed in the design. Commonalities between personas can be identified. Three to five personas will be created. There will be personas for a parent, a doctor, a nurse, and two children. The parent will be identified as a 30-year-old woman who has children who are between 3 – 9 years old. The doctor will be identified as a male pediatrician who is 48 years old with adult children of his own. The nurse will be a 28-year-old woman who works on the pediatric floor at a hospital. One child is a 3-year-old male and the other one is an 8-year-old girl. The purpose of the personas will be to clearly identify who the design of the children’s interactive medical book will be for and how to develop the design for these individuals.

Fictional Scenarios

Scenarios will be used to understand how individuals respond to a variety of situations. Understanding the situations that individuals live in day-to-day will help to tailor the children’s interactive medical book design to the user’s needs. The scenarios will be written realistically and include high-stress situations, such as a patient going to the hospital. Scenarios will be integrated with the personas and the stakeholder map.

Literature Review

The literature review will be used to investigate research that has already been conducted on children’s medical picture books. The focus of the research will be conducted on first-person perspective verses third-person perspective illustrations and text, exposure therapy, coping strategies, and interactive features found in children’s medical picture books. An in-depth examination of research that utilized children’s medical picture books in hospitals will be conducted to determine their benefits.



Writing in a journal is a coping strategy that can be used when working through stressful situations.

Content Analysis

The content analysis will be used to examine a variety of children’s medical picture books to identify which books meet the following categories: interactivity, educational, first person-perspective writing, first person-perspective illustrations, third person-perspective writing, third person-perspective illustrations, and positive coping strategies. The most important categories for the proposed design of this thesis are interactivity, educational, positive coping strategies, and first person-perspective writing and illustrations. These are the components that the literature review identified as being the most effective.

Case Studies

Case studies will be conducted on three subjects to understand what key features need to be in a children’s medical picture book. The subjects to investigate are coping strategies, interactive features, and first-person illustrations and text.

Visual Analysis

The children’s medical picture books that meet the most categories in the content analysis will be used in the visual analysis to further identify how to create a children’s interactive medical picture book about a child going to the hospital for a surgery.

Mind Mapping

The mind map will be used to collect a variety of data and elements to use in the children’s interactive medical book. It will be used to prioritize and organize the information visually to better understand how the elements relate to each other. It documents the complex information and compiles it in a way to see how it works together. Design questions will be used to identify the data to compile on the mind map. Primary and secondary connections will be used to determine the significance of each element. The mind map will provide a visual guide connecting the elements used in the design of the children’s interactive medical book.

Image Board

Image boards are used to explore various designs, context, and styles. Colors, materials, ideas, products, and other elements are used to build an image/mood board. These elements will be assembled into a collage to identify features that will meet the users’ needs. The board will be used as a tool to clarify the visual information used in the children’s interactive medical book.

Stakeholder Map

Primary

- Children
- Parents
- Grandparents
- Foster parents
- Siblings

Secondary

- Teachers
- Students
- Doctors
- Nurse
- Adults
- Child Life Specialists
- Social Workers
- Counselors
- Hospital/Clinic Workers
- Extended Family
- Daycare Workers
- Volunteers
- Library Workers

Tertiary

- Insurance Companies
- Publishers
- Editors
- Illustrators
- Writers
- Hospitals
- Clinics
- Medical Illustrators
- Bookstores
- Libraries



A map showing all the individuals who could be involved with the children’s medical picture book.

Reading a book can be a coping strategy to use while waiting for a doctor or during an infusion.

Fictional Scenario

Create a children’s medical picture book for parents, children, and medical professionals to help children cope at medical visits. Children all over the world are scared to go to medical visits for care they desperately need.

Parents and medical providers want children to feel safe and comfortable at medical visits. The medical facilities are designed to be welcoming in the pediatric unit. There are playrooms for children. Wagons for children and their parents are used to explore the hospital. Activities are planned every day for children to do if they feel well enough. Volunteers read books to children.

The hospital is primarily designed to medically test patients and provide treatments for ailments. This can be very scary for children. A visit to the hospital may mean that the child will have to sleep at the hospital all by themselves. It may be the first time they have been away from their parents. Medical offices are scary as well. Children do not know what to expect when going to see a doctor. They may have been told by a friend or sibling how scary it is. This can make it even more frightening to go to a medical visit. Many times, children have not been

taught coping skills to deal with these visits. Children who are unable to cope with medical visits may fear going to them when they become adults.

There are resources available for children, parents, and medical professionals to help children learn to cope with the stress of medical visits. Educating children on what to expect during a medical visit or hospitalization can reduce a child’s fear. Teaching children coping strategies can also help them navigate through exams and treatments. Child Life Specialists are also available at the hospital to teach coping strategies and what a procedure may entail.

Children who are educated on what to expect during medical treatments and how to cope with treatments do better when they experience medical issues. Educating parents on proven coping strategies for children can help them assist their child to overcome the stress of a medical issue. Children who are able to cope with the stress of medical treatments are better prepared to deal with these stressors as an adult.

Fictional Personas and Scenarios



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<https://pixabay.com/images/id-2586010/>

Name: Michael Smith
Age: 3
Job Title: Child and Student
Responsibilities: Learn and grow into a healthy adult
Gender: Male
Ethnicity: African American

Motivations:
- Play as much as possible
- Enjoys playing ball (basketball, baseball, softball)
- Loves pizza

Hook: Michael is admitted to the hospital for abdominal pain.
Action: He is scared to have surgery for a suspected appendicitis.
Resolution: A nurse reads a book to Michael about preparing to help him cope.



Dimitrisvetsikas1969
Girl-g58d83821e_1920
<https://pixabay.com/images/id-3738312/>

Name: Zoe Meza
Age: 8
Job Title: Child and Student
Responsibilities: Learn and grow into a healthy adult
Gender: Female
Ethnicity: Indian

Motivations:
- Enjoys music, dance, and art
- Loves enchiladas
- Favorite subject is math

Hook: Zoe is going to a medical visit.
Action: Zoe fears going to a medical visit.
Resolution: Zoe’s parents read children’s medical picture book about a medical visit to prepare her for the visit.



Travisdmchenry
Nurse-g43345038b_1920
<https://pixabay.com/images/id-1796924/>

Name: Avery Heart
Age: 28
Job Title: Pediatric Nurse
Responsibilities: Caring for patients
Gender: Female
Ethnicity: Caucasian
Marital Status: Single

Motivations:
- Helping patients to cope with being hospitalized
- Assisting Families
- Caring for children

Hook: Avery’s patients are scared to be at the hospital.
Action: Avery finds resources to help her patients cope.
Resolution: Avery reads children’s medical picture books to her patients.



PublicDomainPictures
Mother-g8ef221797_1920
<https://pixabay.com/images/id-84628/>

Name: Beth James
Age: 30
Job Title: Stay at Home Mom
Responsibilities: Caring for and educating her children
Gender: Female
Ethnicity: Caucasian
Marital Status: Married
Children: 3 boys

Motivations:
- Helps children cope with medical visits
- Educates medical professionals on mental health needs for children
- Finds coping strategies

Hook: Beth is taking her child to a medical visit.
Action: Beth finds resources to help her children cope.
Resolution: Beth reads a book days before the visit to prepare her child for the visit.



Brenkee
Elder-man-gedddcc3d7a_1920
<https://pixabay.com/images/id-1281284/>

Name: Greg Watson
Age: 48
Job Title: Pediatric Oncologist
Responsibilities: Diagnosing and treating illnesses in children
Gender: Male
Ethnicity: Caucasian
Marital Status: Divorced
Children: 3

Motivations:
- Cure cancer
- Help children cope with medical visits
- Save children’s lives

Hook: Greg provides instructions to his patients on how to stay healthy.
Action: Greg searches for resources for his patients.
Resolution: Greg recommends children’s medical picture books for his patients to read preparing them for visits.

Fictional personas and scenarios help to guide the design.

Literature Review

Introduction

Every year children visit multiple medical doctors. Their primary care doctor will make sure they are up to date on their immunizations, growing well, and staying healthy. A dentist will determine if the child's teeth are forming correctly as well as being cleaned properly. An ophthalmologist will examine the child's eyes to determine if their eyes are healthy and possibly prescribe glasses. Each of these visits are comprised of different exams and tests that can cause anxiety, fear, and phobia in some individuals. Coping strategies are essential for children to learn how to manage the stress of medical visits. By integrating positive coping strategies into children's medical picture books through the use of first-person perspective, it may be possible to teach children essential ways of coping with stressful situations throughout their life.

Anxiety

Physical and emotional responses can be caused by a variety of situations, such as going to the dentist. Anxiety is defined as "a diffuse alarm state that results from the anticipation of future danger or a feeling that something bad could happen, but there is no danger at the present moment" (Drewes and Schaefer 3). "Anxiety is described as a natural signal of the body that has a warning function and is innate or learned" (Motz 37). It is characterized by tension, apprehension, and worry (Muris 2). Children who know that they are going to the dentist may be worried and pensive about the appointment hours or days before their visit.

Fear

It is believed that everyone has innate fears that are used for survival. Children also learn the fear response from their parents (Maynes 2). Fear is considered a primitive response where the pupils dilate, heart rate increases, and the muscles tense in preparation for action because of a danger (Muris 2).

"Fear can be defined as a negative emotion or thought that occurs when you are frightened or scared by something dangerous, painful or bad that is happening or might happen. Fear can occur while facing unpleasant care and treatment and cause emotional distress, increased heart rate, dry mouth, cold and pale face, staring and avoidance behavior. Moreover, fear could be augmented as a result of being in an unfamiliar environment with unknown equipment and people. Evidence suggests that fear plays an important role in the experience of pain during needle procedures. Procedural fear can increase emotional distress, which can in turn increase pain sensation by physiologically increasing pain perception and autonomic stimulation. A child's limited understanding of certain procedures in hospital[s], and probable resulting fantasies, can also increase children's fears."

(Kleye et al. 530-1)

A specific situation can cause their body to trigger the flight or fight response. "Many fears are too abstract for young children to express and may be experienced simply as overwhelming feelings which threaten to engulf them (Taylor, 2010)" (As cited in Maynes 3). They may want to flee the situation or fight against the dentist or parents, refusing to have the necessary treatment. "Repeated hospital visits for children requiring care and treatment are often connected with experiences of fear and pain" (Kleye et al. 530). Children who experience pain, fear, and anxiety may develop into a phobia.



It can be stressful seeing a doctor in a white coat during a medical visit. Playing dressup with a white coat can be a coping strategy for children.

Benefits of Coping Strategies

- Higher quality of life (Dellenmark-Blom et al. 760)
- Healthier adult habits like getting preventative care (Cordray et al. 371)
- Life-long coping strategies (Fisak and Paula 11-12)
- Less anxiety from treatments (Cordray et al. 371)
- Less depression after hospitalization (Chaleat-valayer et al. 1330)
- Less pain after procedures (Cordray et al. 372)
- Fewer medications needed for pain (Cordray et al. 371)
- Less addiction to opioids (Sekhavatpour et al.; Cordray et al. 371)
- Stronger bond with parents (Maynes 2)
- Stronger relationships with medical providers (Cordray et al. 371)
- More autonomy in healthcare choices (Sposito et al. 148)
- Higher satisfaction with healthcare (Cordray et al. 370)

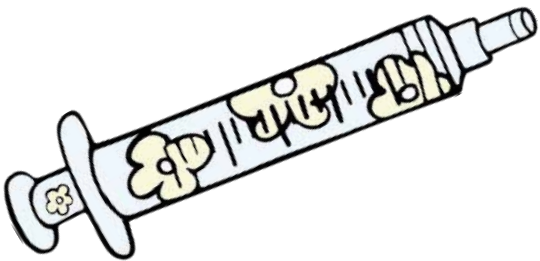
Coping Strategies

- Avoiding the fear by moving away or being held by a parent
- Soothing activities, such as self-talk and cuddling a teddy bear
- Confronting the fear by reading about it or looking at it directly
- Ignoring the fear by saying it is not there
- Acknowledging the fear so the child can transform it into something positive
- Meditation and relaxation techniques
- Problem solving, such as redesigning a room
- Medication that will help with pain or nausea
- Food that is comforting
- Entertainments, such as reading, art, music, and movies
- Hope that the future will be better
- Religion to seek out a higher power for strength
- Education about the situation
- Play with the supplies used in the hospital

(Maynes 3-5; Sposito 145)

Phobia

A phobia is “persistent and irrational fear of a specific situation, object, or activity (e.g., heights, dogs, water, blood, driving, flying), which is consequently either strenuously avoided or endured with marked distress” (APA Dictionary of Psychology). “Phobias are fears that are unrealistic, maladaptive, and generally unresponsive to advice, suggestion, or support” (Drewes and Schaefer 3). A child who had anxiety when going to the dentist and then fear from the treatment could develop a dental phobia. “Dental care-related anxiety, an exemplar of specific phobia, has a prevalence rate of 10-20 percent (Smith & Heaton, 2003). Specific phobias, thus, can be seen as a problem within the population, and examining ways to treat patients suffering from phobias has public health significance” (As cited in Arias 2). When a child develops a phobia, it can cause physiological and emotional responses that they are unable to overcome without coping strategies.



Applying flowers to a syringe is a way to cope with the stress of getting a shot.

Pain

Pain can be the cause of anxiety, fear, and phobias. Pain is defined as “an unpleasant sensation resulting from damage to nerve tissue, stimulation or free nerve endings, or excessive stimulation” (APA Dictionary of Psychology). “The purpose of pain is to warn the individual of a threat to the body, and is therefore a considerable a source of stress to cope with” (Chaleat-valayer et al. 1329). Most people think of pain as being a physical condition. However, it can have an emotional component that is characterized by unbearable pain and can be caused by anxiety or loss. “Untreated anxiety can lead to more pain and have significant implications for children’s recovery and future health care experiences” (Drewes and Schaefer 15). Children with chronic illnesses are living longer with lower quality of life because of pain, anxiety, fear, and phobias. “Pain in relation to medical procedures and treatments is often viewed by children as one of the worst aspects of having a long-term illness” (Kleye et al. 531). “Children with chronic conditions are known to be exposed to disease-related stress and long-term consequences may include psychological malfunctioning and reduced health-related quality of life persisting into adulthood (Boekaerts & Roder 1999; Barlow & Ellard 2006; Hysing et al. 2009)” (As cited in Dellenmark-Blom et al. 760). The good news is that there are ways to help children by teaching them coping strategies to use with pain, anxiety, fear, as well as phobias.

Coping Strategies

There are many coping strategies that can be used to address pain, anxiety, fear, and phobias. The American Psychological Association defines coping as “the use of cognitive and behavioral strategies to manage the demands of a situation when these are appraised as taxing or exceeding one’s resources or to reduce the negative emotions and conflict caused by stress.” “Coping strategies are “instinctive behaviors which children use to soothe themselves” (Maynes 3). Children can learn positive coping strategies before going to medical visits in order to handle the anxiety and fear. “Children can more easily cope with treatments after identifying and carrying out actions that help relieve the side effects of chemotherapy and pain, which make treatment less threatening and cause less discomfort” (Sposito 146). Being able to cope enables the child to endure the treatment until they are cured (Sposito 148).

There are both positive and negative coping strategies. Children who develop positive coping strategies to address anxiety and fear can manage their emotions better in stressful situations (Sugg 39). Children who develop negative coping strategies try to escape the situation and do not perform well in stressful situations as they age.

“Active (positive) strategies used by children to cope with pain include ‘Distraction’, ‘Cognitive self-instruction’, and ‘Problem solving’. These active strategies help children manage pain more effectively than passive strategies such as catastrophizing, helplessness, or seeking social support. Passive strategies are less effective since they are not centered on the problem, moreover, they may even exacerbate the negative consequences of the pain” (Chaleat-valayer et al. 1329). Identifying the best coping strategies for children to use in certain situations and then teaching them these positive coping strategies is important for their long-term mental health. “Younger children use many different strategies, including seeking social support, until they find an effective strategy. Older children tend to use more cognitively demanding strategies, such as ‘Cognitive self-instruction’ and ‘Problem solving’ (strategies that are centered on the problem)” (Chaleat-valayer et al. 1333). Children who learn a variety of coping strategies have more options to use in different kinds of stressful situations throughout their life (Sugg 40). In addition to using positive coping strategies for medical visits, there is a lifetime of benefits to learning positive coping strategies as a child. The benefits of knowing positive coping strategies can have further implications.

Play

Play Therapy can be a coping strategy. Play is essential for children to learn about their surroundings. “Playful learning [is] when you make learning coping skills for anxiety fun and enjoyable, you strengthen children’s interest in and retention of the information” (Drewes and Schaefer 6). “Therapeutic play has three main forms, namely instructional, emotional outlet, and physiologically enhancing play” (88). Play has been a proven strategy for dealing with pain and emotional stress (Kleye et al. 535). “Instead of speaking, children can express feelings through play symbols and metaphors. This creates a safe distance between them and the distressing feelings of anxiety and fear” (Drewes et al 6). “An immersive therapeutic play strategy -- can be easily implemented can help alleviate the pain and fear of school-aged children” (88). Play therapy can be used to help children cope with the stressors of life (Drewes and Schaefer 4). “Play is proven to be of high therapeutic value for ill children, contributing to both their physical and emotional well-being and to their recovery” (Kleye et al. 535). “In therapeutic play, children inhabit the role of a third party to express their inner feelings; understand their inner worries, fears, and defense mechanisms; and deal with their concerns and anxieties” (Hsu et al. 88).

“Play allows the child to have control over anxiety-producing stimuli through the gradual titration of exposure” (Drewes and Schaefer 5). Play can include exposure therapy which uses cognitive-behavioral treatment (CBT) (Muris 226). CBT is used to help children to learn how to correct a specific behavior. Exposure therapy has also been known to help children cope with fear and pain (Hsu, et al. 92).

Key Features of a Children’s Medical Picture Book Design

Age Appropriate
First-person Perspective
Interactive
Illustrated
Educational
Play
Coping Strategies
Desensitization

Exposure Therapy

Exposure therapy is used to “elicit relatively low levels of fear and anxiety” (Muris 226). First, it changes the thought and feelings while also changing the individual’s behavior to reduce stress (226). “Gradual exposure [is] an important first step in overcoming an irrational fear [by] fac[ing] up to the fear and see[ing] that you are safe. Sometimes, facing a fear in imaginative play . . . , provides a safe distance and is less scary than facing it in real life” (Drewes and Schaefer 5). Images can be used with exposure therapy to desensitize a child from something they fear, such as the dentist’s drill. The child views images of the drill. At first the child looks at the image for a short amount of time and they slowly build up the time until they can control the fear response. “With regard to the treatment options, all supported inventions for early childhood anxiety entail exposure-based cognitive-behavioral therapy (CBT) with significant parental involvement” (Kopcsó et al. 256). “Additional findings supported the superiority of exposure-based treatments over alternative psychological approaches for specific phobia, and also showed that more sessions predicted more favorable outcomes” (Kopcsó et al. 257). There has been first-person verses third-person perspective debate as to which images are better for exposure therapy.

First-person Verses Third-person Perspective

The research by Rennie et al. and Arias supports a first-person perspective whereas the research by Hsu et al. supports third-person perspective in one study and in another study first-person perspective. The first-person perspective visualization technique has the participant imagine themselves as the participant to overcome a behavior (Rennie et al. 810). “The present research found that visualizing engaging in behavior using the first-person perspective was significantly more motivating then was visualizing engaging in behavior using the third-person perspective. The findings provide early evidence that visualization may be a useful technique for motivating health behavior change” (Rennie et al. 810). The studies were seeking to determine which perspective provides the viewer with the most stimulus to cause a response. “Using the third-person perspective was found to be not more effective in motivating health behavior than was no visualization at all” (Rennie et al. 810). In the third-person perspective, the participant is an observer trying to overcome a behavior. Determining what kinds of images to use for exposure therapy, as a part of play, is important for the child who is learning how to cope with anxiety, fear, and phobias.

Storytelling

Storytelling is a coping strategy and a form of play composed of imagery both in the mind and physically through viewing. “Stories transport children to the world of the storyteller’s imagination. Through adult storytelling and guided readings, children can be helped to realize they are not alone, since others have similar problems, and need to learn anxiety management skills” (Drewes and Schaefer 5). Conveying a story can take many forms. It can be spoken, it can be acted out, it can be drawn, it can be written, or it can be a combination of these. “Back in the days before therapists, wisdom was dispensed to those seeking advice by sages (rabbis, prophets, priests, hermits, mullahs, gurus, Zen Masters, healers, seers, teachers, philosophers, medicine men, shamans and druids, at different times and in different cultures); in many cases this task is now performed by therapists, social workers, doctors and alternative practitioners” (Hammel 5). Parents provide wisdom to their children through storytelling and other means. Storytelling has shown to be an effective strategy to help children to overcome anxiety, fear, and phobias (Sekhavatpour et al. 62).

“Children demonstrated that they wanted to have access to the information so they could understand the need for treatment and, thus, face it more easily:

‘The doctors talk to me, but when I don’t understand, my mother explains it’ (12-year-old child).

‘I know why I come here. So, any doubts I have, I ask and the doctors answer me...If they explain everything it becomes easier’ (10-year-old child).

And: ‘The doctor explains each procedure that I have to undergo, everything that I have to go through. I prefer knowing what’s going to happen so that I can prepare myself’ (11-year-old child).”

(Sposito et al. 146)

Bibliotherapy

Bibliotherapy is a form of play therapy that uses storytelling in books to help children learn through the process of reading or listening to overcome fears, anxiety, and phobias (Drewes and Schaefer 33). Children's books show many types of coping strategies for children to try themselves (Maynes 5).

"Latrophobia, defined as the morbid and irrational fear of doctors or hospitals, makes medical or hospital visits extremely challenging for those who suffer from it. For many people, the cause of Latrophobia or its milder forms, including dislike and anxiety, is often rooted in childhood. Therefore, a large number of children's books deal with and illustrate the topic of a 'doctor's visit', in order to reduce the anxiety through pedagogical methods combined in the narrative" (Motz 37).

Coping strategies such as exposure therapy, education, and familial bonding can be found in bibliotherapy. Bibliotherapy uses books that are specifically designed for children to work through their own problems while listening to the book (Drewes and Schaefer 31).

"Parents and therapists can introduce books about characters who overcome fears and engage with children in specific activities designed to reduce fears. This type of intervention allows children to distance themselves from their own fears sufficiently to listen to and engage with the message of the characters. Internalizing the character's progress helps the child integrate the progress into his or her own life." (Drewes and Schaefer 31)

Bibliotherapy is one type of coping strategy that can provide parents with a resource to refer to and read over and over again while the child learns new behaviors (Drewes and Schaefer 33). "Book reading, especially if assisted by the parents, could increase the child's self-confidence, leading to reduced sleep-related fears" (Ricci et al. 17). Furthermore, "Parents are by far the most influential people in their children's lives. Research has found that involving parents more centrally in the treatment of their children's psychological disorders can enhance the intervention's effectiveness and maintenance (Bratton, Ray, Rhine, & Jones, 2005; Friedberg & McClure, 2015; Ginsbury, Silverman, & Kurtnes, 1995)" (As cited in Drewes and Schaefer 7). The parent and child bond can provide the emotional support needed for a child to learn new coping strategies.

Bedtime routines are a time when a child and parent can learn new information in a safe environment. "The bedtime story has a particular place in this ritual, serving both a social and educational function" (Maynes 2). "Brice-Heath's (1982) study of families in America highlighted that whilst the bedtime story is by no means universal, it is commonly perceived as a natural way for parents to interact with their child before sleep, simultaneously supporting early language development, introducing children to literature and literate behaviors and reinforcing the emotional bonds between parent and child" (As cited in Maynes 2). "A study by Cooper et al (2019) stated that storytelling is a very useful tool in health communication, . . . it could be a valuable tool for children and their parents for decision making, reducing anxiety, and saving counseling time" (Sekhavatpour et al. 64). "Children's fears may be discussed and clarified through sharing bedtime stories but they cannot simply to be managed for the child by adults" (Maynes 3). Reading a book about a specific topic, such as preparing for surgery, can be used days before a procedure to reduce a child's anxiety, fear, and stress (Cordray et al. 371).

Allowing a child to listen to their heartbeat can help them relax during a medical visit.

"Pre-operative storytelling may be able to increase the child's familiarity with the environment, reduce the harmful effects of imminent stress, change the child's attitude towards the hospital environment, surgery, and operating theater, and decrease the child's fear and anxiety" (Sekhavatpour et al. 67). The value of a well-designed book helps parents and children to learn how to better cope with the stresses of life. "Storytelling [i]s an effective, inexpensive method and the child's favorite non-pharmaceutical intervention" (Sekhavatpour et al. 66). Storytelling can be fictional or non-fiction, either type of book can help to educate the child about what they do not know. The design of a book is key to its success with helping children to learn coping strategies and solve problems.



Integrated Coping Strategies

The design of an effective Children's Medical Picture Book will assist children with learning positive coping strategies. Picture books can be used to signify a variety of situations in which children are fearful (Maynes 2). "The stories used in pursuit of this goal must therefore reflect what is going on in the client's everyday life on a structural level, revealing the way in which a particular structure (or pattern) influences the client's life and making it possible to identify potentially worthwhile areas of change" (Hammel 13). The use of metaphors and analogies provide the child an opportunity to problem solve. "Children can learn from the stories by direct instruction and metaphors or by creating a sense of distance from their own problems as they watch the character deal with fears" (Drewes and Schaeffer 33). The mental state of the child needs to be relaxed for them to be able to learn new coping strategies. "Metaphors are often used in hypnotherapy to bring about changed bodily reactions...discovery of new healing opportunities... a new way of seeing the world" (Hammel 32). A well-known book, the Bible, has been using metaphors for problem solving for thousands of years in the comfort of homes across the world (Hammel 5).

Parents help children to understand the concepts in the Bible. The Bible provides cues to help parents teach specific concepts to their children. There are also child-appropriate books that provide information about the Bible at their educational level. "Child-appropriate language, illustrations, and analogies can help patients process and retain preparatory information under emotionally stressful circumstance (Cordray et al. 370). Children's books are used to "express feelings which may be more difficult to articulate and understand through words alone" (Maynes 5). By using comparing and contrasting in books, children are able to understand the information better. Children's medical picture books can be designed with metaphors and analogies to help children learn the different concepts found in the book.

The way the story is written is essential for children to be able to use the book to learn coping strategies. "Concrete suggestions are framed as stories about situations that other people have experienced, so that the listener can examine their usefulness as a model for his or her own experiments" (Hammel 4). "Stories tend to avoid the 'yes but' structure story" making it easier for the brain to process the information while listening to the story and hopefully finding a solution to the problem (Hammel 4).

The four factors of making an illustrated children's book includes a "searching for content items," "happy ending," "overall atmosphere of the story should be fundamentally positive," and "interactive: pushing, flapping and pulling processes are alive (e.g., the operation of a dental drill)" (Motz 42). One study found that children who have access to the interactive book have "significantly more positive expectations and attitudes, including greater readiness and greater trust in their doctors" (Cordray et al. 371).

"The pop-up book integrates these [education, engaging, child-appropriate language, illustrations, and analogies] components with active learning through tactile participation and interactive reader response. Patients who read the book were significantly more likely to view preoperative explanations as enjoyable, helpful, and child-focused than patients who received standard care alone." (Cordray et al. 370)

Realistic stories need to be used to help the child learn coping strategies.

It is best to avoid a child's "deficits, and 'shortcomings'", as well as "focus on the future goals and solutions with achievable goals" (Hammel 14). Thomas Motz states "As a recommendation for future children's books, which take up the topic of 'doctor's visit', it can be said that a pedagogical value is given particularly if: A) preferred content aspects (images, positive story) are integrated, B) potentially less desirable contents (e.g., representations of instruments) are left out, C) a meaningful discussion with the topic 'pain' takes place, as well as D) a happy ending takes place" (42). Every aspect of the design of the book needs to be considered to assist a child with learning and developing coping strategies to use with a medical visit. Motz continues:

"As the authoritative starting point for the content of future children's books, reference should be made to the results of the question 'What are you afraid of?' It should be clearly stated that the focus should be on the criterion of 'potential pain', which is considered the main criterion of possible fear. Parents must ensure that their own fear is not projected onto their children, as this may be unfounded in some cases." (42)

“It is argued that – texts often mirror coping strategies preferred by young children, in particular positive preference, where threats are minimized or eliminated by mentally changing or altering perception of them” (Maynes 1). The entire design of a book needs to focus on its audience: the child.

Authors and illustrators who design books with positive coping strategies built into the narrative help children process information in the state of play. “The fun, enjoyment, and pleasure experienced in playing are incompatible with anxiety and serve as an antidote to weaken and overcome it (Fredrickson, 2003)” (As cited in Drewes and Schaefer 5). The information, layout, and images compiled and created in a book can assist parents and medical providers in exposing their children to information that may cause them anxiety.

Children’s picture books need to be illustrated to “generate stimuli,” “promote fantasies,” and prevent “language barriers” (as cited from Maier, 1993) (Motz 42). Generating stimuli is important for desensitization through exposure therapy. By promoting fantasies, the child will be able to relax and imagine. The images help to prevent language barriers by providing additional visual information to fill in gaps of understanding.

Pictures alone can tell a story. The use of words add depth to the book. “The ways in which fears are managed and controlled through the authors’ and illustrators’ careful crafting or word and image, demonstrates how essential the pictures are to these stories” (Maynes 7). The text, illustrations, and use of space demonstrates different types of coping strategies (Maynes 5). “Each image is set in a white border and the central gutter is used [as a] signifier”. “The words are sparse, written along the bottom of both pages, separate from the images” (Maynes 5). The “text builds the tension and suspense but these are managed carefully through skillful presentation of the images.

The use of a white border throughout ‘contain[s] or confine[s] the action of the story and creates a distance between reader and text’ (Maynes 5). “The reader is invited to view the action from the perspective of a detached observer rather than being asked to enter the story themselves” (Maynes 5). Utilizing the layout of the page along with the words and images can provide a tension that is essential for the child to overcome a difficult situation (Maynes 2). “Fears are further managed by literary and visual devices employed by the picture book creators, in particular in the presentation of images” (Maynes 1). The strength of a children’s picture book is found in the written and visual images that educate the child.

Education

Educating children about the visit to a doctor or a medical procedure is a coping strategy. Many children crave information and ask questions about everything.

“Children who received age-appropriate training had better data-processing, coping skills, experiences, and emotional control after surgery than children who had received routine daily interventions. These children also had less psychological problems, less anxiety in the recovery phase, and less risk of retrograde behavioral disorders, such as nightmares, separation anxiety, eating disorders, and enuresis after surgery, and were more compatible in all stages and needed less sedation and experienced less physical limitations.” (Sekhavatpour et al. 66)

Educating children about why an exam and tests are needed helps children to feel more in control of their care (Chaleat-valayer et al. 1335). “The results indicate that knowing not only the name of their disease and treatment, but also the meaning of these words, and especially understanding the need of undergoing chemotherapy, helped -- children to cope with the treatment” (Sposito 148).

“The children who understood how chemotherapy acted in cancer treatment mentioned that this knowledge helped them to cope with the adversities and side effects of the treatment as they envisaged cure through these drugs:

‘Understanding why I take chemo helps me not to complain about the treatment’ (11-year-old child).

‘I accept it because I know this treatment serves to kill the disease’ (10-year-old child).

And: ‘Chemotherapy is needed to reduce the tumor. Despite the treatment being so bad, I keep taking chemo because I’m afraid of getting something much worse’ (12-year-old child).”

(Sposito 146)

Children have a need to understand why they need to see a doctor, why they need to be examined, why they need a test, and why they need medications. Children who ask “Why?” are trying to problem solve what is going on in their life or to comprehend their emotions. “If the child is not provided with an initial explanation of procedures or is provided with deceptive information, they can fear and distrust their medical care and medical caregivers and may not cooperate” (Hsu et al. 87). “Negative experiences with this medical process or unfamiliarity with the environment increases pain caused by intravenous injections and affects children’s attitude toward future medical care, physical discomfort, and mental trauma” (Hsu et al. 87). Parents who answer these questions honestly build a stronger relationship with their child and the child trusts the medical professions more.

Selecting the children’s books is usually done by the family. “Books which are selected by adults or children to be read at bedtime have a special significance and value. For many families with young children bedtime is regarded as a special and quality time which has a significance beyond the practical routine which need to be completed such as bathing and teeth-brushing” (Maynes 2). “Parents select cultural products that match their values and beliefs. In turn, cultural products may affect what parents and children know and believe” (Chentsova-Dutton et al.1586). Certain children’s books share valuable information about emotions and what emotions are socially acceptable in certain situations. “Picture books in particular offer us an important window into the ways in which cultural models of emotions are transmitted to young children” (Garner & Parker, 2018) (as cited in Chentsova-Dutton et al. 1587). “Children learn to manage their fears through a process of emotional regulation, which occurs as a result of both neurological development and social factors such as seeing adults model behaviors which help to control and cope with fear, but this process takes time” (Maynes 3). Young children learn what is acceptable by reading with their parents and interacting with their friends.

“Reading together can foster warmth (Barker et al., 2001) and promote learning (Gilboa & Greenbaum, 1978). Even young children attend to and respond to emotional cues in picture books (Arizpe & Styles, 2016). Books introduce and reinforce emotional vocabulary, encourage identification with emotions of the characters and simulate emotional experiences, scaffolding development of regulatory strategies and empathy (Garner & Parker, 2018; Mar & Oately, 2008; Nikolajeva, 2013). Recent work highlights the importance of emotional granularity to emotional wellness (Smidt & Suvak, 2015); children’s books can help children develop granular conceptions of emotions” (as cited in Chentsova-Dutton et al. 1587).

Children who are exposed to children’s books with emotions can learn how to cope with their feelings in a culturally acceptable way. Books educate children on many different topics, including doctor’s office visits and surgeries.

Parents and Caregivers

Adults have a unique responsibility to assist children with finding coping strategies for pain control (Kleyes et al. 535). “It requires that adults listen to and adhere to the individual child’s wishes and needs. It is important that healthcare professionals are open minded and flexible in asking for and meeting the child’s wishes, to reduce experience of fear and pain” (Kleyes et al. 535). There are times when parents do not know how to assist their child with finding coping strategies or talk to them about medical appointments and surgeries. “Caregivers often feel unprepared to explain surgery, and they may maladaptively avoid disclosing the upcoming surgery to the patient . . .” (Cordray et al. 372). “Parents are often unskilled in anxiety management, they often need guidance themselves to teach their children effective anxiety management skills” (Drewes and Schaefer 4). A well-designed book about coping strategies can provide cues for the parent to interact with their child while reading the book.

Parents can learn and use these coping strategies to reduce their own stresses as well as model the coping strategies for their children. “...Children heavily rely on their parents and teachers, for learning positive coping skills. Empowering parents and teachers, by learning the same skills we are teaching the children, provides a systemic ‘language’ of positive coping strategies,

which can be used when challenging situations occur. The modeling of positive skills from caregivers and educators is paramount for this early age group” (Fisak & Barrett xii). “Monsters teach strategies for coping with fears, but in picture books these are modelled gently from within a rich and engaging context which gains the interest and attention of the child without being overtly didactic” (Maynes 3).

“For mild fears and anxieties, therapists can instruct parents about ways to teach and reinforce anxiety management skills in their children, develop more supportive parent-child relationships, enhance their child’s expression of negative emotions, promote independence in their child, reduce their own level of anxiety, and increase empowerment as they read stories about brave children.” (Drewes and Schaefer 7)

Educating parents, educators, and medical professionals on how to teach coping strategies to children helps children to learn and master the skill early enough to help prevent depression and other mental illnesses in throughout their lives (Fisak & Barrett 11-12).

Healthcare Providers

Health care providers are instrumental in assisting parents and caregivers with providing coping strategies to children. Many times, parents and caregivers do not understand the information they need to present to their children. If they do understand the information, they often do not know how to discuss it with their child at the child’s level. Healthcare providers look for accurate and effective resources, but the resources are limited. “Online patient education materials typically exceed the reading level of most Americans, let alone children. Providers have identified a need for more age-appropriate, child-focused education materials. Alternatives to hospital-based preparation have included websites, audiovisual resources, and storybooks” (Cordray et al. 366). Healthcare professionals have limited time with each patient, but they want their patients to be educated about their medical care. “In view of the importance of establishing good coping strategies early in life, health care professionals should integrate coping aspects into care management” (Dellenmark-Blom et al. 759).

“Reducing preoperative anxiety is also clinically important because children’s preoperative anxiety influences emergence delirium in the postoperative unit and pain perceptions during recovery. Children who are highly anxious before surgery tend to express more pain postoperatively and consume more opioid and nonopioid analgesics at home. Given the prevalence of opioid prescribing for postoperative pain, these upstream efforts could help manage opioid overuse among children and decrease the supply of opioid overuse among children and decrease the supply of opioids available for diversion in communities” (Cordray et al. 371).

“Health care professionals should integrate knowledge of coping processes into care management in order to support a positive adaption, psychological functioning and health-related quality of life into adulthood” (Dellenmark-Blom 766). The positive outcome of teaching children coping strategies reaches more than the child. It reaches their family and the community as well.

Educators

Teachers have the opportunity to teach everything from the alphabet to math to playground rules. They have the ability to share a wealth of knowledge with children who absorb massive amounts of information. Educators who use their classroom as an opportunity to teach and support coping strategies will help children who are fearful and have anxiety. Many of the coping strategies used with going to a doctor’s visit will work the stressors found in the classroom. “It is important that teachers, parents and educators -- help children to develop a range of effective coping strategies that can be used when dealing with a wide range of stressors” (Sugg 40). “Active teacher involvement in therapy can be the crucial factor in the success or failure of the intervention” (Drewes and Schaefer 7). “It is generally advisable for pedagogical experts to evaluate children’s books in advance. In my opinion, this can and must be done for post-published books, external factors such as social changes can significantly influence the meaning of contents of a book” (Motz 42). A team of adults assisting a child through a stressful event with coping strategies will find support that can last them throughout their lifetime.

The research has provided an ample amount of information supporting first-person perspective illustrations and text, integration of coping strategies, and age-appropriate material for educating children at their level of understanding in an interactive children’s medical picture book. As the research has shown, there is a benefit for children to learn how to cope with the stress of going to a medical visit while young. A well-designed children’s medical picture book has been proven to assist parents and medical professionals in teaching children coping strategies. However, there are no effective children’s medical picture books on the market that incorporate coping strategies using a first-person perspective. Creating such a children’s medical picture book is novel.

Education

The key components to a well-designed children medical picture book have been identified as age-appropriate, first-person perspective illustrations and text, integration of coping strategies, and interactive. When examining children’s medical picture books, almost all the books provided some level of education about a medical visit. Each book was targeted toward a specific age group and most of them provided basic information for that age group. Children and parents who want to prepare for the medical visit would only receive commonplace information. Information explaining the exams, tests, and procedures are the areas that children and parents need more information about in a children’s medical picture book.

First-person Perspective Illustrations and Text

First-person perspective illustrations with first-person perspective text were difficult to find in children’s medical picture books, let alone other children’s pictures books. First-person perspective text is relatively common with second- or third-person perspective illustrations. Finding resources on first-person perspective illustrations was difficult as well. The only place where there was ample information about first-person perspective was in computer games. Utilizing first-person perspective images can be effective for desensitization, immersion, and exposure therapy for people who are fearful of an event or thing. Integrating first-person perspective illustrations about a fearful event or thing can produce a stimulus that will help children to overcome the fear. The difficulties that may arise from designing a children’s medical picture book using first-person perspective illustration and text are only being able to show the main character in reflections. Naturally integrating metaphors, analogies, problem solving, and coping strategies into the storyline while constructing an interactive feature could be challenging with first-person perspective illustrations and text.

Coping Strategies

Integrating coping strategies into the storyline and illustrations can provide children with the tools they will need to navigate stressful events throughout their lives. Children’s medical pictures books that integrate coping strategies into the illustrations and text have been proven effective for teaching the strategies. The content analysis of children’s medical picture books found that only a few provided limited coping strategies outside of educating children about aspects of a medical visit. As a result, there does not appear to be any children’s picture books that combine the critical elements of immersive illustrations, coping strategies to problem solve, and education on the child’s developmental level.

This research shows that there is a lack of children’s medical picture books on the market that teach the essential skills of how to cope in the stressful situation of a medical visit. The first-person perspective illustrations help with desensitization about a fear. Creating a children’s medical picture book with integrated coping strategies and first-person illustrations would provide families and the medical profession with a resource to use before any medical visit. There is a great need for well-designed children’s medical picture books for children and parents to have a tool to learn coping strategies in the safety of their own home. The proposed visual solution seeks to address this gap.

Content Analysis

Selection: Children’s Medical Picture Books

Audience: Primarily children and their parents

Content: Children’s medical picture books are used to educate children about visits to a clinic and/or hospital to receive medical care. They explain how the body works, especially when the body is ill.

Cultural Context: These books describe the culture of the medical community for children.

Summary of Selection of Books: The information varies from tools that a practitioner would use during an exam or surgery to conversations that a child might witness during a visit. A few books have interactivity features. Most books are written and illustrated in third-person perspective. Only a few books discuss coping strategies for children to use during a visit.

Social Work: These books provide a starting place for parents to use when discussing medical visits. They are also used by medical practitioners to ease children’s nerves about a surgery.

Distribution: All of these books are created by authors and illustrators, then published and distributed to booksellers and the audience.

Symbols: The books used images of items used in a medical practice as symbols. Some of these include masks, gloves, doctor’s coat, wheel chair, tongue depressor, stethoscope, and blood pressure cuff.

Table 1
Content Analysis of Childrens’ Medical Picture Books

Title	Author	Age	Interactive	Educational	1 st P-P Writing	1 st P-P Image	3 rd P-P Writing	3 rd P-P Image	Coping Strategy
<i>ABC Doctor</i>	L. Murphy	4 – 8	No	Yes	No	No	No	Yes	No
<i>A Doctor’s Tools</i>	A. King	7 – 9	No	Yes	No	No	Yes	Yes	No
<i>At the Doctor</i>	A. Grunsell	6 – 8	No	Yes	No	No	Yes	Yes	No
<i>A Trip to the Doctor</i>	D. Lock	4 – 6	No	Yes	No	No	Yes	Yes	No
<i>A Visit to the Doctor’s Office</i>	B. A. Hoena	5 – 8	No	Yes	No	No	Yes	Yes	No
<i>Amazing Pop-up Human Body</i>	DK	7 – 10	Yes	Yes	Limited	No	Yes	Yes	No
<i>Arlo Needs Glasses</i>	B. Saltzberg	2 – 6	Yes	Yes	Yes	Some	No	Mostly	No
<i>A Trip to The Doctor</i>	M. Linn	5 – 7	Yes	Yes	No	No	Yes	Yes	No
<i>A Visit to Dr. Duck</i>	R. Wells	2 – 5	No	Yes	No	No	Yes	Yes	No
<i>Boris’s Glasses</i>	P. Cohen	4 – 8	No	Yes	No	No	Yes	Yes	No
<i>Bumpy and Boo Visits the Eye Doctor</i>	S. Manson	8 - 9	No	Yes	No	No	Yes	Yes	No
<i>Chuckie Visits the Eye Doctor</i>	L. David	6 – 9	No	No	No	No	Yes	Yes	No
<i>Doctor</i>	J. Barger	5 – 7	No	Yes	No	No	Yes	Yes	No
<i>Douglas, You Need Glasses!</i>	G. Adamson	2 – 6	No	Limited	No	No	Yes	Yes	No
<i>First Encyclopedia of the Human Body</i>	F. Chandler	4 – 9	No	Yes	No	No	Yes	Yes	No
<i>Going to the Doctor</i>	F. Rogers	4 – 7	No	Yes	No	No	Yes	Yes	Limited
<i>Going to the Doctor</i>	I. Smith	5 – 8	No	Yes	Yes	No	No	Yes	No
<i>I Can See Just Fine</i>	E. Barclay	4 – 6	No	Yes	No	No	Yes	Yes	No
<i>Katie Goes to the Doctor</i>	L. Slegers	3 – 5	No	Yes	Yes	No	No	Yes	Limited
<i>Let’s Talk About Needing Glasses</i>	D. Shaughnessy	8 – 9	No	Yes	No	No	Yes	Yes	No
<i>Let’s Visit the Doctor</i>	T. Huntley	5 – 7	No	Limited	No	No	Yes	Yes	No
<i>Lions Aren’t Scared of Shots</i>	H. J. Bennett	5 – 9	No	Yes	Yes	No	No	Yes	Yes
<i>Magenta gets Glasses!</i>	D. Reber	3 - 4	No	Yes	No	No	Yes	Yes	Limited
<i>My Doctor’s Visit</i>	C. & J. Florance	4 – 6	No	Yes	No	No	No	Yes	No
<i>My Eyes</i>	K. Furgang	5 – 10	No	Yes	No	No	Yes	Yes	No
<i>My Eye Doctor Visit Olivia Big</i>	Unknown	4 – 5	No	Limited	No	No	Yes	Yes	Limited
<i>Ready for Anesthesia</i>	H. Cordray	5 – 9	Yes	Yes	Limited	No	No	Yes	Limited
<i>See for Yourself!</i>	D. DePrisco	6 – 8	No	Yes	No	No	Yes	Yes	No
<i>See the First Star</i>	N. Simon	5 - 9	No	Limited	No	No	Yes	Yes	No
<i>Berenstain Bears Get a Checkup</i>	S. & J. Berenstain	6 – 9	No	Limited	No	No	Yes	Yes	No
<i>The Eye of the Fry Cook</i>	E. David	4 – 8	No	Limited	No	No	Yes	Yes	No
<i>The Hospital: The Inside Story</i>	G. Hsu	6 – 9	No	Yes	No	No	No	No	No
<i>The Pop-Up Book of Phobias</i>	G. Greenberg	Adult	Yes	Yes	Yes	Yes	No	No	No
<i>Visit the Doctor!</i>	K. Marsico	7 - 9	No	Yes	No	No	Yes	Yes	Limited

*P-P = Person-Perspective

A table identifying interactivity, educational, coping strategies, first-person perspective illustrations and writing used in multiple children’s medical picture books.

Case Study #1

Title: *Interactive Book Design*

Research: Interactive Books, Novelty Books, Movable Books, Paper Engineering

Purpose: The purpose is to understand where interactive books came from and how to use interactivity in children’s books to educate and desensitize.

Analysis: The analysis will inform the solutions to integrating interactive features.

Key Questions:

- 1 What interactivity features will be effective in communicating coping strategies?
- 2 What interactivity features will withstand multiple uses?
- 3 What interactivity features will be engaging?
- 4 What is the history of interactivity and how can it be used?
- 5 What interactivity works well with first-person perspective illustrations and writing?

Review

History: Before the 19th century, novelty books were created for educational purposes mainly for adults. After the 19th century, novelty or interactivity books were created to engage young readers (Phillips and Montanaro 14; Hiner 4).

Motivation: Interactive or novelty books were created to educate and entertain.

Summary: Interactivity or novelty books come in a variety of forms. A paper engineer is usually responsible for creating the interactivity (Salisbury 86). The paper engineer uses the basic forms of paper folding and cutting to build a page spread. There are underlying structures to the pop-up that include v-folds, parallel-folds, zigzag-fold, m-fold, floating plans, box, open-topped shapes, pyramids, curved shapes, twisting mechanism, automatic pull-strip, and moving arms (Birmingham 20-3). Rotating discs, pull-up planes, wheel, pivoting motion, dissolving scenes, coils, pull-tab can also be used to create interactivity (Hiner 5; Carter and Diaz). Many of these techniques can be used in connection with other techniques on the same page spread.

Challenges: Many interactive books have broken components from normal use. The design of the interactive features and the material choices (paper, supports, glue) are major factors in the success of each interactivity (Hiner 6). The length of the book is also a challenge. Most children’s books are thirty-two pages. If each page spread has interactivity within the design, how large can the completed book be and still function correctly?

Outcome: Some interactivity features last a long time. Others break easily. Identifying interactive features that last through multiple uses will be essential for the success of the book. Problem solving how to reinforce the interactive features to make them stronger is another option. There are other type of interactive features that do not involve delicately folded paper, such as look and finds. Interactivity that does not utilize delicate paper may be a better choice for the design of this book.

Relevant Elements: The interactive functions that last longest are the rotating disc and dissolving scenes.

Case Study #2

Title: *Coping Strategies and Techniques*

Research: Coping Strategy Books for Children

Purpose: The purpose of the research is to understand coping strategies to use in children's medical books.

Analysis: Identify which coping strategies are most beneficial to use in a book for children and parents.

Key Questions:

- 1 What coping strategies are effective for children?
- 2 What coping strategies will be effective in a children's medical book?
- 3 What coping strategies are more effective with first-person perspective illustrations and writing?
- 4 What are positive coping strategies?
- 5 What are negative coping strategies?

Review

History: Coping strategies began with the development of psychotherapy. Utilizing psychotherapy to help children cope is a recent development. The professions which have been teaching coping strategies to children are mental health providers, nurses, doctors, and more recently child life specialists and sometimes teachers. Mental health, in general, is relatively young. Therefore, it has been only recently that coping strategies for children have been developed. Children find hospitals, clinics, medical procedures, dentist appointments, going to school for the first time, or going to school at the beginning of the year to be very stressful. That is why research has been conducted to determine which coping strategies work for each targeted area.

Motivation: The motivation for finding effective coping strategies can be easily seen. One example is the parent who is struggling to take their child to the doctor for a well-child visit and the child is so upset that they will not let the doctor or nurse examine them. The goal of the medical profession is to first do no harm; however, it's very difficult to administer injections, draw blood, or use a tongue depressor to look at tonsils in a child who is fearful that the situation will be painful or uncomfortable. The motivation behind providing coping strategies to children is to educate them about how to deal with painful, uncomfortable, and stressful situations in a way that is effective and beneficial to their health, now and in the future.

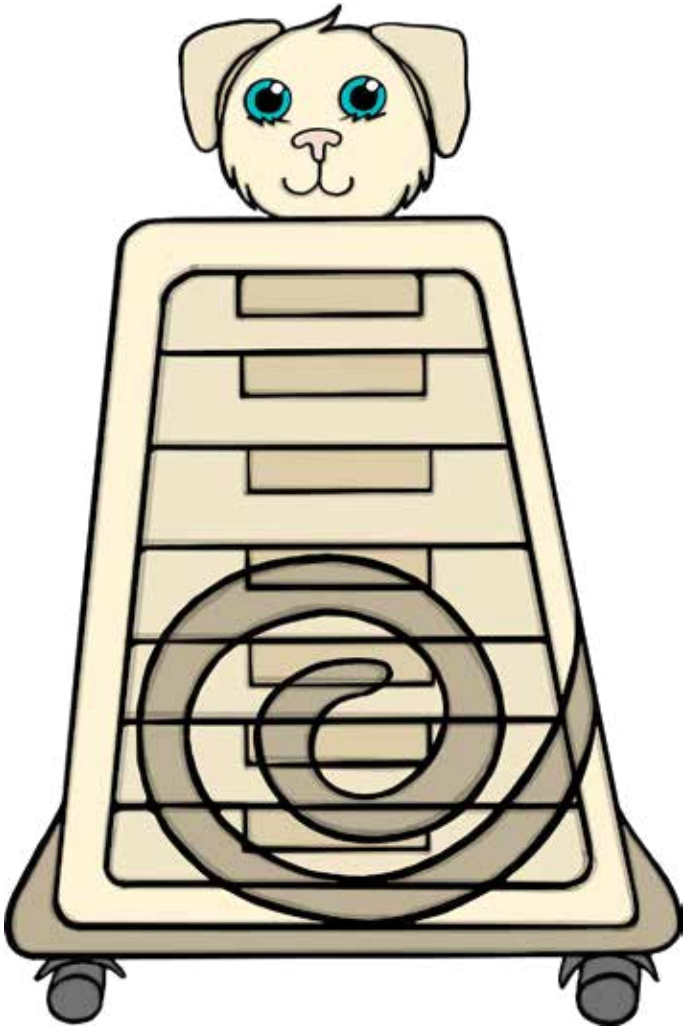
Summary: There are both positive and negative coping strategies that children can use to manage the stress of going to a medical visit. The modified table by Holly Cordray et al. provides information about positive and negative coping strategies. It has been modified to show implications for designing children's medical picture books.

Challenges: There are many coping strategies available for children to learn, but not all of them are effective in a medical setting. The coping strategies for a children's medical picture book need to be useful for situations where a child might be examined, have a skin puncture, or being with strangers for long period of time. Coping strategies that can be taught and reinforced before a medical visit will provide the most benefit to the child. Strategies that are messy, such as creating art, would not be effective when being examined by a doctor or having blood drawn. Although, many children are able to play and paint with intravenous (IV) medications being administered, but only after the IV is in place. Counting to 10 or finding five of the same objects in the room would be more appropriate for multiple situations than painting. The challenge will be identifying the best strategies that can be built into the story of the book, and which can also be used in a variety of situations.

Another aspect to deciding which positive coping strategies to implement depends on what the children's medical picture book will be preparing the child for. If the book is for preoperative care, it will be best to provide coping strategies about separation from parents. For a book about preparing a child for chemotherapy, providing coping strategies for nausea, possible hair loss, and fear of dying is most appropriate.

Outcome: There are many coping strategies that are beneficial for children. Many coping strategies will not be as effective in a children’s medical picture book. The strategies that have been identified as being effective for a children’s medical picture book are ones that children can learn before a medical appointment and be used in a variety of situations. Table 2 has been modified from the research table of Holly Cordray et al. to outline coping domain and strategies that can be used in children’s medical picture books.

Relevant Elements: Coping strategies that provide for desensitization of medical equipment, staff, and facility will be effective in educating children about visiting a medical facility while preparing them for the stress of the visit. One example would be a scavenger hunt within the book using images and text. First-person perspective images of items along with the text will allow the child to be immersed in the experience. A chart about pain and anger levels would be another option to use in the book for the young reader to learn how to describe their levels of pain and anger to medical professionals.



Redesigning an object or room is a coping strategy that can be used while visiting a medical center. This illustration is a redesign of a pharmacy robot to make it look friendly.

Table 2
Coping Domains, Strategies, Definitions, Implications

Coping Domains	Strategy	Definition	Implications for Designing Books
Positive active coping strategies		Imaginative engagement	Imagining the situation
	□ Restructuring	Positive affect	Positive self-talk
	□ Seeking information	Overcoming fear Education	Accepting the situation Learning about the situation
Distraction positive coping strategies		Imagining the situation	Imagining needle is tiny as a strand of hair Redesigning rooms or how a needle
		Positive self-talk	"I can do this!"
		Accepting the situation Learning about the situation	"I will be getting a shot, but it will be over before I know it." Asking the medical professionals questions or a pain chart
		Exploring the area or equipment	Scavenger hunt Placing flowers on scary things
		Thinking about a pleasant experience Sleeping, meditation, slow breathing Finding ways to laugh	An image of a beach Counting to 10 Telling a joke or making funny faces Mixed up head, body, feet of people
Support-seeking strategies	Storytelling Bibliotherapy Toys	Reading or listening to a book Using books to learn how to cope Doll or stuffed animal to hug can be soothing	A list for preparing for a visit to the doctor
	Bedding	Pillow and blanket from home can be comforting	A list for preparing for a visit to the hospital
	Play Reward Music	Socializing with other children Overcoming situation for a reward Listening to music	Show a playroom for the children to use Provide examples of some of the rewards Image of a child listening to music
	Parent and family support Help from healthcare provider	Talking, hugging, holding hands with family Support from nurse, child life specialist	Holding hands during the exam Child life specialist demonstration of tools
Negative avoidance coping strategies	Cognitive avoidance	Closing Eyes Deliberately avoiding thinking about it Pretending it is not happening Escaping, hiding, physically resisting	Wishing for a better future Write a complaint both seriously and funny Puppet to speak for them Engage in a game of ABCD find an item for each letter
*Redirect child to use positive coping strategies	Avoidant action	Feeling sad, scared, crying, screaming, verbally resisting	Chart their anger
	Unsure or nothing	Does not know what to do	Ask more questions

*Adapted from Cordray, Holly et al. "Reducing Children's Preoperative Fear with an Educational Pop-up Book: A Randomized Controlled Trial." *Otolaryngology-Head and Neck Surgery*, vol. 167, no. 2, 2022, pp. 366-374., <https://doi.org/10.1177/01945998211053197>.

An adapted table from research concerning coping domains, strategies, definitions, and implications.

Case Study #3

Title: *First-Person Perspective Writing and Illustrating*

Research: First-person perspective books

Purpose: The purpose of the research is to understand the best approach to writing and illustrating a first-person perspective children’s interactive medical book.

Analysis: The information from the analysis will inform the narrative and illustrations for the book.

Key Questions:

- 1 What is the most effective way to write a first-person perspective book?
- 2 What is the most effective way to illustrate a first-person perspective book?
- 3 What key factors need to be included in the first-person perspective illustrations?
- 4 What key factors need to be in the first-person perspective narrative?
- 5 What illustrations and writing are effective for exposure therapy?

Review

History: Children’s books have changed over the years. It used to be that children’s books were wordy with minimal illustrations. Current children’s books have less text to tell the story than in the past. This change is predominately related to the consumers’ needs. The consumers of children’s books are parents and children.

Parents have less time to read a lengthy children’s book to their child at night and children are used to receiving information quickly. Children receive endless amounts of information on television, the internet, and possibly playing video games. These sources of information provide to-the-point abbreviated information that captivates the audience’s attention and is more realistic. Video games provide children with immediate feedback about their performance. Children expect the same kind of to-the-point interaction as media sources provide.

Children’s books that provide this to-the-point interaction along with telling an entertaining story will fare better in the market and have interesting illustrations. Parents will be more able to find time to read a short story over a long arduous story. Children’s books that are easy to read out loud are more desirable than more difficult yet informative books.

Motivation: Many authors have different reasons for writing a book to tell a story. The book, *How to write and illustrate children’s books and get them published* by Trela Pelkey Bicknell and Felicity Trotman, explains why telling stories is helpful for children. The reasons include children learning to listen, expanding their desire to read, their vocabulary, their knowledge, their imagination, and to share their experience of storytelling with others (9). An author’s motivation may be linked to these reasons, but they may also be more intrinsic. They may have a personal need to tell a story. Whatever the motivation is behind telling the story, the author is charged with writing and illustrating it in a way that engages the audience.

Summary: There are many styles to writing and illustrating children’s books. All of these styles have things in common from a beginning, middle, and an end (Bine-Stock 66). The beginning is comprised of the set-up. The middle is where the reader will find the conflict, and the end will have some kind of resolution. Following this common writing style is important as children crave this predictable pattern.

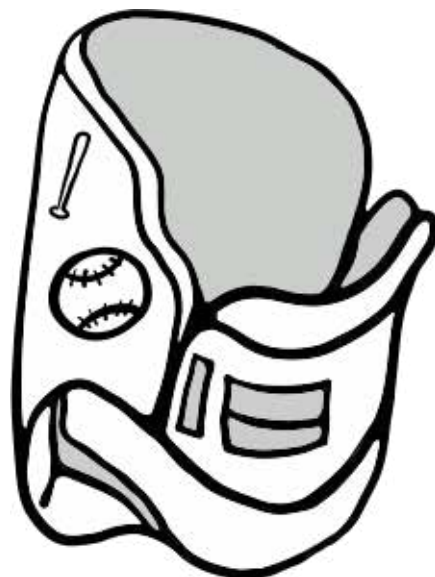
The book, *How to write a children’s book and get it published* by Barbara Seuling, states many “Picture books may have fewer than 1000 words” (65). These words have to be well written, appropriate for the age, and “Focus on the one main character and have all things happen from her point of view” (66). If the character is a child, their point of view will be different than an adult. “A child stands much closer to the ground than an adult... maybe she is eye level with the family dog or sees the knobs on the dresser while you see what’s on top” (66). Keeping the child’s point of view in perspective, in both text and illustration, is essential for making the book feel as though it is authentic.

The illustrations of the book need to be captivating, especially for young children. It is important to write with an idea of what the illustrations will look like (Seuling 71). “The interplay of text and pictures can also add layers of meaning to the story” (Bine-Stock 31). “Th[e] additional layer of meaning is created because there is a difference between what the text says and what the picture shows” (34). Present tense within the text and picture can provide a feeling of timelessness to the activities being present in the book (30). Combining to-the-point first-person text with vivid illustrations draws the young reader into the story.

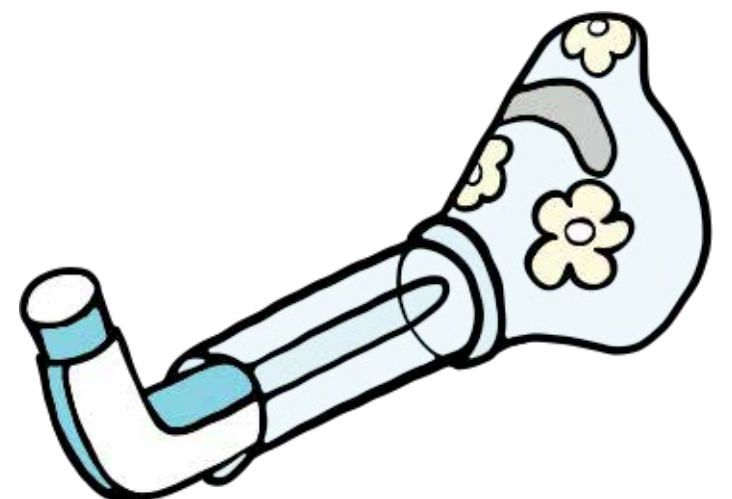
Challenges: First-person perspective text is one of the most used in picture and young adult books (Wyndham 42). The reason for using first-person perspective is that it allows the reader to be immersed in the dialogue of the character if the writer engages the main character in the action. The challenge with first-person perspective is that the reader could feel removed from action if the character is not the involved in the main storyline (43). “Readers want to worry along with a main character who is actively working to solve a problem or maintain a goal” (43). Involving the main character in all aspects of the story is the best way to write an engaging first-person perspective book.

Another challenge with writing in first-person perspective is that the audience is seeing what the main character sees, hears, smells, touches, and thinks (Wyndham 43). The main character will only be able to see himself/herself in reflective objects, in photographs, or being described by other characters. Within the story, the main character will need to grow as a person to bring them to life and make them feel real (46).

Many children’s books utilize more than one perspective. Some children’s books are predominately first-person perspective text with third-person perspective illustrations. The authors write the story using “I” as the main character speaks, but the illustrations show the character’s body and their surroundings. Other authors write in third-person perspective and illustrate in third-person perspective. When illustrating in first-person perspective, the main character is not seen with the exception of reflections and photographs. They might be able to see their arms, torso, legs, and hair (if it is long enough).



Outcome: Even though there are first-person perspective written children’s books, there were not any first-person perspective illustrated children’s medical picture books found in the content analysis. Books on writing and illustrating do not specifically cover illustrating in the first-person perspective. The only solution is to have the illustrations be driven by the first-person perspective text. As long as the main character is involved in the action of the book, the reader will be able to work through the problems that arise with the main character. They will also be exposed to medical equipment and concepts with the main character.



Relevant Elements: The illustrator is responsible for composing the page in a way that is understandable to the reader. “The artist needs to arrange ... to compose...elements deliberately rather than at random to create a visual pattern that gives the viewer a meaningful experience rather than a confusing one. When we look at a picture, we immediately see the subject matter and its concrete details; we do not immediately see the composition. The composition, however, is felt. It is to a picture what the unseen skeleton is to the human being. It structures what and how we see” (Shulevitz). Composing the illustrations from the perspective of what the main character sees, feels, smells, touches, and thinks will allow the reader to feel immersed in the experience.

Visual Analysis #1

Title of the Book: *The Pop-up Book of Phobias*

Author: Gary Greenberg

Publisher: HarperCollins

Analyses: It will inform the first-person perspective writing, illustrations, and interactivity for the design of a new children’s interactive medical book.

Key Questions:

- 1 Is the information educational and relevant for the age group?
- 2 Are there any coping strategies? Are the coping strategies effective?
- 3 Are the interactive features effective? Are they engaging? Are these features still working?
- 4 Are the illustrations engaging?
- 5 What perspectives are used for writing and illustrating?

Summary

Selection: The book depicts phobias. These phobias are interactive and in first-person perspective. Each page spread includes a phobia with a description of the phobia.

Audience: The audience would be any reader interested in phobias. The age range for this book would be pre-teens to adults.

Visual Information: The audience consumes the visual information through the book design. Each page represents an interactive three-dimensional feature that describes a phobia. The phobia’s interactivity and three-dimensionality move into the reader’s personal space with the turn of each page.

Cultural Context: The project is embedded in psychology. It examines the different things that people are fearful of. People of all cultures have phobias. The book includes psychological education features as well as a form of entertainment. The book fulfills the need for entertainment through its interactivity. It also teaches and exposes the reader to elements that they are fearful of through the use of first-person perspective illustration and writing.

Interrelation: The illustrated interactive three-dimensional page spreads are accompanied by a written description of each phobia. The text describes the phobias in a paragraph with medical terms mixed with a macabre joking tone. This approach to writing works for some adults, but not all.

Composition: The page spread for each phobia provides ample space for the three-dimensional interactive functions. Each page includes a written paragraph about the phobia. The design of the three-dimensional interactivities provides the feeling of being inside the book. For example, the spread about claustrophobia does not allow the book to be opened all the way, and the illustration is of individuals crammed together into a tight place. The materials used in this book are glossy printed paper, string, straw, and glue to create the interactivities. The book design uses multiple interactive functions to make complex movables. The interactivity includes parallel folds, wheels, flaps, holes, moving arms, pivoting motions, v-folds, angle-folds, and a magic box.

Content Analysis: The areas of analysis found that the book includes first-person illustrations and writing, has three-dimensional interactivity, would be appropriate for pre-teen to adults, and it would desensitize through exposure therapy.

Aesthetic Choices: The success of the first-person perspective in the illustrations and interactivity provides immersion therapy for the viewers who have a phobia. A failure is the typography that overlays the patterned background making it difficult to read the words.

Solution: The vivid interactive three-dimensional features in the book are engaging, educational, and great for exposure therapy.

Table 3

Content Analysis of *The Pop-up Book of Phobias*

Content	Iconography	Meaning
Dentophobia	Dentist with drill moving into reader's space Barbwire instead of floss Skull and crossbones on drawers Lightning on drawers Radiation symbol on drawers Green glowing dentist eyes and x-ray machine Tools with spikes	Danger and fear Lacerations of gums Death Electrocution Radioactive Evil Torture
Aerophobia	Flames outside plane window Fluids, snacks, masks, emergency manual flying in the compartment showing loss of cabin pressure	Uncontrolled plane Falling from the sky
Ophidiophobia	Snakes coming towards the reader Layers of snakes of different colors and scales	Attacking Unable to escape
Claustrophobia	Dark walls and people packed into a tight space	Unable to escape
Mysophobia	Cracked tiles, dirty toilet, empty toilet paper roll	Spread of disease
Glossophobia	Microphone facing the reader with a large group with frowning faces wearing suits behind, and a note showing that the speaker has not written their speech	Inability to impress the audience with speech
Arachnophobia	Extra large spider with magnified background	Larger than life
Acrophobia	Large buildings at top and smaller towards ground	Falling
Coulrophobia	Enlarged clown face, lollipop, and circus ball	Negative experience
Necrophobia	Reader looking upward as a shovel is throwing dirt into the opening in the ground, with a rose on the side	Buried alive

Table 4

Semiotics of *The Pop-up Book of Phobias*

Composition			
Condition	Fear	Illustration	Interactivity
Dentophobia	Dental work	Procedure room	V-Fold, Parallel Fold
Aerophobia	Air travel	Inside airplane	V-Fold, Parallel Fold
Ophidiophobia	Snakes	Layers of snakes	V-Fold
Claustrophobia	Closed spaces	Tight space with people	V-Fold, Parallel Fold
Mysophobia	Unsanitary	Dirty bathroom	Magic Box
Glossophobia	Speaking	People staring at speaker	Parallel Fold, Angle-Fold
Arachnophobia	Spiders	Huge spider	V-Fold
Acrophobia	Heights	Top of building looking down	Parallel V-Fold
Coulrophobia	Clowns	Clowns close-up	V-Fold, Asymmetric Parallel-Fold
Necrophobia	Death	Buried alive	Floating Plane, V-Fold

Visual Analysis #2

Title of Book: Ready for Anesthesia

Author: Holly Cordray

Analyses: The analyses will inform the first-person perspective writing, illustrations, and interactivity for the design of a new children’s interactive medical book.

Key Questions:

- 1 Is the information educational and relevant for the age group?
- 2 Are there any coping strategies? Are the coping strategies effective?
- 3 Are the interactive features effective? Are they engaging? Are these features still working?
- 4 Are the illustrations engaging?
- 5 What perspectives are used for writing and illustrating?

Summary

Selection: The book Ready for Anesthesia by Holly Cordray was written for children to learn about outpatient procedures that they may be having in the future. The front of the book depicts a child who is holding a teddy bear with the mask in his hand. the following pages of the book take the patient through different steps of anesthesia page. It describes how the mask is worn as well as possible smells that it can smell like. Another page describes what anesthesia is and how it works.

The book has interactive features, including flaps, a wheel, and a spiral. The interactive features describe different aspects of having a surgery. One of them is an operating room with the tools that the doctors use along with the bed and an overhead light. The wheel shows the child’s ideas about what the mask resembles on the child’s face from an astronaut to a snorkeler to an elephant. Under the flaps the viewer finds a description of the anesthesia mask, what a child can bring on a visit to the hospital, and how long they will be asleep. This information is provided to educate readers about what to expect when going the hospital for an operation.



Anesthesia Rotation Interactivity in the Ready for Anesthesia book.



Elephant Rotation



Astronaut Rotation



Snorkeler Rotation

Audience: The audience of this book is between the ages of 5 to 9 years old. Parents, nurses, and child life specialists would also be members of the book’s audience as they may be reading this book to children.

Visual Information: The way to consume this product is by reading the book. The book has interactivity with flaps, pop-ups, wheels, spiral, and scratch and sniff to engage the young reader. The book is laminated and parts of it have folded sides to be able to explore different elements of an operation.

Cultural Context: This book includes the medical community with illustrations of doctors and nurses as well as a patient. The human illustrations are from multiple different races. This type of book is considered an interactive book which is a novelty. After finding this example through some research of Holly Cordray I reached out to her to find out more about the book. Fortunately, she responded and informed me that this book was unable to be published. She explained that the publishers do not want unsolicited novelty books to be sent to them. This has prevented her from being able to publish this book to a wider audience. At this time, this book is only available for the research that she completed with a group of doctors. Otherwise, this book would also be relevant to publishers, booksellers, educators, and families.

Interrelation: The relationship between the text and the imagery in this book is that the three-dimensional capability of the popup, wheel, flaps, and spiral provide the viewer with a more detailed illustration of an operating room and the use of the mask for anesthesia. The color selection of the book is in pastels, mostly light green with hints of yellow, gray, and white. These colors are meant to be soothing and comforting while children read about the stressful situation of having an operation. The images, the forms, and the accompanying text are all designed to educate the young child about having a medical procedure.

Compositional: Unfortunately, I only have portions of this book and most of the images are taken from a YouTube video and a few of them are difficult to see. The images that I do have of the book show that it’s more like a booklet then a finished thirty-two-page children’s medical picture book. The book has been laminated which appears to be helping with the strength of the book; however, on the page that says “My operation” with the tools and the operating room, it appears that this page spread is not laminated, and it appears to be more delicate than the other examples.

Table 5
Content Analysis of *Ready for Anesthesia*

Content	Iconography	Meaning
My operation	Doctors and nurses around an exam table with tools on the side	The atmosphere of the space with its specialized environment and tools that creates its own culture.
Under the flaps	Pillow, alarm clock, clipboard, teddy bear, and mask	The different icons stand for various things. The pillow resembles the safety of sleeping. The alarm clock illustrates that in time everyone will wake up from the procedure. The clip board shows that a doctor will be keeping a close eye on the patient. The teddy bear is the patient’s comforting toy that helps them feel safe through the procedure. The mask is placed with all the things that are safe for the viewer to help relate the unknown with things that are safe.
Anesthesia	Boy sleeping with a bubble for what he looks like with a medical mask on for anesthesia “Open up” is a section that has scratch and sniff circles to decide what smell to choose for the mask	The wheel is used to show the boy in different mask-like situations to desensitize the reader from being scared when the mask is placed on the child’s face. The option to choose makes a person feel in control of the situation. The options are familiar, providing even more security to an unsecure situation.
How does anesthesia work?	Illustrations of the nervous system and envelopes with a mailbox	The images of the nervous system show what the nerves look like and the relation to the mail and mailbox show how the nervous system works in relation to getting mail on a computer.
Vital Signs	Thermostat, breathing, blood pressure cuff, and heart	The thermostat shows how warm or cold the body is. The breathing shows the movement of air as it would happen when breathing. The blood pressure cuff is used to describe blood pressure, but most children do not know anything about it. The heart with repeated lines around it provides for the beat of the heart.

Overall, the product does seem to be educational for children who are going to be having an operation in the future. The interactivity seems to be interesting and engaging for the viewer. There is some information about “How does anesthesia work?” where it shows more complicated information and provides the nuts and bolts of how our bodies react to anesthesia. A small section shows what the vital signs are of the body, these include body temperature, breathing, blood pressure, and heartbeat. Each of these vital signs has imagery to go along with the word to describe it.

Content Analysis: The areas of analysis found in the booklet include third-person perspective illustrations and writing, has three-dimensional interactivity, and would be appropriate for children. It provides information to educate a child about an operation and limited coping strategies to help desensitize a child who is going to be having and operation.

Semiotics: The signs and symbols used in this book are related to vital signs, such as a thermometer, breathing, blood pressure cuff, and heartbeat. These images or similar images are commonly used to describe vital signs. The other imagery used in the book are the nerves. The nerves are illustrated to show how they relate to each other. Like getting mail on a computer, they are all linked.

Aesthetic Choices: Even though publishers are not seeking out this interactive booklet for mainstream sales, this booklet is the best example of creating an interactive children’s medical picture book that includes limited coping strategies. The success of the product is based on the quality of the material, the interactivity being used for educating the population, and the information presented within the book. The issues that I see with this product is that it is difficult to manufacture. If it was not so difficult to manufacture and it was longer with more coping strategies embedded into it, I think it could be a really great tool for families and medical providers.

Solution: The information provided for this book by the author was very enlightening. The inability of this book to be published is a major concern. Especially since this is a very effective example of a children’s medical picture book for children who are learning about coping strategies for medical treatments.



Operating Room Pop-up from *Ready for Anesthesia* book



Flaps in the *Ready for Anesthesia* book

Under the pillow flap reads “You feel like you’re going to sleep, but it’s deeper than normal sleep. You won’t even know your surgery happened!”

Under the clock flap reads “You’ll probably be asleep in less than one minute. You close your eyes, your body relaxes, and your breathing gets slower and deeper.”

Under the mask flap reads “You will get anesthesia from a mask. There’s a big tube on the mask with a balloon on the other end. When you take deep breaths, you’ll blow up the balloon.”

Under the teddy bear flap reads “You can bring your favorite toy with you, and you can bring your mom or dad too!”

Under the chart flap reads “Doctors use your weight, height, age, and medical condition to know exactly how much anesthesia is right for you. Once you’re asleep, they put more anesthesia into your arm through a tube called an IV.”

Visual Analysis #3

Title of Book: Arlo Needs Glasses

Author: Barney Saltzberg

Publisher: Workman Publishing

Analyses: The first-person perspective writing, illustration, and interactive features of a children’s medical book.

Key Questions:

- 1 Is the information educational and relevant for the age group?
- 2 Are there any coping strategies? Are the coping strategies effective?
- 3 Are the interactive features effective? Are they engaging? Are these features still working?
- 4 Are the illustrations engaging?
- 5 What perspectives were used for writing and illustrating the book?

Summary

Selection: The book *Arlo Needs Glasses* by Barney Saltzberg is written in first-person perspective with third-person perspective illustrations. The children’s picture book has interactive features such as flaps, sliders, Velcro, and v-fold. It also has an accordion style pull-out feature for the phoropter. There are glasses folded and placed into pockets for Arlo to try on.

Arlo is a dog whose owner believes that he needs glasses. The book takes the reader through a journey of going to the eye doctor with Arlo. Arlo’s owner is the one who is talking to the audience. He does not suggest any coping strategies to use during the ophthalmologist visit.

The illustrations show why the owner believes that Arlo needs glasses. The illustrations have a fuzzy, imperfect appearance. The colors are bold and vary greatly between pages. There are aspects of visiting the ophthalmologist that are believable, like the eye chart, but the phoropter interactive feature has colors that are not similar to the device at the eye doctor’s office.

Audience: Children between the ages of 2 – 6 years old will enjoy reading this novelty children’s picture book. Parents will also enjoy this book. Librarians and teachers may suggest this book to children they know.

Visual Information: This interactive book can be read. The interactive features can be played with by a child or adult to demonstrate a couple of the aspects of visiting an eye clinic. Many parts of the book are torn and ripped. One of the eye charts and a ball has broken sliders. The last page has a v-fold pop-up that has been taped, but it still is not working well. For this being a library book, it is in better shape than other interactive books with the same use.

Cultural context: This book includes a couple of things found in the medical community specifically at an eye clinic. The owner of Arlo and the eye doctor both appear to be a male Caucasian character with glasses. Dog lovers of all ages would enjoy reading this children’s book.

Interrelation: The relationship between the text, the interactive features, and the illustrations is strong.

The text discusses what the audience is seeing. The illustrations along with the interactive features make the book more interesting.

Compositional: The pages in this book provide for a large amount of empty space within each spread. The text is short and to-the-point. The illustrations are simple except for the phoropter spread.

Content Analysis: The book is a first-person perspective written text with third-person perspective illustrations. There are multiple three-dimensional interactive features that children would enjoy playing with while reading or re-reading the book. The content is appropriate for 2 – 6-year-old children. There are not any coping strategies explained in the book. There is some education about the eye chart, phoropter, and glasses. It may provide minimal desensitization for children who have never been to the eye doctor.

Table 6

Content Analysis of *Arlo Needs Glasses*

Content	Iconography	Meaning
Ball	Owner and dog playing with ball	Sports, active, working together
Glasses	Owner and dog wearing glasses	Personal style, intelligence, nerdy, vision issues
White Coat	Doctor wearing white coat	Status, highly trained, clean, sterile
Books	Lots of books flying between pages	Intelligent, reader, learning

Semiotics: The signs and symbols in this book relate to the ophthalmologist’s office. There is an eye chart that is in focus and one that is blurry to show that there can be a difference in vision between people. The phoropter is a symbol for the device used to check an eye patient’s vision and determine if prescription glasses are needed. The glasses have different styles that relate to people’s unique style such as a movie star, superhero, or mad scientist. On the last spread, there are books displayed about all sorts of dog related topics. On the bottom of the spread, the states that “Arlo loves to read!!” The books relate to the text on the bottom.

Aesthetic Choices: The choices of colors are vibrant and eclectic. The backgrounds have texture from the brush strokes in the paint. The outlines around Arlo and the owner are rough. Eraser marks show under the paint for both the characters. The anatomy is not accurate. The owner and the proportions of the characters are distorted and change between pages. The strongest aesthetic choice in the book is the phoropter and the glasses. The glasses are well made with clean lines to designate the change between colors. The glasses have lamination on the top of them.

Solution: The three parts to this book that make it minimally effective for educating children about visiting the eye doctor are the eye chart, phoropter, and the glasses spreads. Overall, the book is fun with vibrant colors. It would not be a book to use to teach about going to the eye doctor because it really does not explain the experience or provide coping strategies for children who get scared about medical visits. It is a good book for entertaining children.



Mind Mapping

Children’s Medical Picture Books		
Stories Stick		
Educational		
5 to 6 Days Prior to Medical Visit		
Family Bonding		
Age Appropriate		
Graphic Novel		
Form of Play		

Integrating Positive Coping Strategies	Interactivity	Integrating First-Person Perspective
Breathe	Pop-Ups	Illustrations and Writing
Count to 10	Dissolving Scenes	Use Metaphors
Hug	Flaps	Open-Ended Questions
Imagine a Favorite Place	Sliders	Layout Builds Tension and Suspense
Listen to Music	Victorian Turning Circle	White Borders Confine Action and Create Distance
Pray	Movables	Educational Illustrations
Positive Self-Talk	Revolving Pictures	Dramatic Spacing of Words and Images
Talk about Feelings	Rotating Scenes	
	Pain Chart	
	Scavenger Hunt	

Long-term Benefits of Learning Coping Strategies	Viewing the Action through First-Person Perspective
Fewer Medications for Pain Relief	Immersion Therapy
Coping Strategies for All of Life	Exposure Response Prevention
Less Costly than Alternative	Desensitization
Less Anxiety Related to Medical Care	
Prepares for Medical Visits	

A map of concepts to be used in the design of the children’s medical picture book.

Research Implications

The benefits of learning positive coping strategies during childhood are profound. A person's quality of life is better, and this includes their mental and physical health. A well-designed children's medical picture book can provide cues for parents. An inexpensive book can be a valuable resource for the child, their family, medical providers, and educators to share essential strategies of healthy coping methods in the medical setting at the same time as engaging children in the state of play through storytelling.

Children who learn coping strategies and techniques early in life will be able to manage all kinds of stress throughout their life. These individuals will have good relationships with healthcare providers, will seek routine medical care, and be healthier. The cost of producing a children's medical book is small compared to the cost of intensive therapies for children and adults who are unable to cope with the stress of a medical visit.

The overall savings is far reaching as children who have healthy coping strategies will teach their children the same skills. Individuals with healthy coping skills will need fewer medications after surgery, they will need less therapy to learn coping strategies, and fewer resources to stay healthy. Individuals with coping strategies will get preventative care, removing some of the strain on the medical community worldwide.

Summary of Findings

There were nine different research components conducted in this thesis on children's interactive medical picture books. The research included a stakeholder map, fictional personas, fictional scenarios, a literature review, a content analysis, case studies, visual analysis, a mind map, and an image board. These research components were used to determine the best design implications for the creating a children's medical picture book.

Stakeholder Map

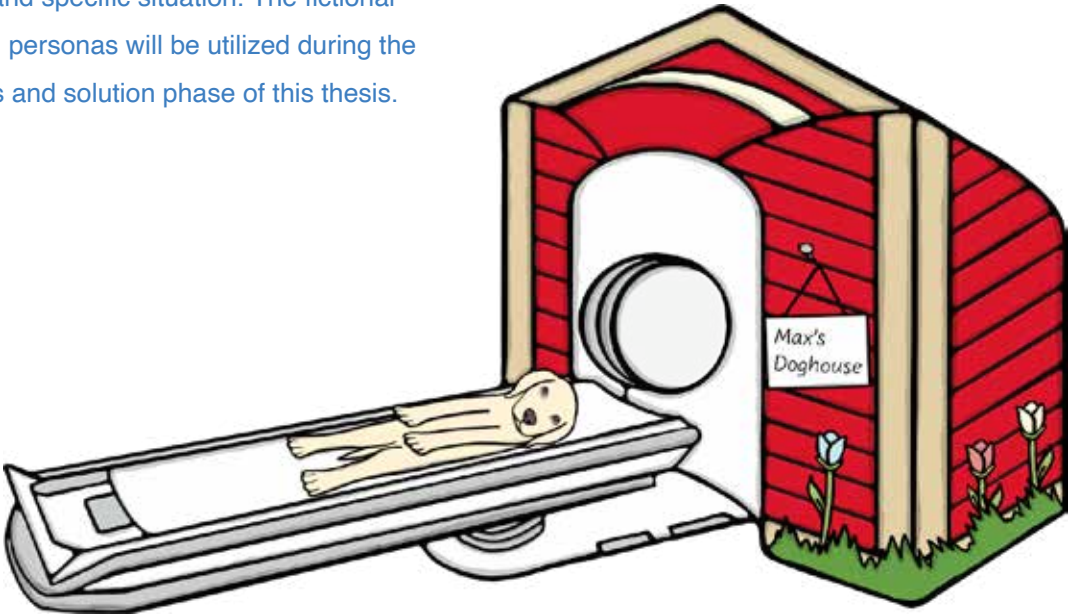
The stakeholder map outlines the primary, secondary, and tertiary groups of individuals who may use or have implications for a children's medical picture book. The goal of the map was to find as many individuals as possible who may reap benefits or are in competition from the publication of a children's medical picture book. The primary and secondary stakeholders are mostly obvious with children, relatives of children, and individuals who work in the healthcare field. The individuals in the tertiary category were surprising with insurance companies and writers. Overall, the stakeholder map provides an overview of the people who would be interested in a children's medical picture book being published.

Fictional Scenarios and Personas

The fictional scenarios and personas were written to understand each specific individual's needs for a children's medical picture book and the situations in which they may use the book. Fictional scenarios and personas were created to eliminate the need for approval from an institutional review board. Even though they are fictional, they were created based on interactions with groups of people in the hospital and at schools. One overarching scenario was created to understand the dynamic of how individuals will interact with the book. Personalized personas were created to understand how each individual would interact with the book in their own environment and specific situation. The fictional scenarios and personas will be utilized during the visual process and solution phase of this thesis.

Literature Review

The literature review provided the information about pain, fear, anxiety, phobias, coping strategies, play, exposure therapy, first-person perspective illustrations and text, storytelling, bibliotherapy, education, parents, healthcare providers, and teachers for creating a children's medical picture book. The review sought to determine the best design elements to use in creating a children's medical picture book. The most promising elements were educating about the topic and instilling positive coping strategies directly into the book. Using exposure therapy through first-person images and interactive features had mixed reviews.



A coping strategy for managing the stress of going into an MRI machine is imagining being in a favorite place, like Max is doing in this illustration where the MRI machine is his doghouse.

Content Analysis

A content analysis was conducted to explore the children's medical picture book market for publications that could meet the stakeholder's need of age-appropriate education, coping strategies, interactivity, and first-person perspective illustrations and text. The results of the analysis were interesting. Most of the books had some kind of education about a medical visit. Very few books provided coping strategies and first-person perspective illustrations with first-person text. Most books were comprised of third-person perspective illustrations and text with no interactivity and/or coping strategies.

Case Studies

The case studies explored three different areas of research to include interactive book design, coping strategies and techniques, and first-person perspective writing and illustrating. There are many different three-dimensional options to use to create interactive books; however, most of the three-dimensional interactive features that have been utilized in children's books were found to be broken. This concern along with the concern that it is difficult to publish an interactive book has concluded in another option for interactivity found within the coping strategies research.

One of the coping strategies found was to create a scavenger hunt for children to use while learning and navigating the hospital. This interactive function would not break over time and would allow the child to take the book with them to the hospital to find all the places within the scavenger hunt. Other coping strategies were found that can be implemented in the book like blowing bubbles or on a pinwheel when in pain, having a teddy bear receive a shot first, and counting to ten when in a stressful situation.

The first-person perspective illustrations and text were limited. There was more information about first-person perspective text than illustrations. In first-person perspective text, the main character uses "I". First-person perspective illustrations do not show any part of the main character's body unless they are using a reflection or photograph. Being creative when writing and illustrating in the first-person perspective is essential when describing the character's body.

Visual Analysis

The visual analysis was conducted on three books chosen from the content analysis for having the most promising features for creating an engaging children's medical picture book. The Pop-up Book of Phobias is an adult content book about the most common phobias. The book utilizes first-person perspective three-dimensional pop-ups to illustrate each phobia. The book does not help the viewer cope with their phobia, but the book could be used in exposure therapy for desensitization.

Ready for Anesthesia is a book created for children who are going to be having surgery. The book has not been published because the publishers are not publishing interactive pop-up books from unsolicited authors. The books using third-person perspective along with pop-ups and wheels to explain the use of masks and anesthesia. It does integrate a few coping strategies into the book. They are asking questions, imagining, and bringing a teddy bear to hold during surgery. The book has been used to research the effectiveness children's medical picture books in hospitals in the United States with positive results.

Arlo Needs Glasses is a book about a dog needing glasses. It is a fun book to read, but it has limited education about a visit to the ophthalmologist. The main visual elements in the book that discuss going to the ophthalmologist are the eye chart and the phoropter. The book does have interactivity, but many are broken. It does not have coping strategies integrated into the text and illustrations.

Mind Mapping

The mind map visually shows all the different aspects to the children's medical picture book concepts. Each major component of the book concept is outlined with more specific details below. As the design concept unfolds, the content on the mind map will change depending on what is best for the stakeholders. The mind map includes integrated coping strategies, first-person perspective, and interactivity.

Image board

The image board shows the design ideas. Helvetica is a typeface that is easy to read. A soothing color palette of blues, green, and neutrals. Images that reflect some of the ideas to present in the book.

Research Conclusions

The research has provided an ample amount of information supporting first-person perspective illustrations and text, integration of coping strategies, and age-appropriate material for educating children at their level of understanding in an interactive children's medical picture book. As the research has shown, there is a benefit for children to learn how to cope with the stress of going to a medical visit while young. A well-designed children's medical picture book has been proven to assist parents and medical professionals in teaching children coping strategies. However, there are no effective children's medical picture books on the market that incorporate coping strategies using a first-person perspective. Creating such a children's medical picture book is novel.

Education

The key components to a well-designed children medical picture book have been identified as age-appropriate, first-person perspective illustrations and text, integration of coping strategies, and interactive. When examining children's medical picture books, almost all the books provided some level of education about a medical visit. Each book was targeted toward a specific age group and most of them provided basic information for that age group. Most of the information was basic. Children and parents who want to prepare for the medical visit would only receive commonplace information. Information exemplifying the exams, tests, and procedures are the areas that children and parents need more information about in a children's medical picture book.

First-person Perspective Illustrations and Text

First-person perspective illustrations with first-person perspective text were difficult to find in children's medical picture books, let alone other children's pictures books. First-person perspective text is relatively common with second- or third-person perspective illustrations. Finding resources on first- person perspective illustrations was difficult as well. The only place where there was information about first- person perspective was in computer games. Utilizing first-person perspective images can be effective for desensitization, immersion, and exposure therapy for people who are fearful of an event or thing. Integrating first-person perspective illustrations about a fearful event or thing can produce a stimulus that will help children to overcome the fear. The difficulties that may arise from designing a children's medical picture book using first-person perspective illustration and text are only being able to show the main character in reflections. Naturally integrating metaphors, analogies, problem solving, and coping strategies into the storyline while constructing an interactive feature could be challenging with first- person perspective illustrations and text.

Coping Strategies

Integrating coping strategies into the storyline and illustrations can provide children with the tools they will need to navigate stressful events throughout their lives. Children's medical pictures books that integrate coping strategies into the illustrations and text have been proven effective for teaching the strategies. The content analysis of children's medical picture books found that only a few provided limited coping strategies outside of educating children about aspects of a medical visit. As a result, there does not appear to be any children's picture books that combine the critical elements of immersive illustrations, coping strategies to problem solve, and education on the child's developmental level.

This research shows that there is a lack of children's medical picture books on the market that teach the essential skills of how to cope in the stressful situation of a medical visit. The first-person perspective illustrations help with desensitization about a fear. Creating a children's medical picture book with integrated coping strategies and first- person illustrations would provide families and the medical profession with a resource to use before any medical visit. There is a great need for well-designed children's medical picture books for children and parents to have a tool to learn coping strategies in the safety of their own home. The proposed visual solution seeks to address this gap.



Process

Review

The research conducted on children’s medical picture books sought to determine if the books were meeting the needs of children and their families. The areas of interest in the research were first-person perspective illustrations and text, integration of coping strategies, and interactivity. The research determined that there are limited numbers of children’s medical picture books which have coping skills integrated into the storyline on the market for families and care providers to utilize in preparing children for a visit to a medical facility. A plan was created to design an innovative children’s medical picture book that addresses these areas of concern.

Plan

The plan started to take shape months ago during the research phase of the thesis. Examining many children’s medical picture books and cataloging them in the content analysis provided indications where other children’s medical picture book authors have not capitalized. The main concepts that previous authors had not utilized were first-person perspective illustration along with the first-person perspective text as well as integrating coping skills directly into the text and illustrations. A few books were interactive and provided an entertainment element to the books, but many did not.

The other factors that were not considered until further research was completed were the entertainment factor and multicultural characters. Many children’s medical pictures books contained serious information. Due to the seriousness of the material, some authors created books that were not as enjoyable to read. For children and parents to enjoy a book it needs to be entertaining and they need to feel a connection to the characters. One way to facilitate a connection with the book is to create an interactive book with characters that represent the reader’s gender and ethnicity. Creating multiple genders and ethnicities within one child’s medical picture book was not the easiest task. It was possible with careful planning and an effective design.

To create a plan that combined entertainment through interactivity, first-person perspective, education about the hospital, coping skills, and multiple genders and ethnicities was challenging. The plan had to identify how many pages the children’s book would have, who would be represented on each page, what coping skills would be discussed, what education about the hospital would be explained, and how all of this could be interactive and fun. A template was used to document all these elements.

The plan included finding styles and layouts that would work best for all the elements of the book. Images were found to reflect the concepts of the pages. Pages of typefaces were created to select one that reflected the playfulness of the children’s book. The plan began with a set of colors that were eventually edited and soon replaced with more colors depending on the need of the layout and characters represented on each page. A manuscript was written and edited. Sketches were created to determine the direction of the layouts. The final step of the plan was to create the illustrations and apply the text. All the pages were edited multiple times until each page in the book works well together and the content fulfills all the elements identified in the research.

Entertainment

Entertainment must be at the core of the design and plan of the book. If the book is not entertaining, children are not going to be interested. Lack of interest makes it difficult for anyone to learn a new topic, especially if it is a sensitive topic. Books that have funny antics of the characters with a refreshing style along with an interactive component can be entertaining for children.

“Crango (2005) indicated in his essay, ‘Healing Texts: Bibliotherapy and Psychology,’ that there are ‘few examples of successful and popular literature which do not offer both delight and instruction in some form or other’ (p. 166). The idea that books should not just inform but delight to be popular and successful was a concept first understood by children’s authors in the 19th century. Nevertheless, in texts dealing with the serious subjects of disability and illness, delight is often not considered at all. Pfannenstien (2012), who examined children’s books on sickness and disability, observes that ‘as the seriousness of the condition increases, the value placed on entertainment diminishes in favor of other educational and inspirational purposes’ (p.7)”

(As cited in Doering 22).

After considerable hours playing with interactive flap books and checking out multiple flap books from my local library, it was determined that the entertainment component of the book would be best as a scavenger hunt. Most, if not all, of the novelty or flap books researched had some kind of damage that made them inoperative. Also, the research conducted by Cordray et al. found that publishing novelty or flap books is more difficult. Designing a book using a scavenger hunt for the interactive feature was the best solution to the problem.

Education

The children’s medical picture book will educate the child on what happens during medical visits through the illustrations and the text. Each page of the book will discuss one area of the hospital for the child to learn about. The illustrations will include their own story and the text will tie in with the illustrations, thus adding contextual information to the concept being taught.

The book needs to have an educational component to it for it to be effective as a children’s medical picture book. Even though the book needs the educational aspect to it, it does not need to bore children with the facts of the hospital or coping skills. A balance between educational and entertaining is essential for the book to be of value to children and their families. Several ways to accomplish this is by simplifying the information, using a child friendly voice, and having fun illustrations.

Max, the dog character, is a fun addition to the book. He educates the reader about what situations are going to be like in a medical center. He even conducts medical play with his stuffed dog by wrapping him in gauze.

Coping Skills

The main goal for this book is to teach children coping skills when they visit a medical center. The plan was to add as many strategies as possible to each page. The first-person perspective illustrations and text provide desensitization in the largest panel of each page. These panels needed to provide a visual story about what a medical center would be like.

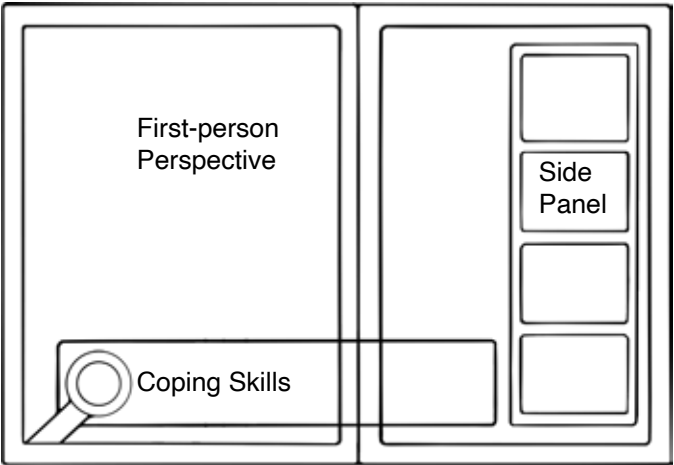
A side panel was created, like what can be found in a graphic novel, to have a new character present what it is like to visit a medical center on each page. These characters discuss coping skills they have used while visiting a medical center. The coping skills range from deep breathing to playing games. Each of the coping skills has been used in medical centers.

The side panel allows for the character to present the information directly to the reader. The content relates the 2-page spread but it is presented in a panel to still allow for the first-person perspective illustration in the larger panel to help with desensitization. Another small panel can be found at the bottom of the page with a magnifying glass. This area is for the reader to find the different coping skills that are used on the page.

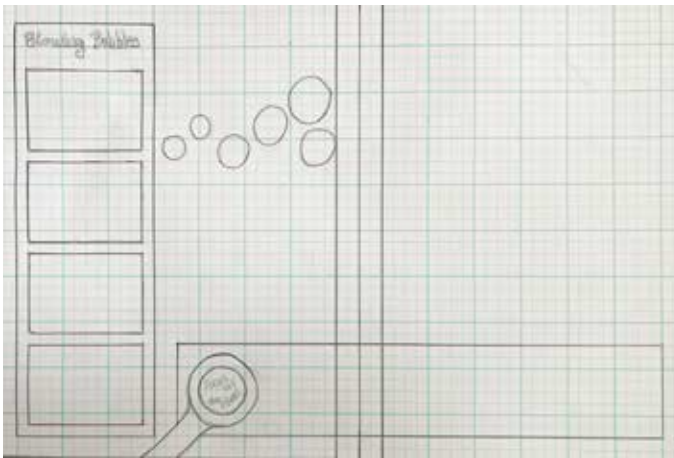
First-person Perspective

The goal of creating a first-person perspective in the largest panel was two-fold. One was to show children a realistic view of a medical center along with providing coping skills. These realistic views help children to become desensitized from potentially scary surroundings found in a medical center.

The second was to eliminate the gender and ethnicity of the main character. By showing the main character as a specific gender and/or ethnicity, many readers will not feel a connection with those specific characteristics. Instead of showing a main character, slippers were used at the bottom of each page with a quote bubble to ask questions of the characters in the scene. The slippers represent the reader who is also the unseen main character of the book. This element became another form of interactivity within the book. The reason for selecting slippers to represent the reader was because medical centers usually provide them for in-patients. The benefit of designing the book with a first-person perspective eliminating the main character was to allow any gender and ethnicity to feel connected to the storyline as though they themselves are the main character interacting within the book.



2-Page Spread Layout Design with First-person perspective, coping skills, and side panel



Pencil drawing of 2-Page Spread Layout Concept

Template

Planning began with examining how each 2-page spread would be placed within the book. There are various templates to use when creating a children’s picture book. The one that was decided on was the 32-page layout because it included multiple pages for end sheets, a copyright page, a title page, and 24 pages consisting of 12 spreads. This arrangement would provide the best layout for the first-person perspective illustrations that stretched across the 2-page spread. This layout provided an option for adding 8 pages (4 spreads) to create a 40-page layout. Depending on the need, 40 pages may be needed to construct all the elements and coping skills necessary for the storyline.

32 Page Layout Picture Book

24 Pages (12 Spreads)		Stuffed Dog Gauze Wrapped	
Theme		End Sheet #2 Repetitive Theme	End Sheet #3 Repetitive Theme
Coping			
Layout			
Content			
Characters			
Waiting Room & Intake	Rosa-Hispanic	Emergency Room	Trey-Black
Standing on Scale, BP, Pulse Ox, Temperature	Tell Jokes Talk about feelings Pain Chart	Collect Autographs	Deep Breathing Exam Teddy Bear on Lap Casts
5	6	7	8
Infusion/ Chemo/ Radiation	MaKena-Black	Cafeteria & Nutrition	Anna-Asian
Listen to Music Art	Play a Game A-B-C Identify Game Read Sickle Cell Anemia		Hug Talk with a friend Eat comfort food
15 Write	16	17	18
Stuffed Dog Gauze Wrapped			
End Sheet #30 Repetitive Theme	End Sheet #31 Repetitive Theme	End Sheet #32 Leave Blank	
Optional 40 Page Layout		Laboratory	
		Holding Hands Looking at what is happening	

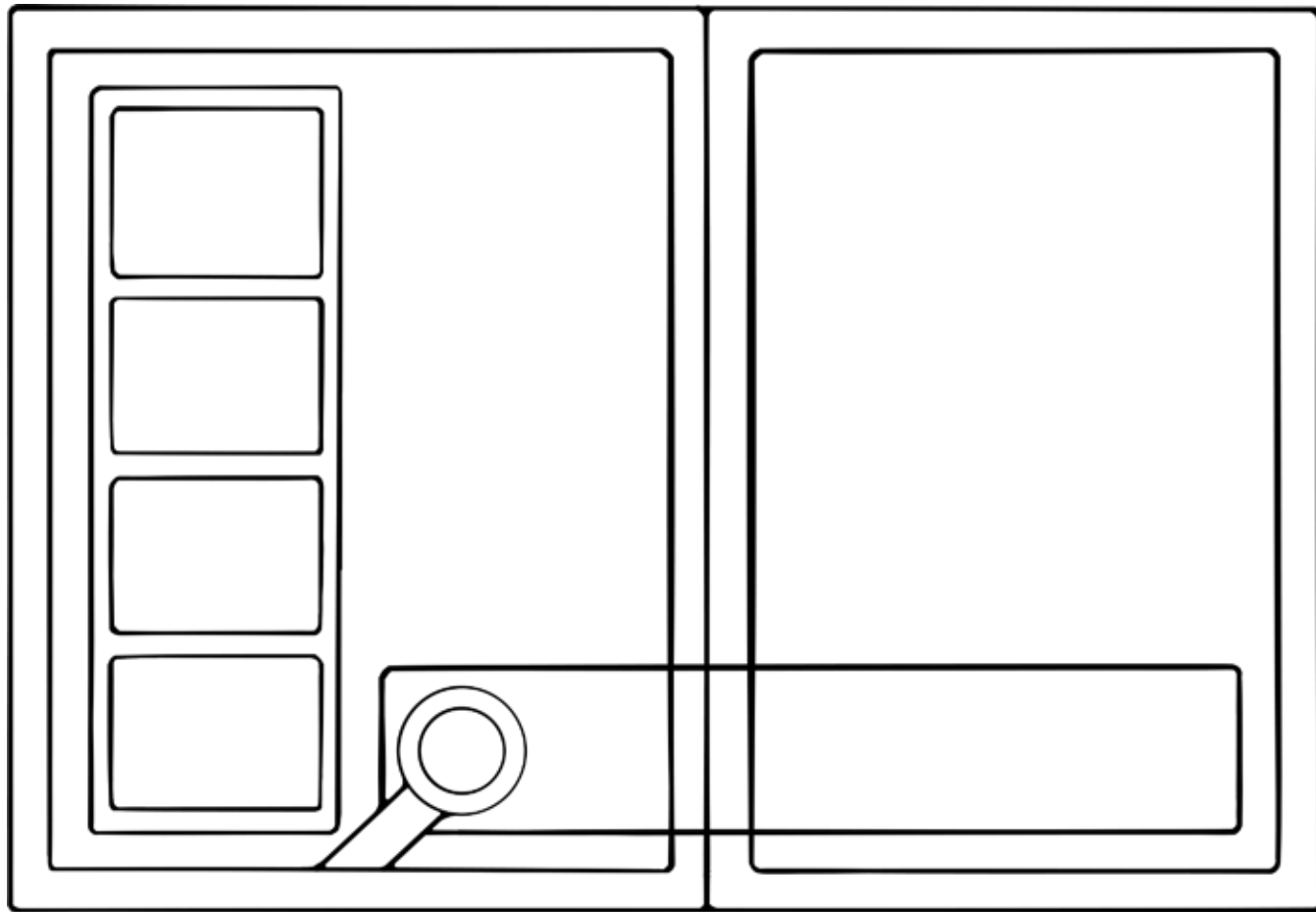
Message to Parents		Tour Guide	Jamal-Middle Eastern	Transportation	Ari-Indian
		Welcome Instructions	Be a Detective Journaling Scavenger Hunt		Holding Hands Ask Questions Hug Stuffed Animal
Copyright Page	Title Page	1 Story Begins	2	3	4
Patient Room	Kai- Hawaiian	Imaging	Nina-Native American	Pre-Op/Op/ Post-Op	Leo- Caucasian
Name Sign Max in Gown with Slippers Preparing for visit 9 Games	Music TV Visitors Write about feelings Write a complaint 10	Positive Self-Talk Imagine a favorite place 11		12	Hug Teddy Bear Counting to 10 14
19	20	21	22	23	24
Playroom	Austin- Hispanic	Butterfly Garden	Lilly- Caucasian	Discharge	Sara-Middle Eastern
Play Blow Bubbles Pretend	Art Music Syringe Squirter	Walk Blow on a Pinwheel	What can you find? 5 - see 4 - hear 3 - touch 2 - smell 1 - taste	Talk About Feelings Ask Questions	
19	20	21	22	23	24
Gift Shop				Coping Clues	Max
Ideas: Staff Mixup Emotion Chart Scream Chart Well Wishes Funny Faces				Stuffed Dog Gauze Wrapped	
				Explore Walk Buy Treat or Game	
				Front Cover	Back Cover
Physical Therapy		Lee-Asian	Pharmacy	Maya-Indian	Chapel
Dancing Tumbling Wheelchair Races		Crutches			Meet with Chaplain Quiet Time
			Redesign a robot		
				Pray	

The 32-page layout template was used to determine the sequence of events for the entire book. Each page has notes about the theme, coping skills, layout, content, and characters. The template was used to stay on track, move coping skills around, and determine what works best for each page.

Style

Another area that was investigated was styles of books from picture books to graphic novels. A hybrid picture book with some graphic novel characteristics was determined to be the most effective use of the space and it allows for multiple character's perspectives to be represented in a 2-page spread. A sequential side panel was determined to be the most effective way to capture multiple characters. Each 2-page spread has a side

panel with a character sharing their experiences along with coping skills of their visit(s) to a medical facility for the reader to learn from. At the bottom of each page, a magnifying glass with "Coping Clues" guides the reader to items that can be found on the page that help them to cope in the situation. Sketches of the 2-page spread were drawn to determine if they would work with first-person perspective and the interactive scavenger hunt.

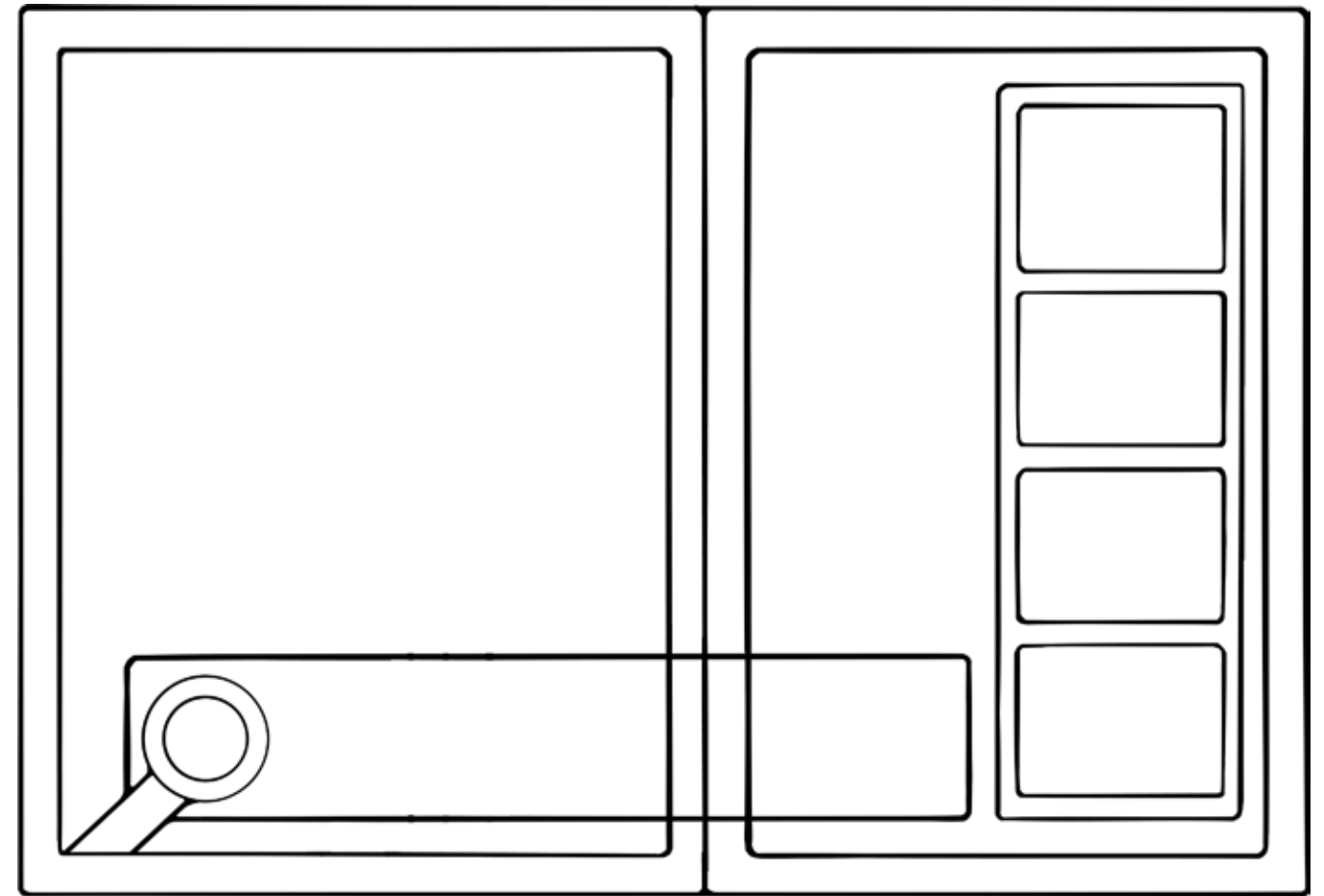


The left side panel on the 2-page layout with the magnifying glass box at the bottom of the layout allows for a large open center for the first-person perspective illustration.

Layout

The 2-page spread layout needed to combine multiple elements to include coping skills, a place for a new character to present information, first-person perspective to help with desensitization of the medical center and educate about the medical center. The layout needed to fit all of these elements in a way that is engaging for the reader. The side panels were specifically designed to instruct the reader of what

coping skills can be used in the environment. Two different layouts were designed to be used on all the pages. These designs provide younger readers with repetition. Repetition is known to be good for younger readers. It allows younger readers to learn the layout on the first pages and then be able to understand how the subsequent pages work.



The right side panel on the 2-page layout with the box holding the magnifying glass provides another layout option for the design of the book.

Image Board

The image board was used to get ideas for what the medical center would be like. The image of the woman helping the girl go into the MRI machine provides valuable information about how the process looks. The nurse and the girl dancing in the patient's room shows how medical centers can be fun. The girl pretending to be a doctor shows how children play to understand what

is going on around them. Pretend play helps children to learn and stay calm during stressful events.

Each of these images provides insight into what it is like to be a patient. They all show different aspects of a medical visit. All of them are useful in designing a book about a visit to a medical facility.



Goesstock
Ct-scan-gdc6d20158_1920
<https://pixabay.com/images/id-1782433/>



ArtisticOperations
Ambulance-gb1db9aa46_1920
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Jackmac34
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Truthseeker08
Hospice-gec3c48e4c_1920
<https://pixabay.com/images/id-1797305/>



Orzalaga
Doctor-gf6c8ba7c_1920
<https://pixabay.com/images/id-6497498/>

Uberhand Pro

Uberhand Pro Bold

Helvetica Regular

Typeface

The original typeface was going to be Helvetica Regular because it is easy to read. Unfortunately, Helvetica does not have the personality that the design needed. Helvetica was not providing the fun and child-like demeanor the text needed.

The typeface needed to have certain characteristics to make the text inviting and easy to read for young children. The characteristics that the typeface needed was that it resembled handwriting with an average x-height, rounded ends, a single story "a" with regular and bold as options. Several typefaces were selected out of the batch of thirty to move to testing on the 2-page spread. The exploration of more than thirty plus typefaces was conducted to determine that Uberhand Pro and Uberhand Pro Bold were the best ones for the project.



Test of typefaces on 2-page spread

Hi, my name is Indy Flower
~~Hi, my name is Ciabatta~~ Hi, my name is Sirenia
~~Hi, my name is Cocon Pro~~ Hi, my name is Buckley
~~Hi, my name is Tekton Pro~~ Hi, my name is Museo
Hi, my name is CCSign Language
Hi, my name is Zubillo
~~Hi, my name is Skippy Sharp~~
Hi, my name is Blambot
Hi, my name is Gooddog
Hi, my name is P22 Stanyan
Hi, my name is Uberhand
Hi, my name is Puffin
Hi, my name is Giulia plain light
Hi, my name is Chauncey
Hi, my name is shadows
Hi, my name is graphite
Hi, my name is Chalooops
~~Hi, my name is duper~~ Hi, my name is Omnes
Hi, my name is gothiks
Hi, my name is zenara
Hi, my name is new zen
Hi, my name is aptly
Hi, my name is marigny
Hi, my name is hoss
Hi, my name is brother

Thirty plus typefaces to find the one with the best character



Color palette with notes for adding more colors

Colors

The color selection was chosen to be soothing, inviting, and calm. The blues of the cover, copyright, and title page are reminiscent of the blue sky. Max and Max’s stuffed dog are both the color of the Labrador breed of dogs who are known for their kind and friendly nature. The skin, eye, and hair color of the characters in the side panels were all selected to represent a specific ethnicity.

The welcome page has light blue and translucent windows to make the medical center feel open and airy. The transportation page has the calm colors in the background with hints of red from the ambulance and helicopter. The red is a symbol of urgency which is sometimes needed when traveling to a medical center.

The playroom is mostly blues and greens with hints of red and orange. The playrooms in medical centers have playful colors without being too

overwhelming. The garden is mostly green with hints of blue and yellow. Blues and greens are both used for their calming effect.

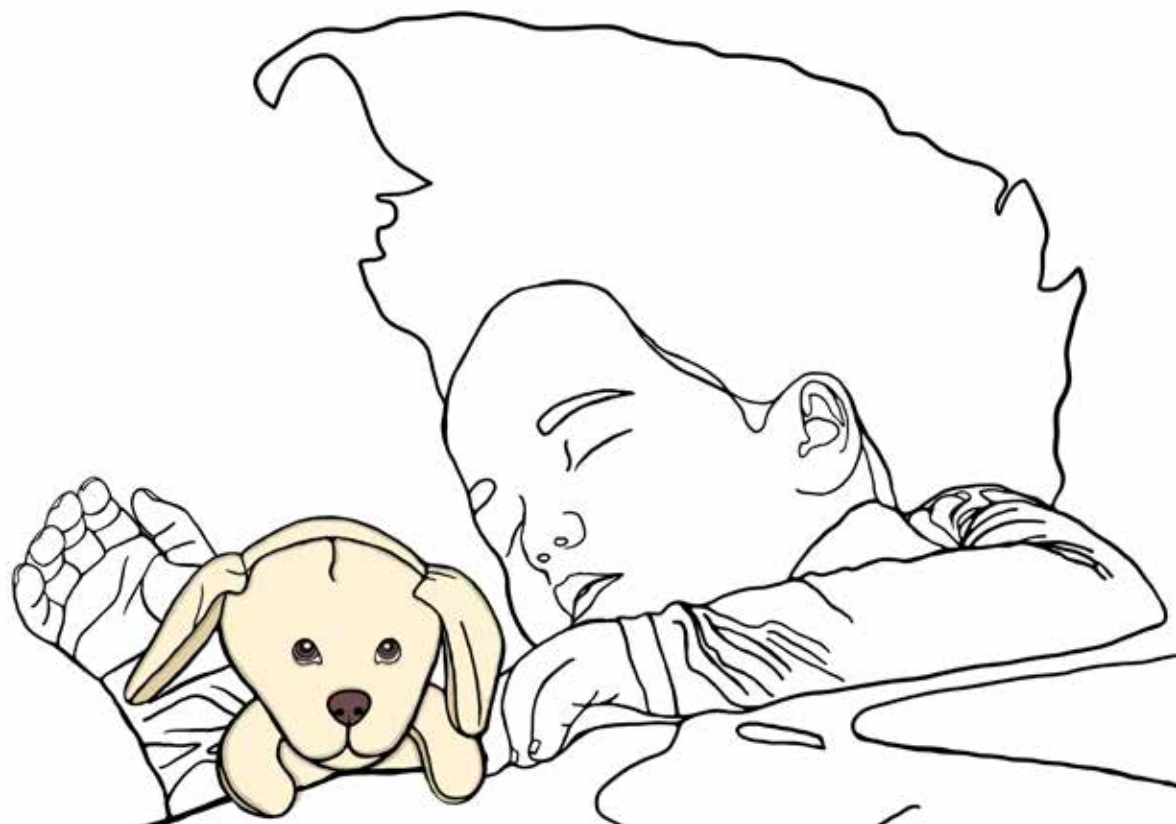
At the beginning of the design process, there were a variety of colors that needed to be removed because they were too close to other colors. Creating a condensed color palette made it easier to find a previous color that had been used. It is also helpful in keeping the consistency between pages. As new colors were needed, the color would be added to the palette.

The color palette was essential to completing the 2-page spread, cover, and copyright/title page. The pages were created using Adobe Fresco on an iPad. The color palette in Fresco resets every time a new file is created. Creating the color palette page was used to add the colors from previous pages and verify the colors were correct in some situations.

Color Palette

White FFFFFF C0 M0 Y0 K0 R255 G255 B255	F1F9FF C4 M0 Y0 K0 R241 G249 B255	C5E8F1 C21 M0 Y4 K0 R197 G232 B241	70BEFC C48 M13 Y0 K0 R125 G187 B230	7CB5D8 C50 M16 Y5 K0 R126 G181 B216	Body Text 1584EB C77 M45 Y0 K0 R61 G126 B193
DAFAF4 C12 M0 Y6 K0 R222 G241 B238	C9E9EB C20 M0 Y5 K0 R201 G233 B235	B2FAFB C25 M0 Y6 K0 R187 G228 B237	61FDFF C44 M0 Y10 K0 R135 G211 B226	5FCAE5 C56 M0 Y7 K0 R93 G202 B230	00BBC0 C73 M0 Y29 K0 R0 G187 B192
00ABC0 C76 M10 Y23 K0 R0 G171 B192	17749B C87 M47 Y23 K3 R25 G116 B156	Green Grass 67A045 C66 M17 Y98 K2 R103 G160 B69	Light Green Grass A2C26A C41 M7 Y75 K0 R162 G194 B106	Lilly's Skin FFEEE4 C0 M6 Y7 K0 R252 G238 B228	Lilly's Hair FFFAF5 C0 M1 Y2 K0 R255 G250 B245
Jamal's Skin 3D2F2F C61 M68 Y63 K60 R61 G47 B47	Jamal's Lips/Nails 634C4B C53 M64 Y58 K35 R99 G76 B75	Austin's Skin DC8F5D C12 M50 Y70 K1 R220 G143 B93	Austin's Lips/Brow BB633C C21 M70 Y84 K8 R187 G99 B60	Available for Future Charcter	Available for Future Charcter
May Skin EBC8FF C9 M22 Y0 K0 R235 G200 B166	May's Lips DE8F86 C11 M52 Y41 K0 R223 G143 B134	DB162A C8 M100 Y95 K1 R219 G22 B42	EC974C C4 M47 Y79 K0 R236 G151 B76	D6B040 C10 M31 Y88 K0 R230 G176 B64	FCFBFF C1 M1 Y0 K0 R252 G251 B224
Max's Eyes F2EFE4 C4 M4 Y9 K0 R242 G239 B228	Max's Body FFF2D5 C0 M3 Y17 K0 R255 G244 B215	Max's Eyes F1E6C9 C5 M7 Y22 K0 R241 G230 B201	Max's Inside Ears E3D0A6 C11 M15 Y38 K0 R227 G208 B166	Max's Eyes A2746D C34 M56 Y51 K8 R163 G117 B110	Max's Eyes 704c4b C46 M67 Y59 K32 R112 G76 B75
Ari's Skin CF713D C15 M65 Y86 K3 R207 G113 B61	Ari's Skin BE6331 C20 M70 Y94 K1 R190 G99 B49	Ari's Lips E09574 C10 M47 Y55 K0 R224 G149 B116	CACECA C20 M13 Y18 K0 R202 G206 B202	707070 C57 M48 Y48 K14 R112 G114 B114	Black 000000 C75 M68 Y67 K90 R0 G0 B0

The color palette was used for consistency between pages



Characters

The main character is the reader and is portrayed by the slippers at the bottom of the page because the illustrations and text are in first-person perspective. May and Max are the guides for the story of the book. They guide the reader from page to page while educating them about the medical center. The rest of the characters are multicultural characters that share their ways of coping during their medical visits.

The multicultural characters exist in the side panels to share their perspective of visiting a medical center with the reader. Upon reading the research by Doering, a startling fact was discovered. “Out of every 5,000 new titles of children’s books published annually, only 500, or 10% depict people of colour

(Botelho & Rudman, 2009)” (12). This information slightly changed the direction of the side panels to include a different character, representing a different culture, on each 2-page spread. The 32-page layout template was used to visualize where each person resided in the book along with the topic to be shared with the reader.

Multiple character descriptions were created for use in the book along with a manuscript of the storyline. The characters represent ethnicities including Indian, Hispanic, Middle Eastern, Caucasian, Black, Native American, and Hawaiian. The text does not specifically state that the characters are from these ethnicities. The illustrations are the representation of each ethnicity and genders.



Additional Characters

Maya

Indian girl who likes robots. She shares her tips for visiting the pharmacy. Redesigning robots is one way she copes with the stress of going to the pharmacy.

Makena

Black girl who likes music, art, reading, and talking with her friends. She shares her coping skills for getting an infusion with the reader.

Trey

Black boy who acts like he is not afraid of anything. He talks with the readers about his visit to the emergency room and how he got a cast.

Rosa

Hispanic girl who likes to tell jokes. She talks to the readers to let them know it is alright to talk about feelings, especially when they are in the hospital.

Leo

Caucasian boy who likes stuffed lions. He counts to 10 when he is nervous.

Kai

Hawaiian boy who likes to surf. He describes all the items that he takes with him on a visit to the hospital.

Sara

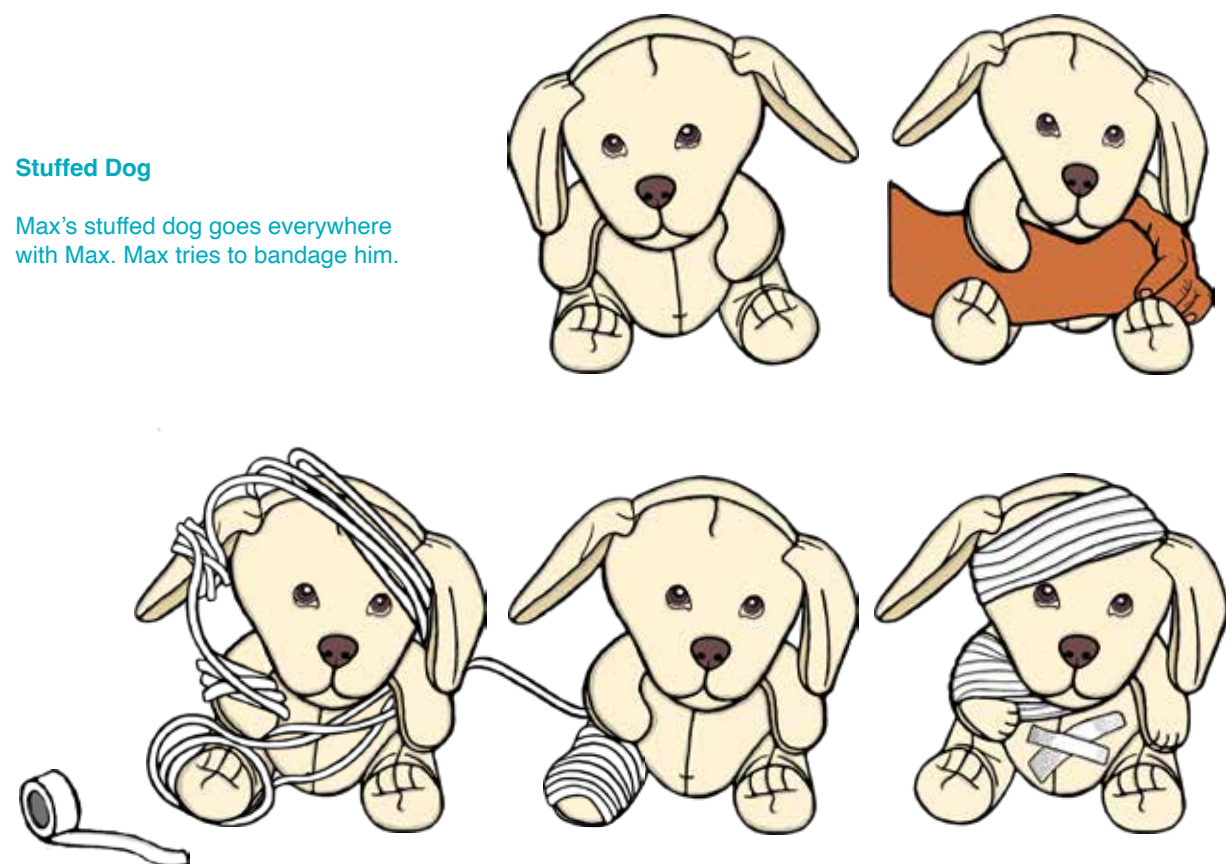
Middle Eastern girl who wears a hijab to cover her hair. It is important for Sara to ask questions about what it will be like when she goes home.

Nina

Native American girl who likes to imagine her favorite places when she needs to get an x-ray or have a CT scan. She tells the reader about her ability to calm herself using positive self-talk.

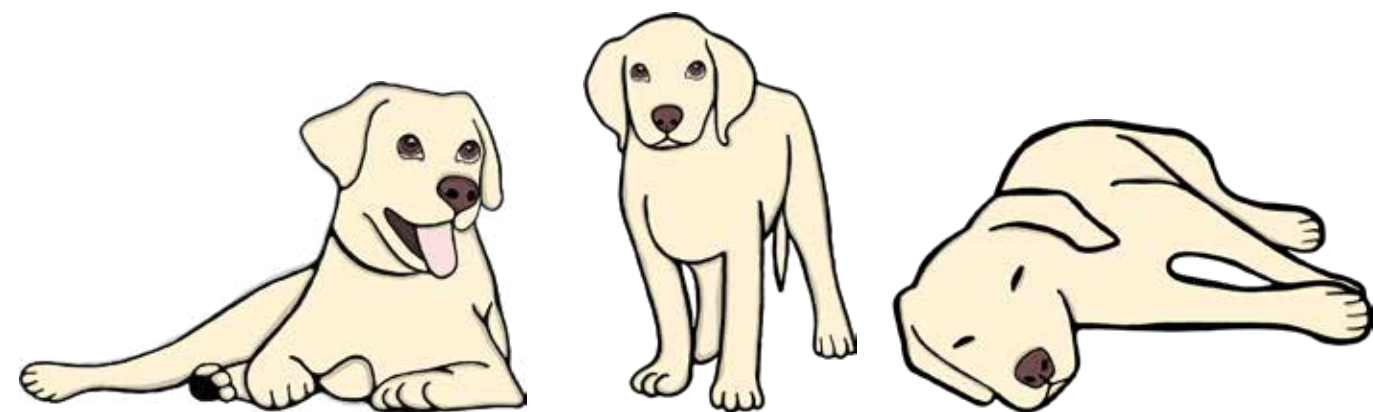
Stuffed Dog

Max's stuffed dog goes everywhere with Max. Max tries to bandage him.



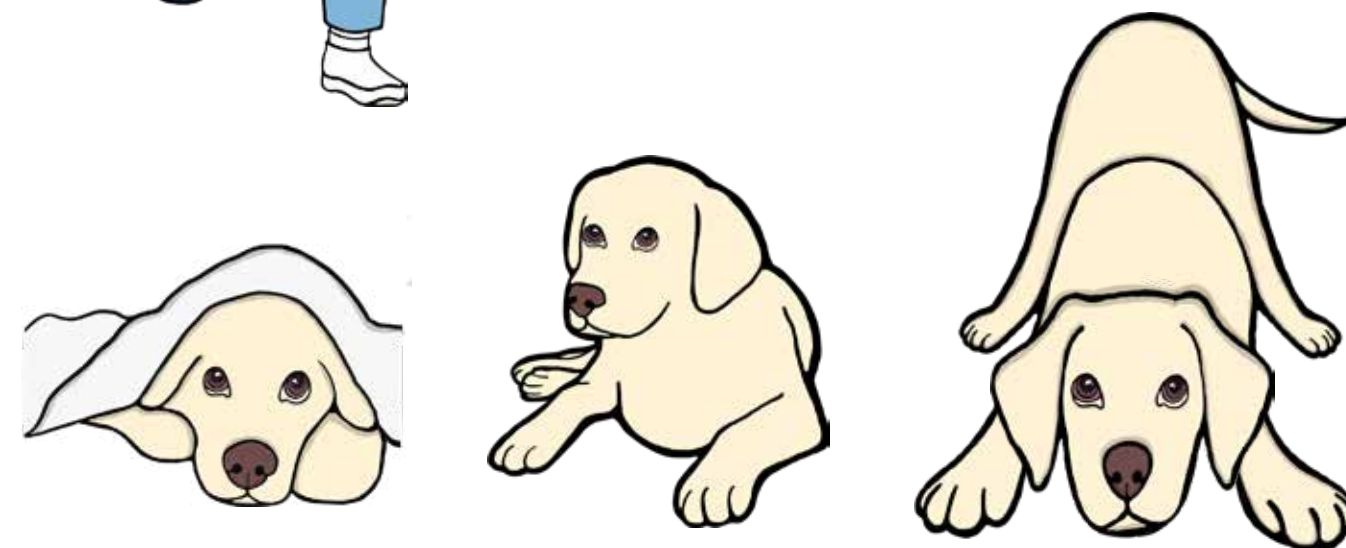
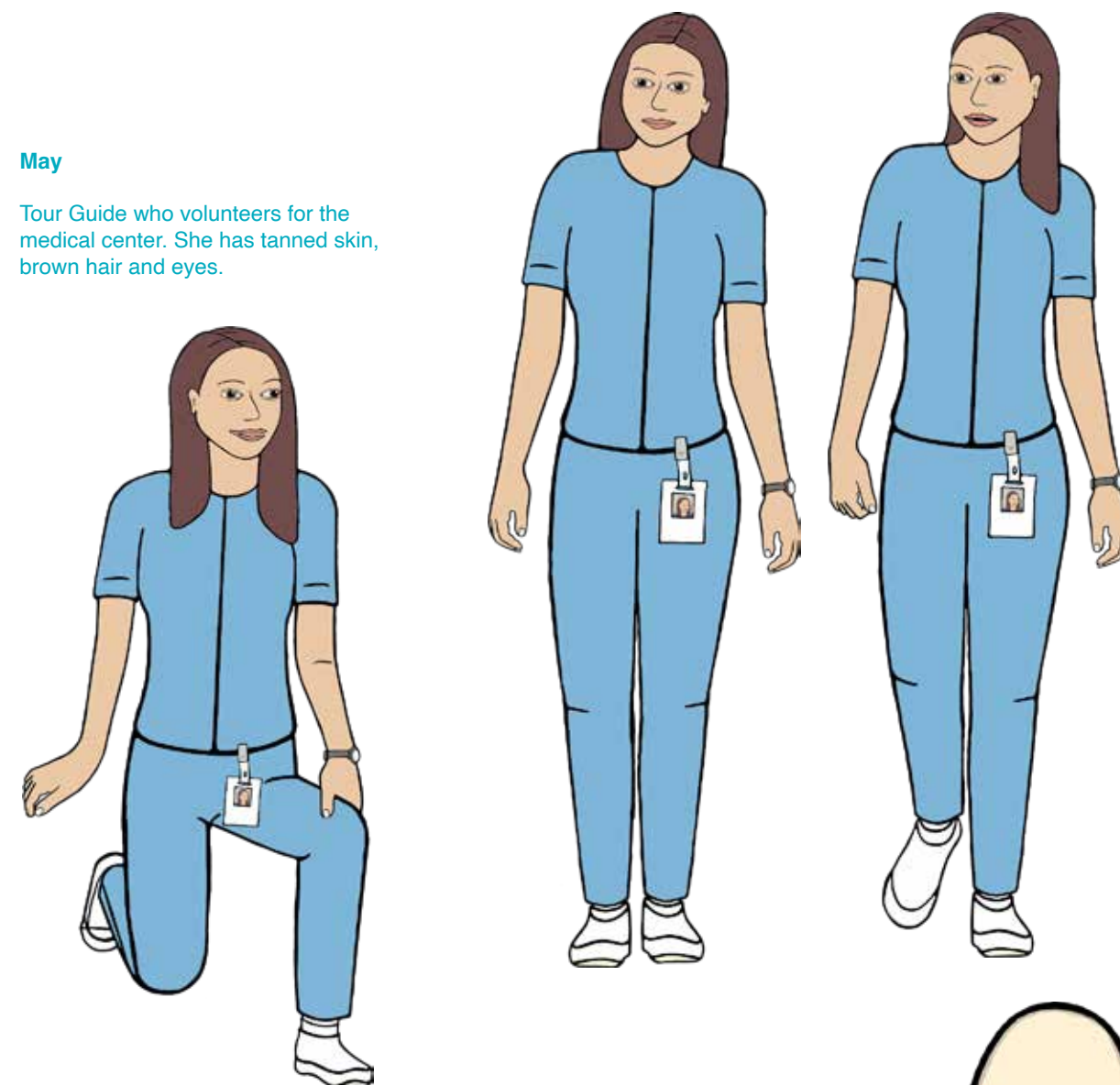
Max

Companion dog who visits the medical center to help patients feel better. Max is a cream colored Labrador.



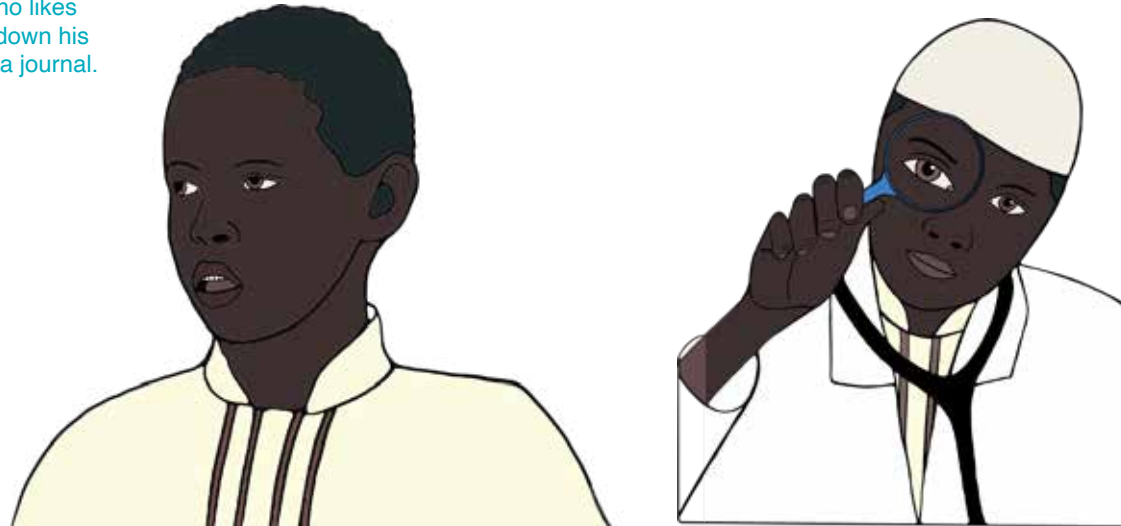
May

Tour Guide who volunteers for the medical center. She has tanned skin, brown hair and eyes.



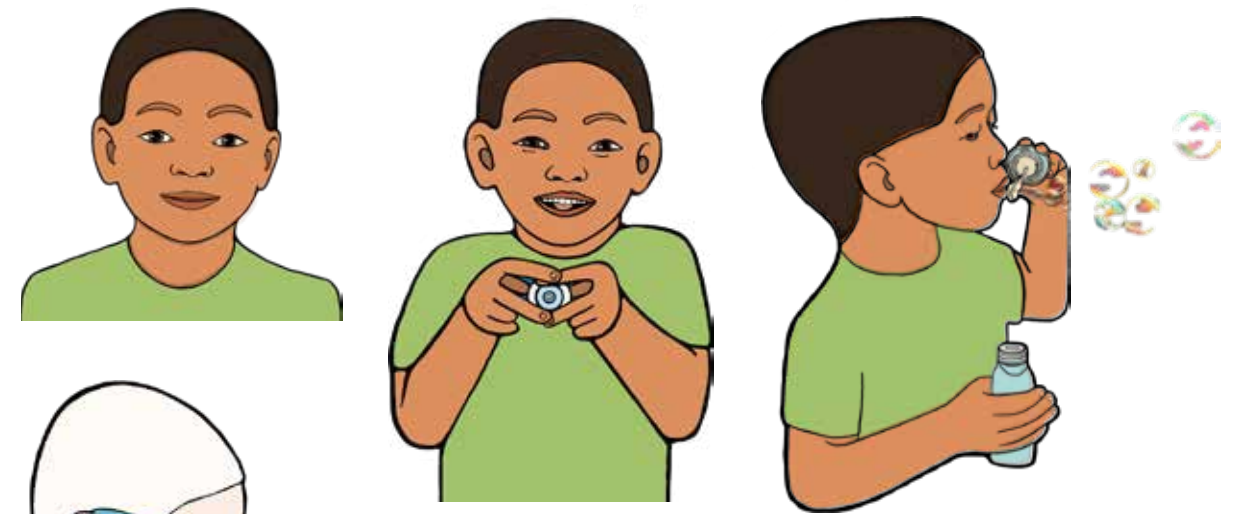
Jamal

Middle Eastern boy who likes detectives. He writes down his thoughts and clues in a journal.



Ari

Indian boy who likes helicopters. He shares coping skills for traveling to a medical visit.



Austin

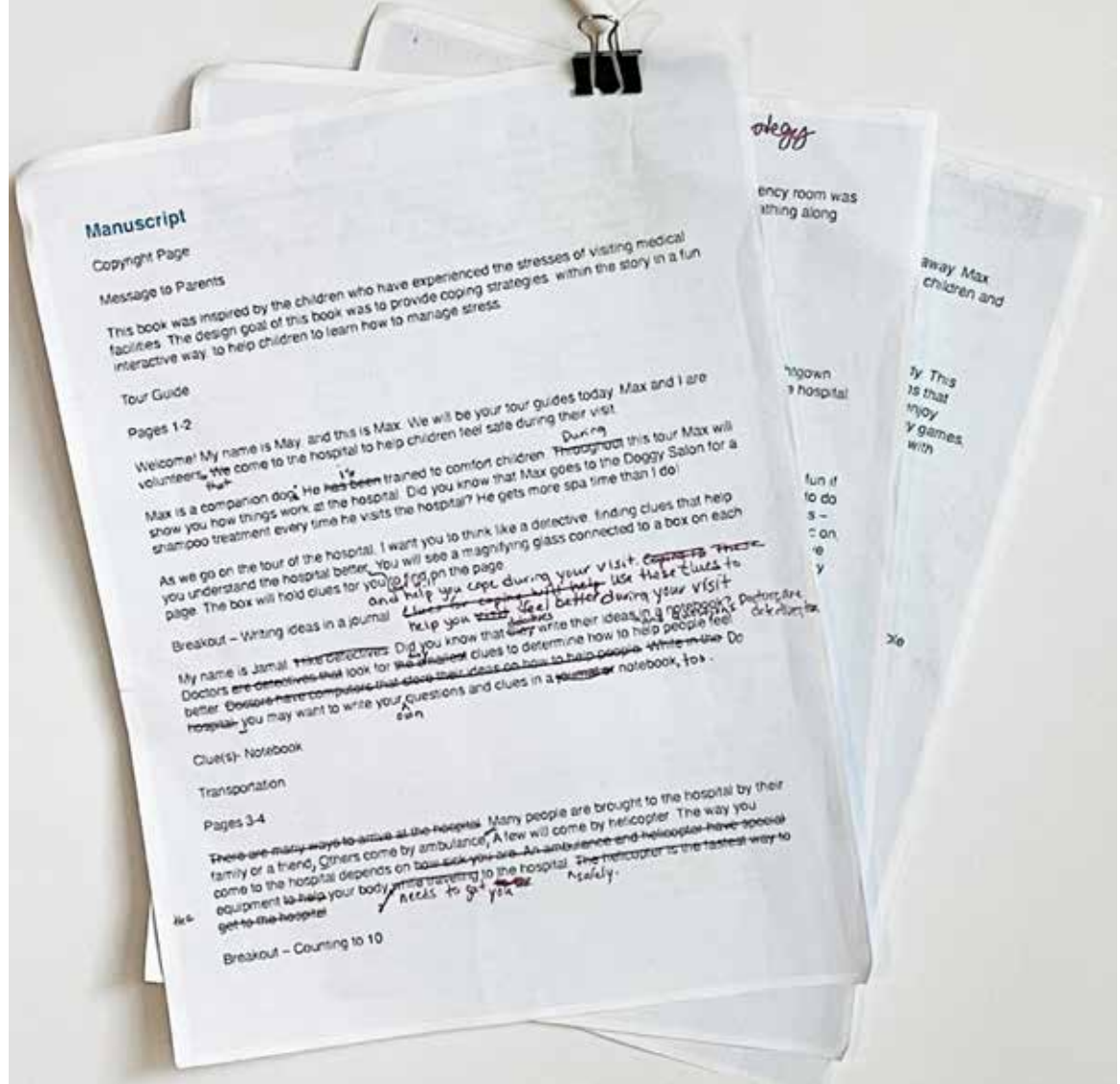
Hispanic boy who likes to play. He shares ideas of having fun while visiting a medical facility.



Lilly

Caucasian girl who likes to blow on pinwheels. She likes to take walks at medical centers.





Edited manuscript

Manuscript

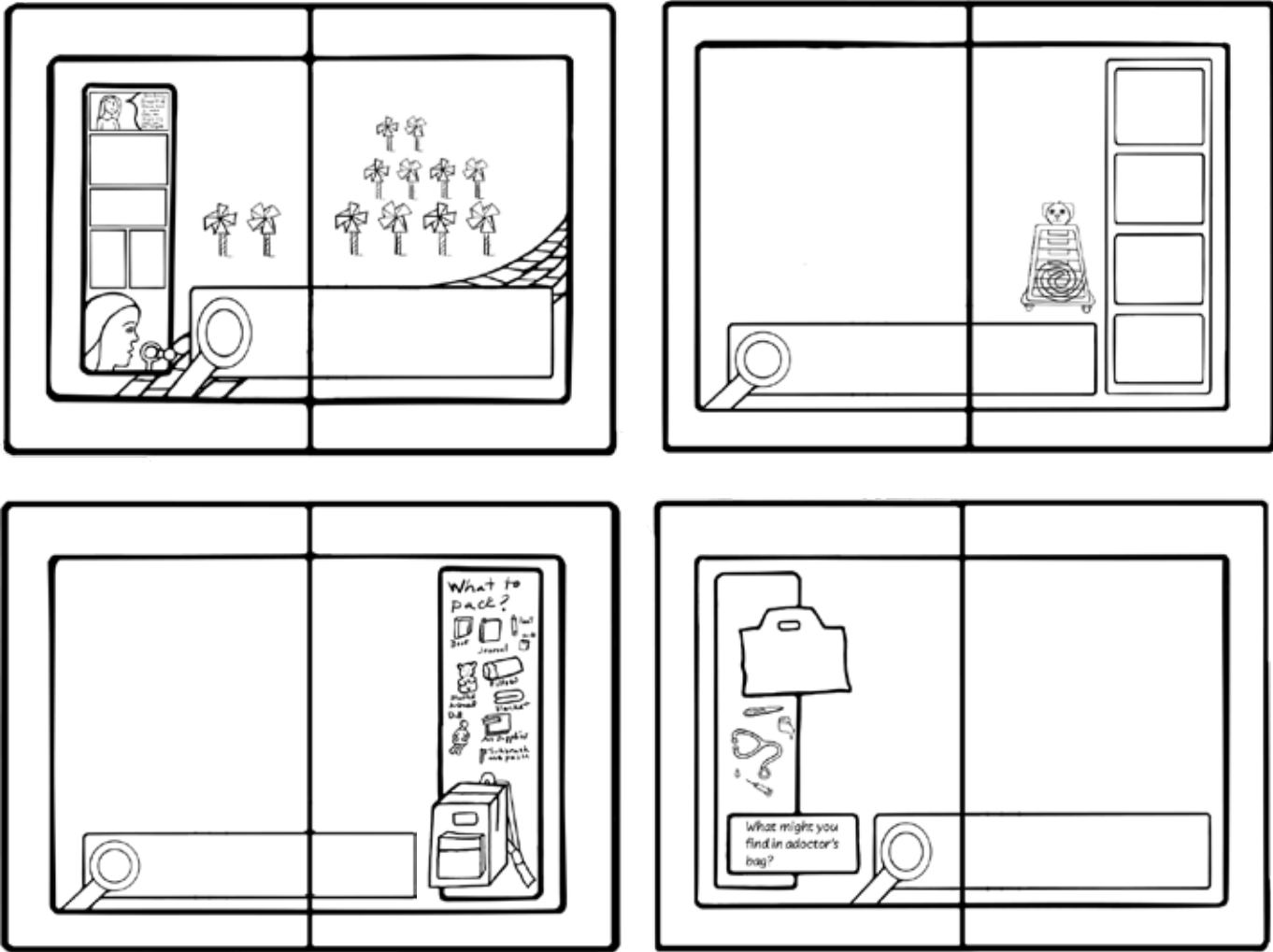
A manuscript of the story was written as a Microsoft Word document to be used in conjunction with the 32-page layout template. The manuscript is a work in progress. As each page is built, problems arise, and solutions must be found. Many times, the storyline has

to be condensed to fit the layout. Children's picture books in general need a simple yet fun story. In this book, it needs to educate about coping skills used during medical visits. The number of words used also needs to be considered when writing for children.

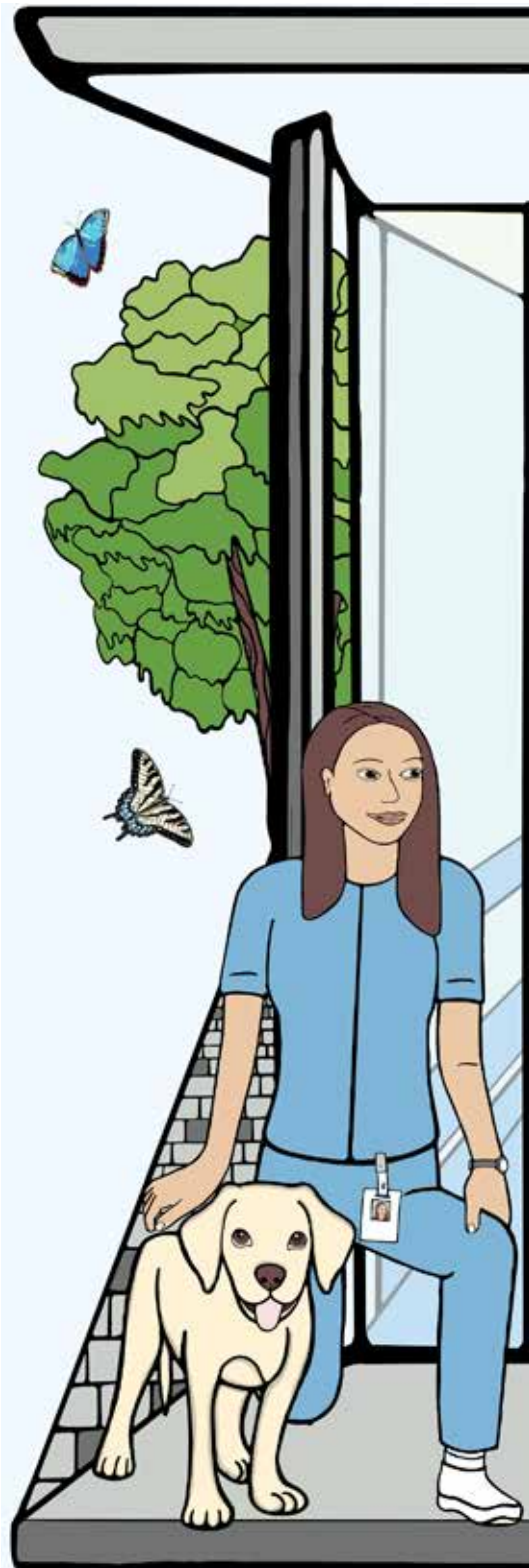
Sketches

Multiple sketches were created of the layout of various pages to determine the viability of the plan to use a side panel and a lower panel around the larger first-person perspective illustration. One concept sketch was completed on gridded paper to determine the size of the book. The ideal size of the pages will be 8.5 inches wide by 11 inches tall to create a spread of 17 inches wide by 11 inches tall.

The sketches were also used to test out ideas for various pages. In one of the examples a doctor's bag with supplies is in the side panel. The complete concept for the side panel became clear after reading the research by Doering concerning multicultural characters in children's picture books.



Sketches of pages with page concepts



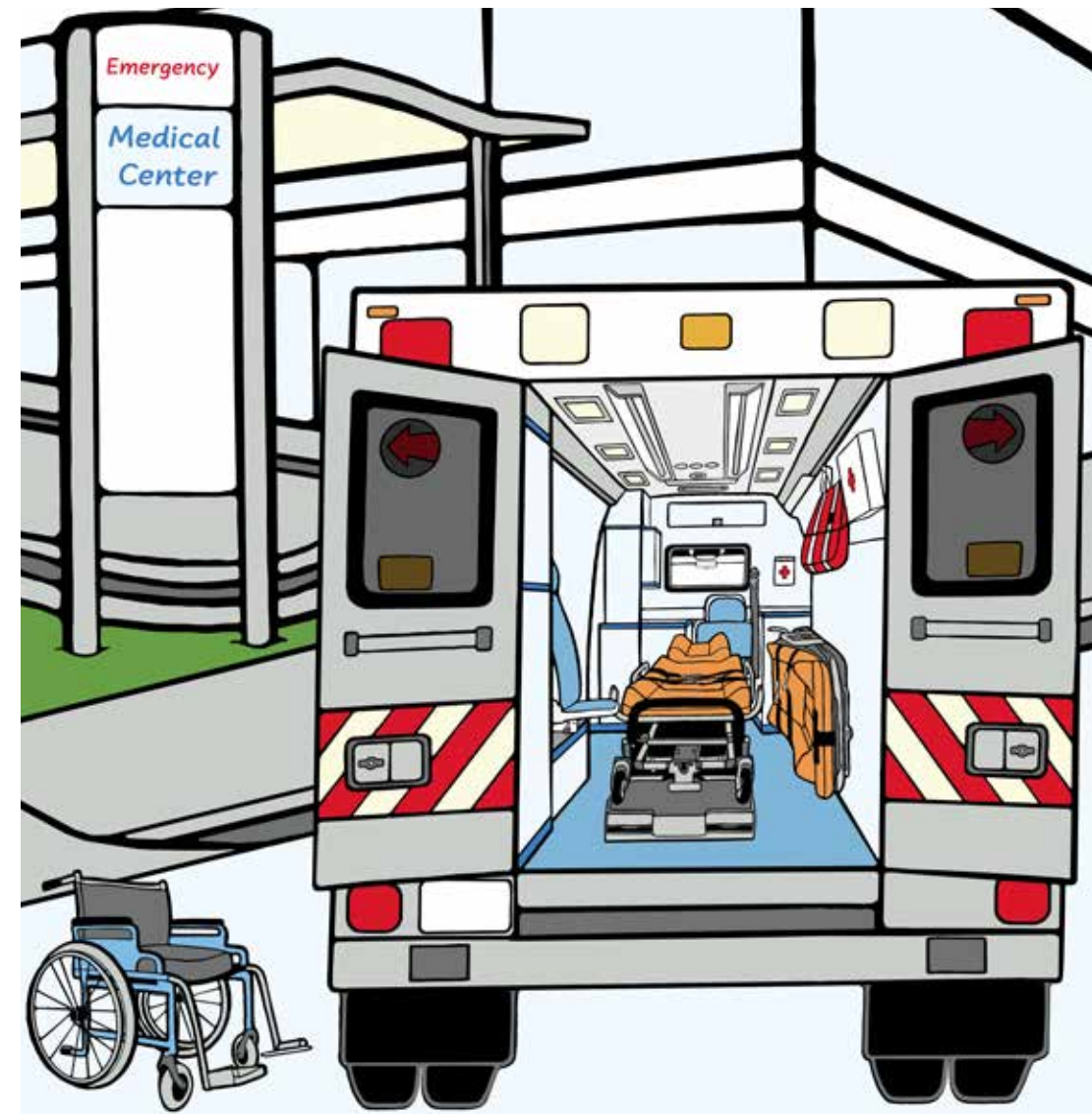
The tree on the welcome page showing what is coming in the future pages

Illustrations

The illustrations can captivate the reader, overwhelm the reader, and bore the reader. The goal of the illustrations in this book design is to educate, desensitize, and entertain the reader. The illustrations in the larger panel of the 2-page layout is designed for a first-person perspective image for desensitization. The side panel illustrations are to educate the reader about coping skills that can be used while visiting a medical center. The entire book is designed to educate the reader about what it is like to visit a medical center. The lower panel and slippers with the quote bubbles are interactive and entertaining.

The entire book needs to be both entertaining and educational. The illustrations will do this by telling the story. While the words tell a related story, the illustrations by themselves can tell a more in-depth story than words alone. "...Quality [picture books] must display a level of artistry in the pictures, possess a strong storyline that commits to a specific theme or concept, and develop an interdependence between the pictures and text." (As cited in Doering 16). The theme of each page of the children's medical picture book needs to be interdependent with the side panel, the illustrations, and the text.

The imagery on each page provides a glimpse of what is to come on the next pages. As on the welcome page, the green tree is a preview into the area around the medical center akin to the butterfly garden that is found further on in the book. The tree helps the reader to predict what will be coming next.



The ambulance's doors are open and the inside has many details to help with desensitization.

Perspective

The perspective used in the illustrations of each page was determined by what needed to be presented on the page. In the playroom 2-page spread, it was important to show all the different activities that can take place within the large room. By using a perspective of looking down into the playroom, it was possible to show more of the activities in the playroom. Playing with the perspective allowed for more details to be presented in each 2-page spread.

Line Weight

The use of different line weights was used with perspective to visually make things that are closer bigger with a thicker line and things that are smaller with a thinner line weight. Some line weights are heavier to add prominence to the detail or character. Line weight, color, and value were used throughout the designs to add depth to the design.



Solution



Mockup of front and back cover of *Coping Clues*

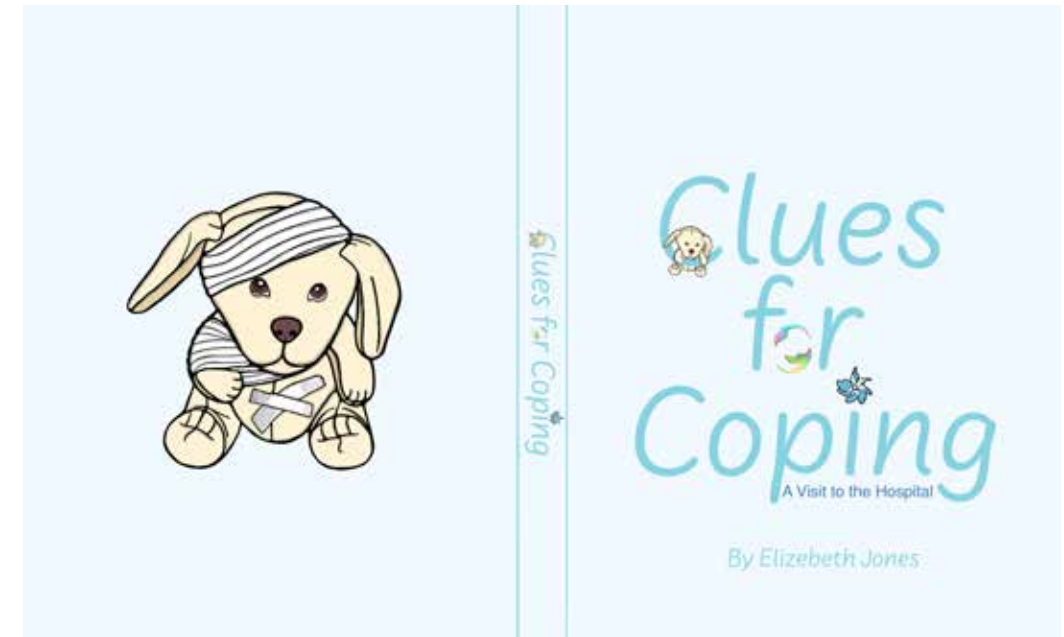
Introduction

Children everywhere visit medical centers for their healthcare. These experiences can be scary for young and old. By learning coping skills at a young age, children can cope with the stress of visiting medical centers. Being able to cope with stressors is a lifelong skill that can help people to regularly receive preventative healthcare and possibly be healthier and live longer.

Unfortunately, there are not many resources for children and parents to learn about coping skills and visiting medical centers. There are numerous books that teach about going to the doctor, but they do not

specifically teach how to manage the stress associated with the visit. Many of these children's medical picture books are not entertaining or interactive.

The design goal of this children's medical picture book is to teach children about what it is like to go to a medical center at the same time as sharing coping skills and desensitization through first-person perspective illustrations. An interactive feature helps children to remember the coping skills.



An older version of the cover

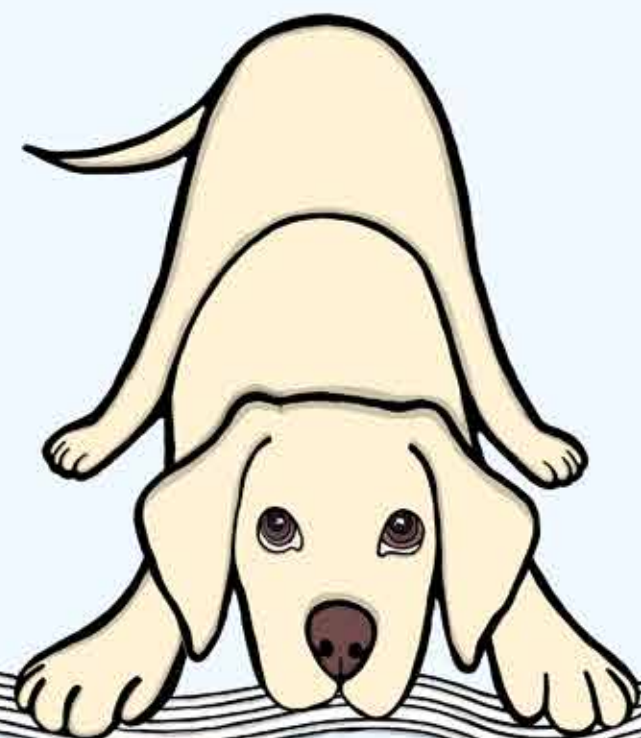
Cover

The cover design engages the reader with an image of medical play. Hsu et al state, "In therapeutic play, children inhabit the role of a third party to express their inner feelings; understand their inner worries, fears, and defense mechanisms; and deal with their concerns and anxiety." Medical play is a way for children to play with medical equipment to better understand the different situations that happen at a medical center. In the design, Max is trying to wrap his stuffed dog with gauze.

The title of the book is surrounded by a large magnifying glass. The magnifying glass is used inside the book to look for clues on coping skills that are shared on each 2-page spread of the book. The title has a pinwheel, a

bubble, and Max's stuffed dog embedded in the letters to add some fun to it.

The design of the cover has changed due to the title of the book. At first the title was "Welcome to the Hospital", which did not fit the theme of the book very well. "Clues for Coping: A Visit to the Hospital" was another title that was tried. It still did not fit the book. One of the goals of the book was that it could be used for any visit to a medical center. Many children go to a clinic and never see a hospital until they are adults. The book needed to offer tools for children in many medical care situations. The final title became "Coping Clues: An Interactive Exploration of a Medical Center".



Welcome to the Hospital

Message to Parents

This book was inspired by the children who have experienced the stresses of visiting medical facilities. The design goal of this book was to provide coping strategies, within the story in a fun interactive way, to help children to learn how to manage stress.



By Elizebeth Jones

Old version of the copyright/title pages

Copyright

The copyright page is packed full of information. This also contains a message to parents that discusses the purpose of the book and how to use the book. It also has disclaimers, the copyright, my website, and the first comment bubble with the slippers. The slippers and the comment bubble are an interactive feature that were used with the first-person perspective illustrations. Cordray et al found that children who have access to interactive books have “significantly more positive expectations and attitudes, including greater readiness and greater trust in their doctors.” This type of interactivity was determined to be the best for the situation according to the previous research conducted.

Title

The title page is a version of the cover with the title in the middle of the magnifying glass. The magnifying glass was inspired by Hart and Rollins’s detective coping strategy, and the other coping strategies within the title are used throughout the book. To find the right cover and title page design, multiple versions were created until this version was selected because it was the most effective at providing imagery that relates to the story of the book while meeting the stakeholders needs.

Message to Parents

This book was inspired by the children who have experienced the stresses of visiting medical facilities. The design goal of this book was to provide coping skills within the story in a fun interactive way and to help children to learn how to manage stress.

This is a work of fiction. Names, characters, places, and incidents either are the product of the author's imagination or are used fictitiously. Any resemblance to actual persons, living or dead, events, or locales is entirely coincidental.

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First Paperback edition March 2023

Book designed by Elizebeth Jones

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ISBN 000-0-0000-0000-0 (Paperback)
ISBN 000-0-0000-0000-0 (ebook)

Published by Name, Location, Website

www.elizabethjones.myportfolio.com



Old version of the copyright/title pages

Message to Parents

This book was inspired by the children who have experienced the stresses of visiting medical facilities. The design goal of this book was to provide coping skills within the story in a fun interactive way and to help children learn how to manage stress. The slippers are an attempt at first-person perspective illustrations, which have been shown to reduce anxiety in people who are experiencing new or difficult situations.

This is a work of fiction. Names, characters, places, and incidents either are the product of the author's imagination or are used fictitiously. Any resemblance to actual persons, living or dead, events, or locales is entirely coincidental.

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First Paperback edition March 2023

Book designed by Elizabeth Jones

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ISBN 000-0-0000-0000-0 (Paperback)

ISBN 000-0-0000-0000-0 (ebook)

Published by Name, Location, Website

www.elizabethjones.myportfolio.com

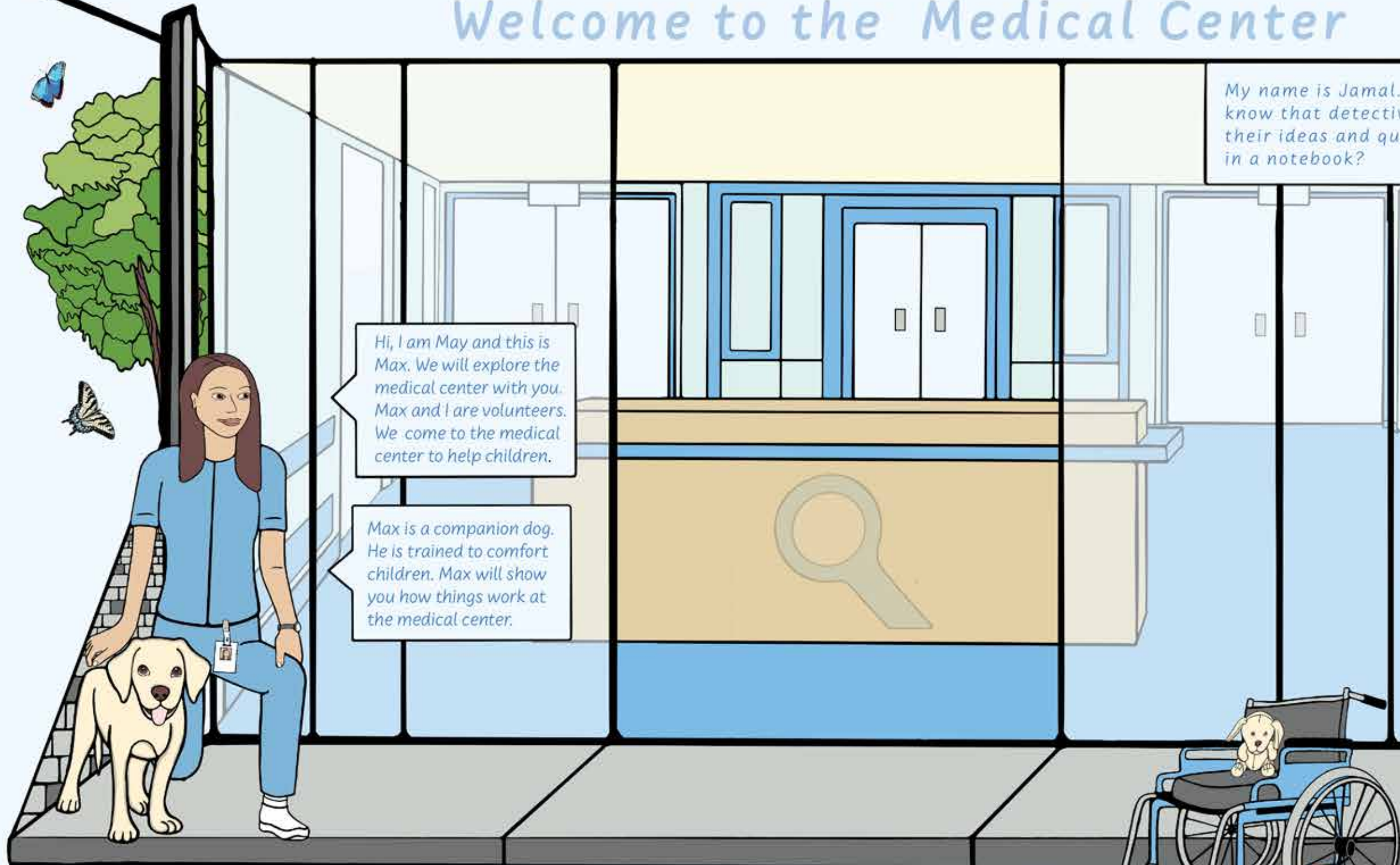


Look for the slippers and the question bubble to ask and interact with the book.

This is you, the reader!



Welcome to the Medical Center



Hi, I am May and this is Max. We will explore the medical center with you. Max and I are volunteers. We come to the medical center to help children.

Max is a companion dog. He is trained to comfort children. Max will show you how things work at the medical center.

My name is Jamal. Did you know that detectives write their ideas and questions in a notebook?



Doctors are detectives, too. Doctors look for tiny clues to determine how to help people feel better.



You may want to write your own questions and clues in a notebook, too.



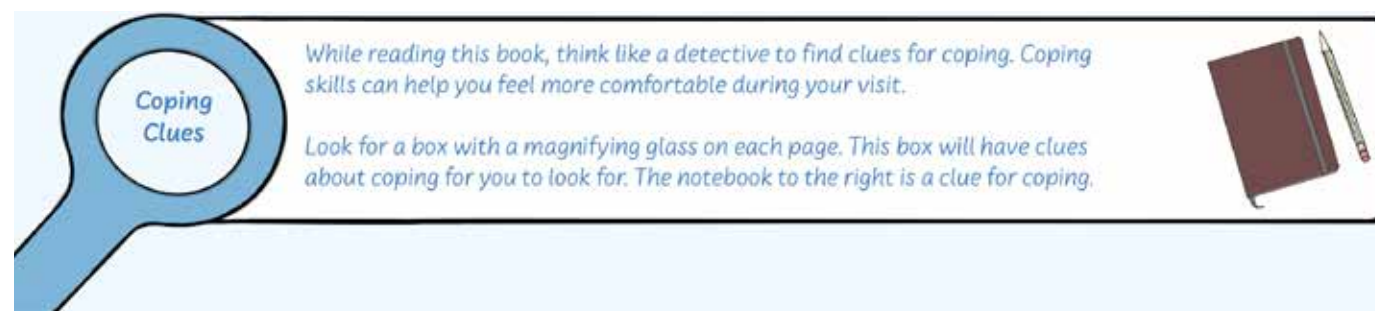
Coping Clues

While reading this book, think like a detective to find clues for coping. Coping skills can help you feel more comfortable during your visit.

Look for a box with a magnifying glass on each page. This box will have clues about coping for you to look for. The notebook to the right is a clue for coping.



What do I write in the notebook?



The Coping Clues magnifying glass shows the reader where to find clues about coping skills on the page. The fist box instructs the reader about how to use the scavenger hunt. The scavenger hunt was another coping strategy discussed by Hart and Rollins. In this design, it is used to re-enforce the other strategies being taught.



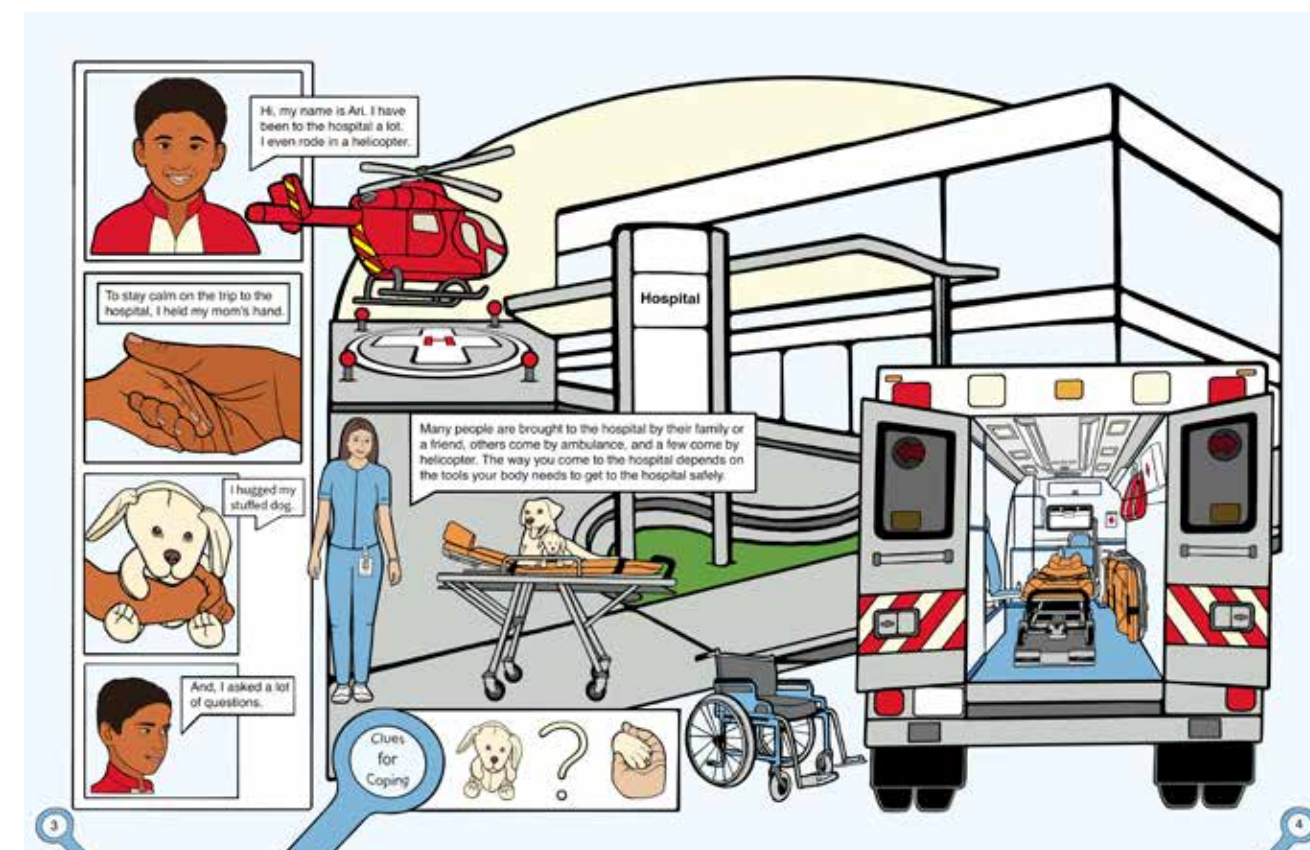
Slippers and question bubbles are used to signify the reader. The questions are answered by one of the characters on each page.

Welcome

The welcome page is the first and second pages of the story. The goal of these pages is to make it feel like a welcoming and inviting look into the front entrance of a medical center. This is where May introduces herself and Max to the reader, Jamal shares his wisdom on detectives, and the Coping Clues panel at the bottom of the page describes how to use the Coping Clues box throughout the book. It also has the slippers with the question bubble for the first-person perspective element. The concept of this 2-page spread stayed true to the original design with only minor changes.



May and Max guide the reader through the book



In this older version of the transportation page, May's quote bubble goes right into the crease of the 2 pages

Transportation

Being transported to the hospital in a helicopter or ambulance can be scary for anyone, let alone a child. Hsu et al stated, "Unfamiliarity with the environment increases pain caused by intravenous injections and affects children's attitude toward future medical care, physical discomfort, and mental trauma." This is why this page was designed to educate children about being transported to a medical visit.

On this 2-page spread, Ari shares his wisdom of traveling to a medical center. May educates the reader on getting to the medical center. Max and Max's stuffed dog lay on the ambulance gurney for the reader to see.

Three coping clues are introduced to the reader: asking questions, hugging a stuffed animal, and holding someone's hands or paw.

The illustrations are of the front of the medical center with a helipad and ambulance. The ambulance doors are open for the reader to look inside and see that there is not anything to fear inside. This page had some challenges with the quote bubble and all the items in the layout. At one time it seemed as though the design would need to be edited because not everything would fit.



Hi, my name is Ari. I have been to medical centers a lot. I even rode in a helicopter.

To stay calm on the trip to the medical center, I held my mom's hand.



I hugged my stuffed dog.

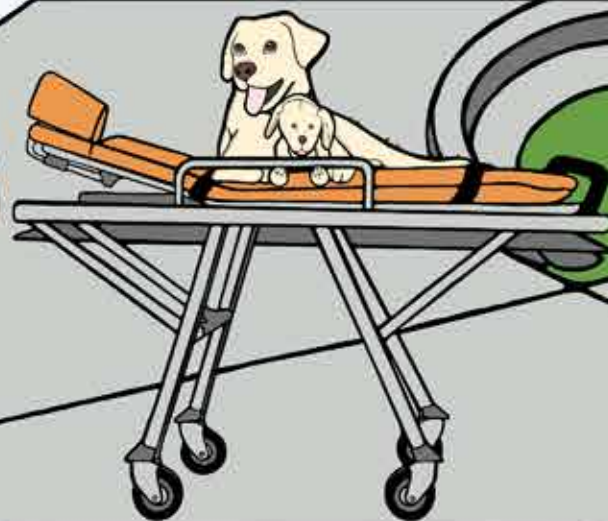


And, I asked a lot of questions.

Why travel in a helicopter?



People arrive at the medical center by walking, a car, an ambulance, and a few come by helicopter. An ambulance and helicopter have special people and tools to help you.

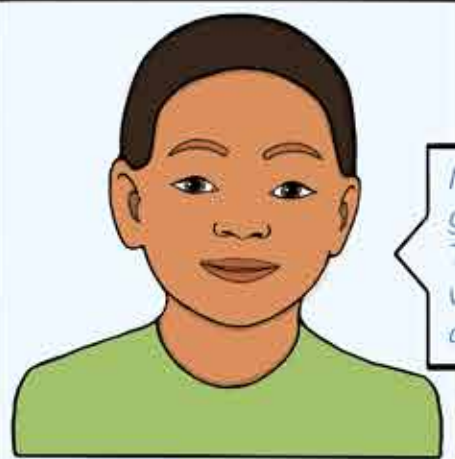


Coping Clues



Emergency

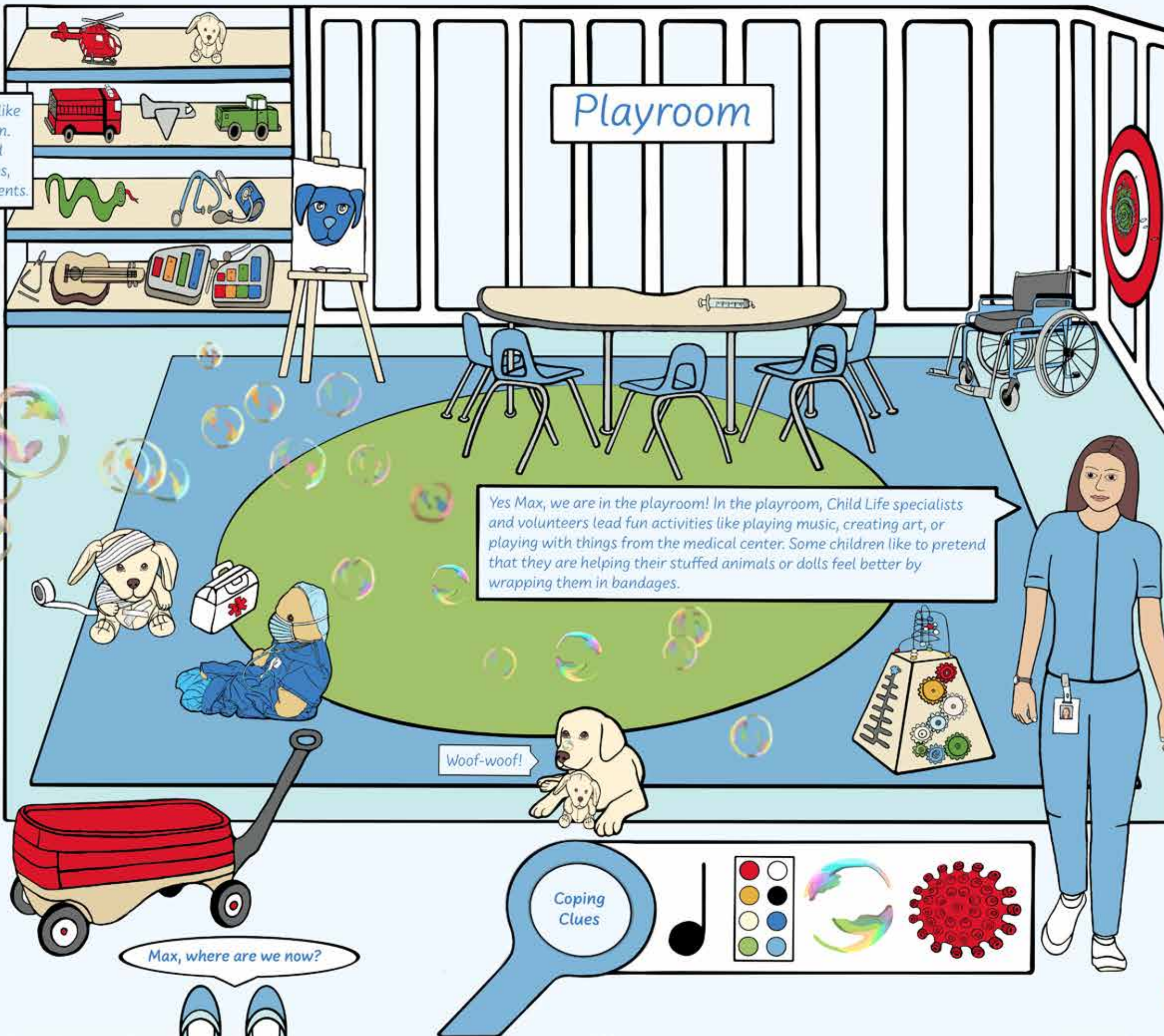
Medical Center



My name is Austin. I like going to the playroom. The playroom is filled with toys, art supplies, and musical instruments.



My favorite things to do are blowing bubbles and using syringes to squirt water at germ targets.

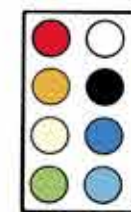


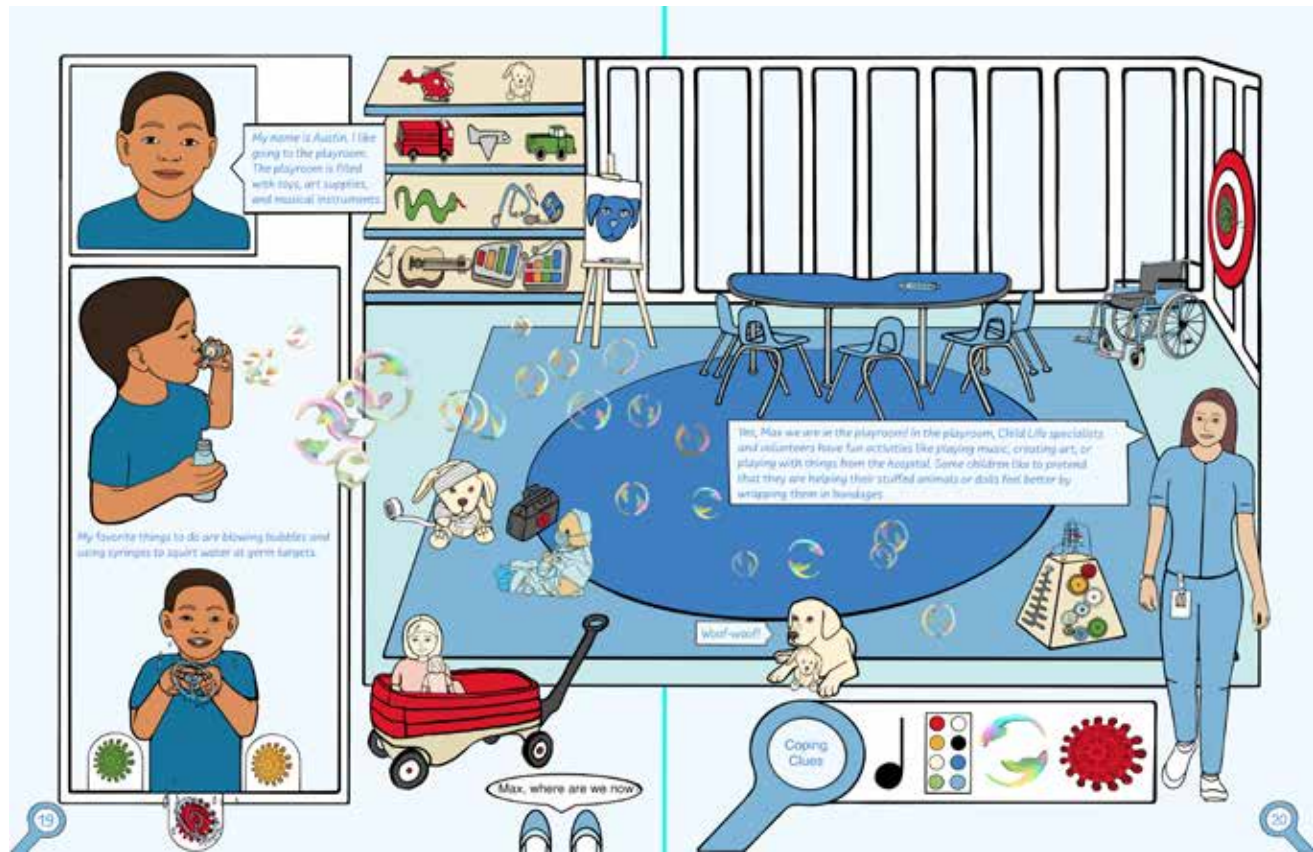
Yes Max, we are in the playroom! In the playroom, Child Life specialists and volunteers lead fun activities like playing music, creating art, or playing with things from the medical center. Some children like to pretend that they are helping their stuffed animals or dolls feel better by wrapping them in bandages.

Woof-woof!

Max, where are we now?

Coping Clues





An older version of the playroom with more blues

Playroom

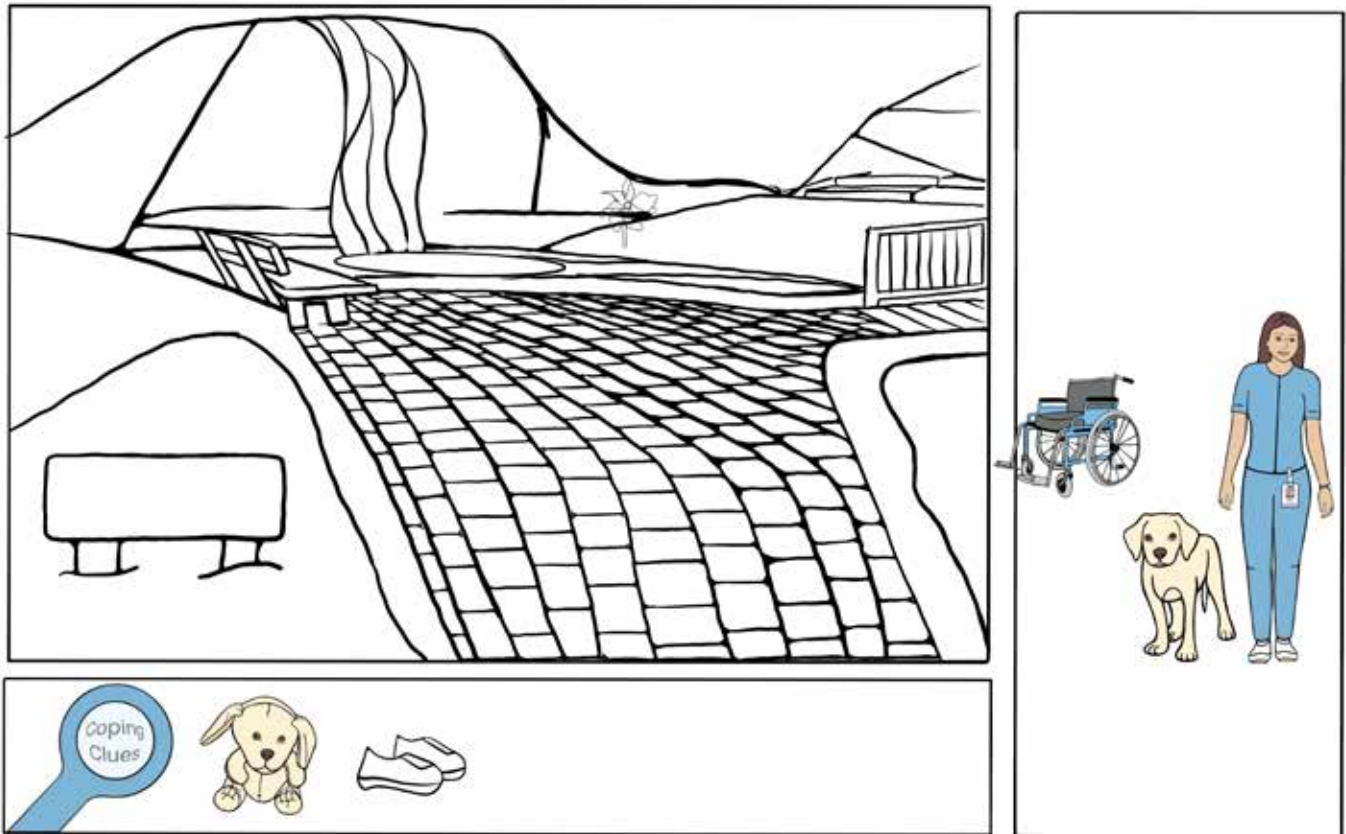
Children need play to learn about the world around them and play is even more important in stressful situations. Kleyes et al stated, “Play is proven to be of high therapeutic value for ill children, contributing to both their physical and emotional well-being and to their recovery.” The playroom was essential for children to know that there are places in medical facilities designed just for them to play.

The goal of the playroom was for it to look like children actually played in the room. The room was designed so that the reader could see all the things that could happen in the room, from playing instruments, to painting, to blowing bubbles. May explains what children

can do in the playroom while Austin tells the reader about his experience in the playroom. The drawing for Austin has changed over the past few months. He originally had a blue shirt on but the green works better with the green carpet on the floor. The room design encourages the reader to look all over the page for clues.



The many versions of Austin



Rough draft of the garden

Garden

Many medical facilities have gardens for patients and medical professionals to visit. Determining what kind of garden to illustrate for children was the question that needed to be answered. It was clear, according to an article by Brooks, that the research indicated that children prefer butterfly gardens with things to crawl on and interact with.

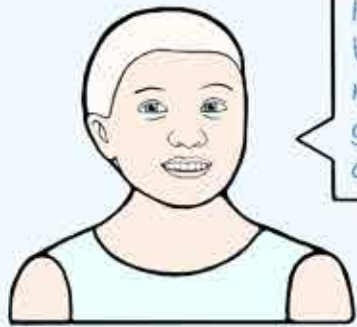
A turtle toy was drawn for children to crawl on and a bench for parents or children to rest. The flowing waterfalls provide a natural sound that overcomes the noises of most cities. The flowers and trees block the view of buildings. The walkway needed to be smooth enough for an IV pole to be pulled over.



Detailed verses simplified illustrations of butterflies

Detailed Verses Simplified

Balancing the detailed and simplified realistic illustrations was necessary to meet the needs of the target audience and the objectives of the design. After completing the first draft of the garden page, revisions were completed on the butterflies to be more simplistic. The tree was transformed with tonality and shapes to add more detail. This provided consistency between each element on the page while still having realistic qualities and a fun style.



Hi, my name is Lilly. When I visit the medical center, I like going on walks. I walk around each floor.

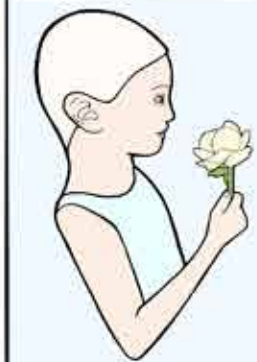
I go to the nursery to see the babies and to the gift shop for a treat, game, or pinwheel.



I like to bring a pinwheel on my walk with me.



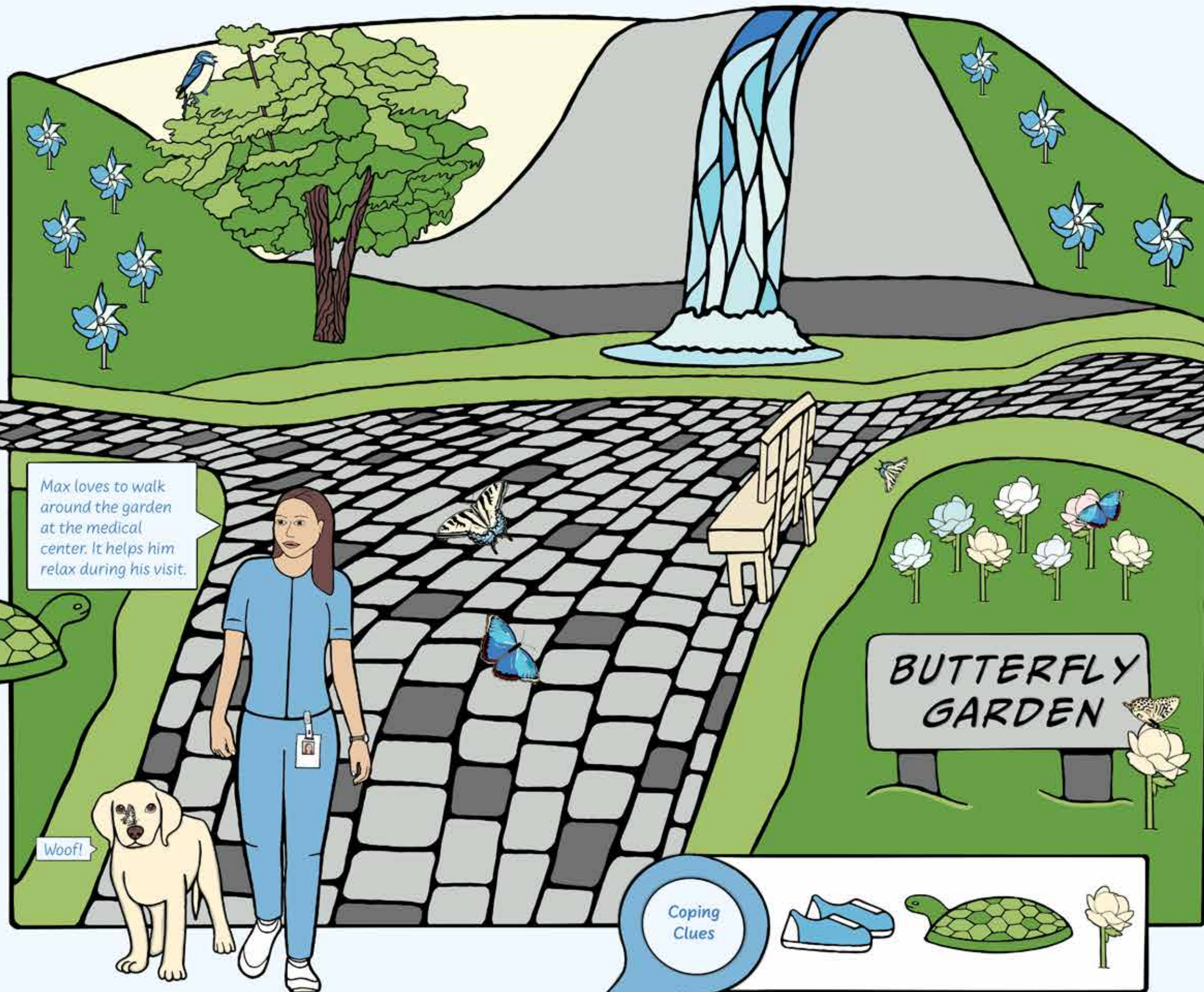
Some medical centers have gardens. I like the butterfly garden. It has trees, flowers, benches, and a waterfall. I enjoy listening to the birds singing.



At the garden, I smell the flowers, watch the butterflies, listen to the waterfall, and play on the turtle toy.

A game I play while on my walks is to find
5 things I see
4 things I hear
3 things I touch
2 things I smell
1 thing I taste

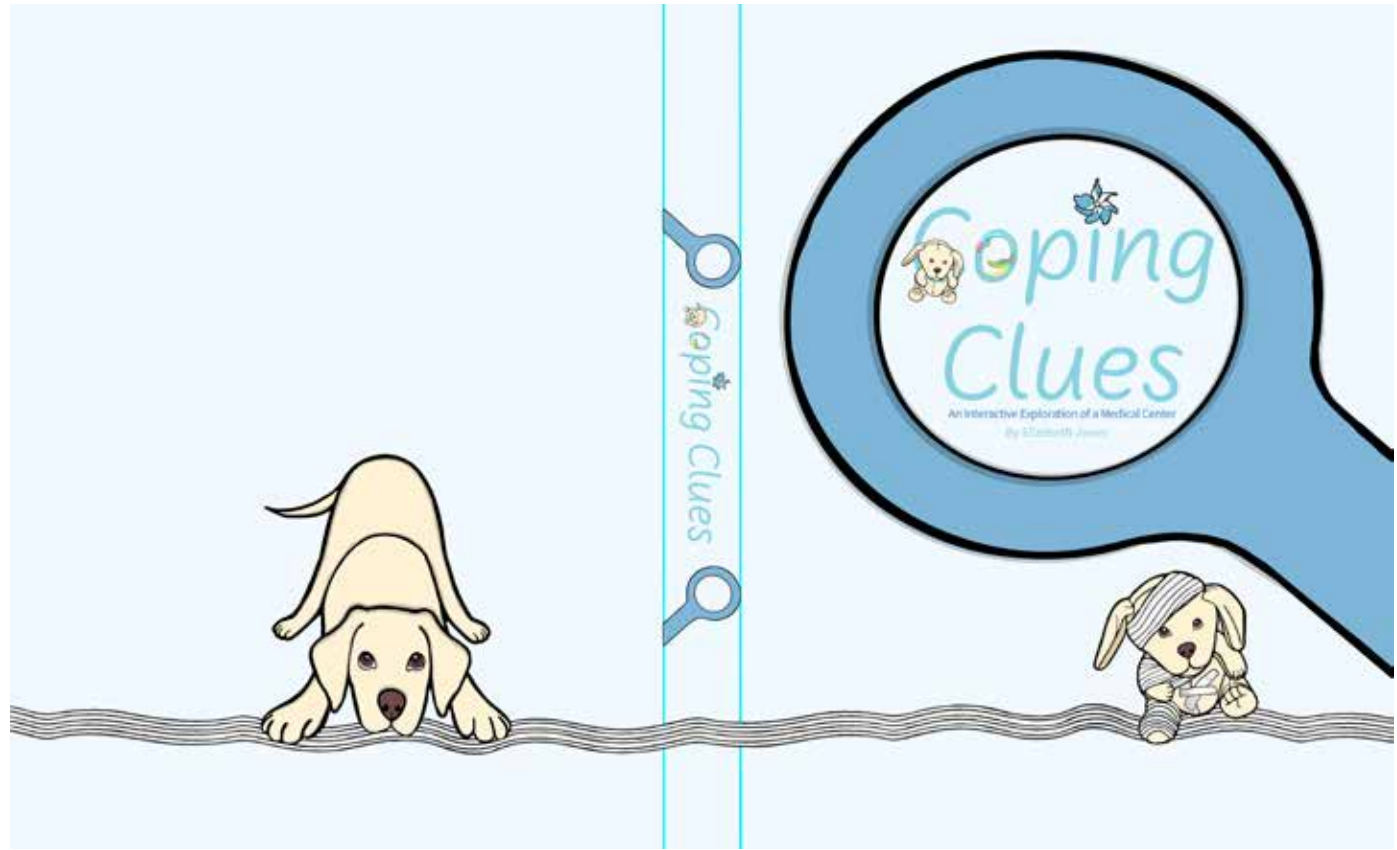
Max, do you like walks?



Woof!

Coping Clues





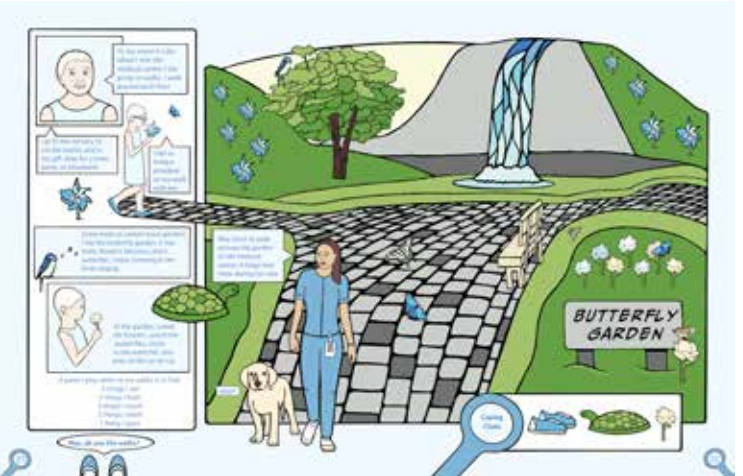
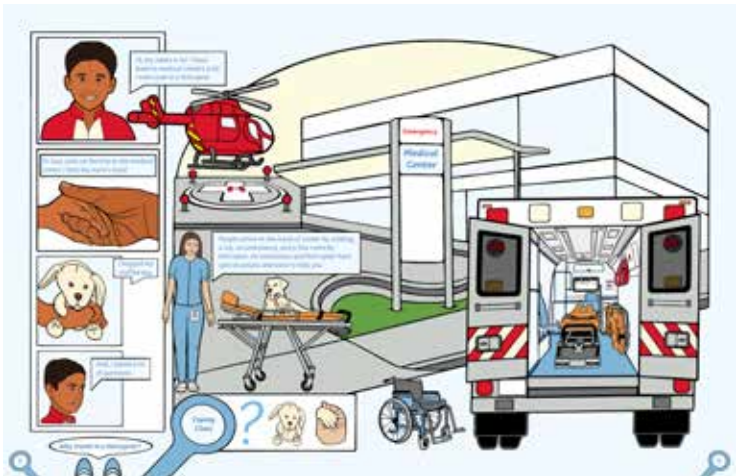
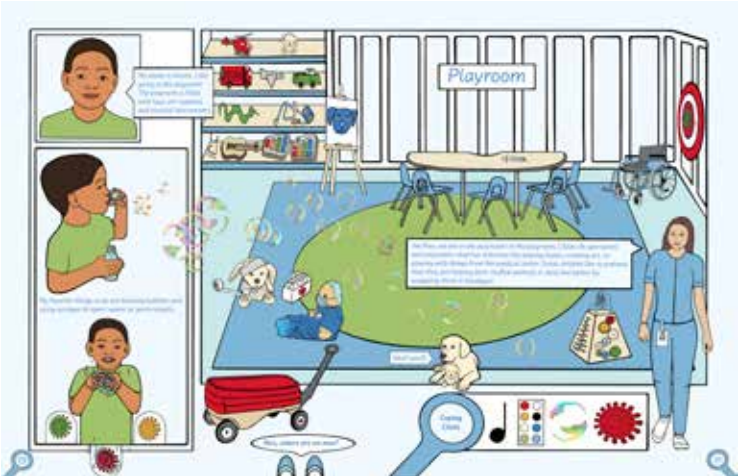
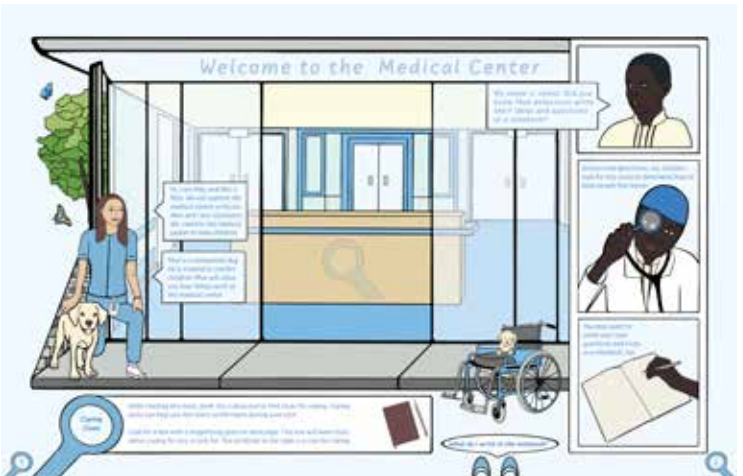
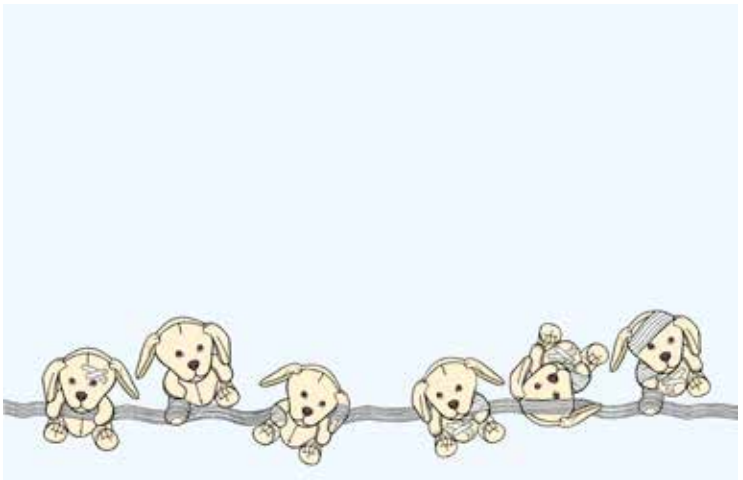
Final versions of the cover and spreads

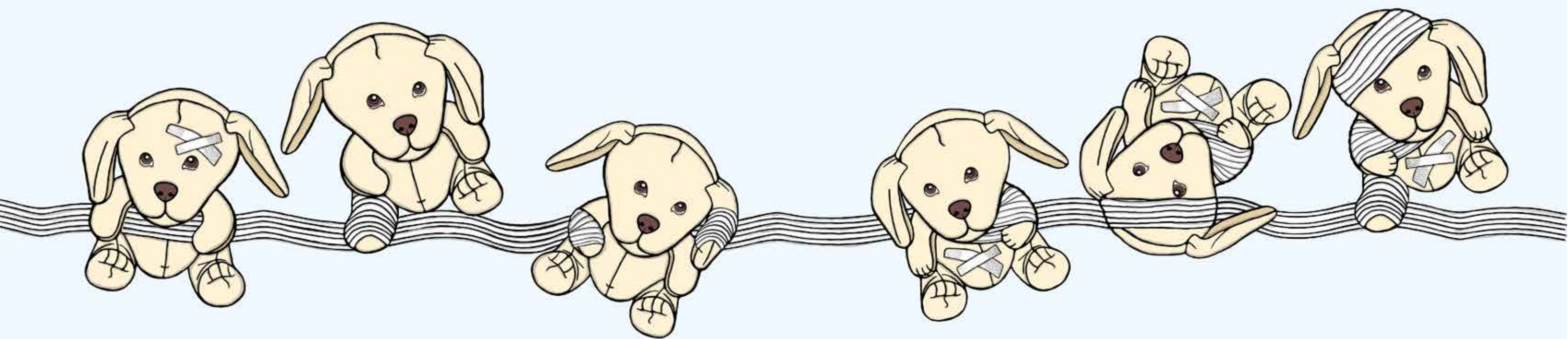
End Sheets

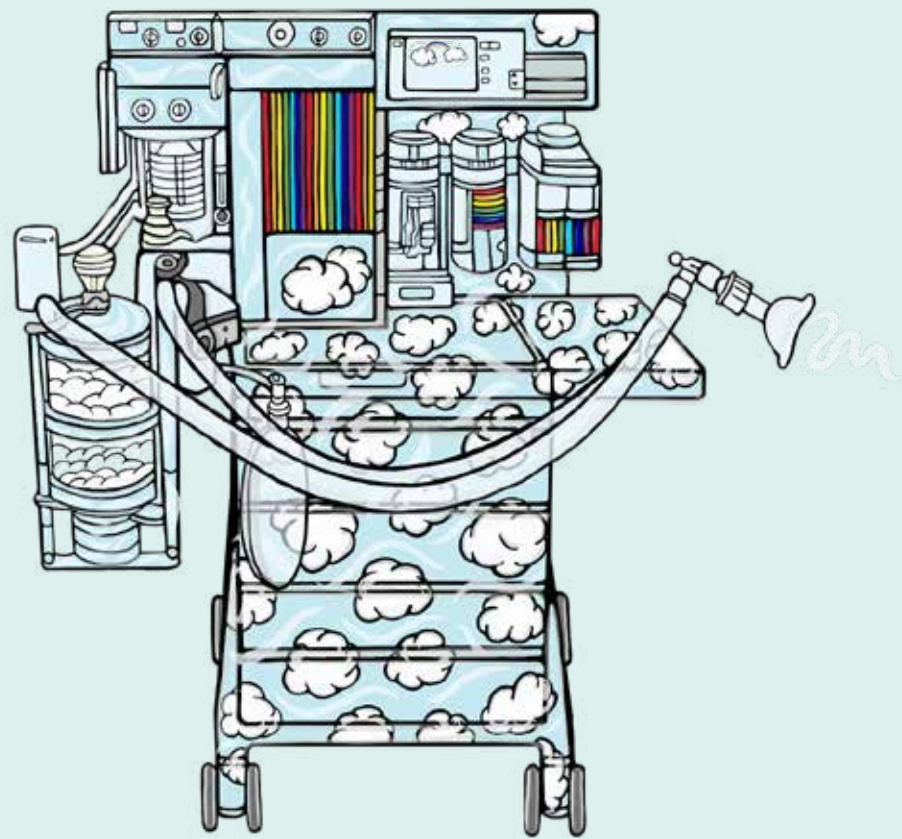
The end sheets are the pages that are found in the very front of books before the copyright and title pages. End sheets can be simple or complex. Most illustrators keep them simple. The goal with these end sheets was to use them to pull the theme from the cover with Max pulling on the gauze to wrap around his stuffed dog. The line of the gauze draws the reader to the next page. Plus, it adds some fun to the sheet. The end sheets were originally going to be many stuffed dogs all over the page until this idea came along.

Conclusion

Designing a children's medical picture book by integrating coping skills and first-person perspective was a complicated task that took a good amount of planning. The multiculturalism piece adds another level of complexity that made the design even better. Choosing the color for each ethnicity's skin was challenging. Designing the book with a new character on each 2-page spread sharing a new coping skill really helps to reach a larger audience than creating a book with one main character. The first-person perspective element was the most challenging out of all the tasks.

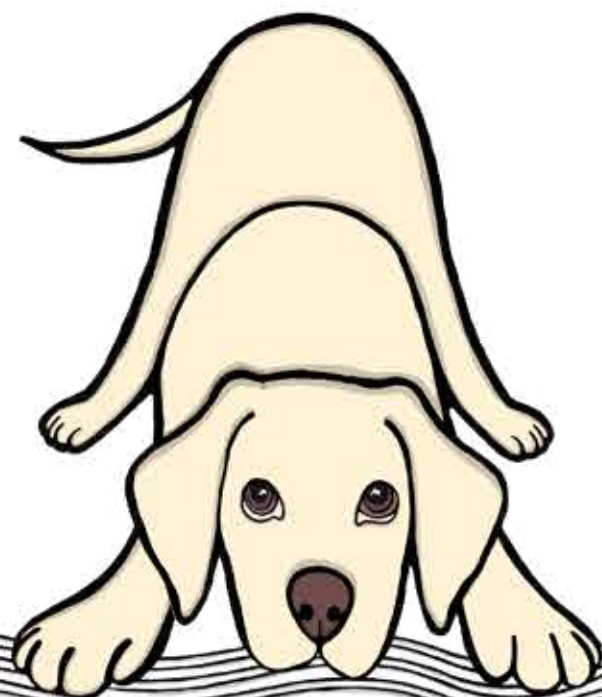






An anesthesia machine redesigned to be child-friendly.

Conclusion



Review

Children have medical visits to the doctor every year. These visits can be stressful for children and adults. Learning coping skills can help children to manage the stress of these visits.

Designing children's medical picture books with the integration of coping skills and the use of first-person perspective for desensitization can help children to learn essential ways of coping with stressful situations for their entire life.

Problem Statement

Parents and medical professionals struggle to help children cope with the stress of visiting a medical facility. Children's medical picture books are designed to educate children about a visit to a medical facility. Unfortunately, they are not successful at teaching children how to manage stress associated with the visit.

Solution

The solution is a well designed children's medical picture book that discusses coping skills for different aspects of a visit to a medical facility. Integrating coping skills into the storyline for children to read along with their parents will help them to be better prepared for a visit. First-person perspective illustrations of medical centers will help to desensitize children from the things they think are scary at a medical center. Educating children about the different areas of the medical center will help them understand what will happen during the visit. It is important that the book be entertaining. Designing a book that is interactive with a scavenger hunt and questions asked from the reader's perspective allows the reader to be more engaged in the story.

In this book, slippers were used to represent the first-person reader. Other options to represent the first-person reader that will be explored in future pages are the signing of a leg cast, asking more questions of the characters in the book, and examining the reader's red blood cells under the microscope. In addition, more pages will be designed for each of the areas of the medical center to include a laboratory, patient room, and emergency room.

A well-designed children's interactive medical picture book with integrated coping strategies and first-person perspective illustrations was the goal of this thesis. The final solution reached that goal by using a hybrid children's book with side panels found in sequential art to create a dynamic educational story that reaches children of all races and genders.

Deployment Plan

The overarching goal of this book design was to help children to cope with the stress of going on a medical visit. The only way that the Designs for Coping Thesis will benefit children is for the coping strategies book and the other resources to be used by children. It is essential to find professionals who are willing to advocate for these products to be used within their facilities to get the book and the resources in children's hands.

Further Research

Presenting this research along with the completed book to healthcare professionals would be an important step before publishing the book. Healthcare professionals have a unique perspective on how to help children and adults cope with the stress of a medical visit. Receiving feedback from healthcare professionals about the book and the concepts presented in it would provide invaluable information for future revisions as well as other books on the topic.



An example of an MRI coping strategies poster for use in medical centers.

Pre-Deployment

Before deploying the book, it is important to get the book vetted by medical professionals and children. Pediatricians, family practice doctors, pediatric nurses, child life specialists, and child psychologists would need to read the book and determine if it would work well in their practice. Children at libraries and schools would need the opportunity to read the book to see if it would work for them to learn and utilize coping strategies when they go on a medical visit.

Post-Deployment

After the book is published, libraries and schools will be contacted to determine if they would like to have the book presented to children at various functions. This will help to reach more of the target audience. An invitation for children's medical facilities to request the book will be sent out to determine which medical professionals would like to use the book and strategies with their clients.

Product Design

A medical facilities book and poster bundle will be created for those professionals who choose to use the product in their practice. Designing posters about coping skills for medical centers to hang on the walls in areas where children receive treatment would provide another opportunity for children and parents to learn when and where to use the coping skills to reduce stress. The posters will show the coping strategies for each area of a medical facility on an 18" x 24" laminated poster. The areas that will be included on the posters will be the waiting room, intake, emergency room, patient room, laboratory, imaging, pre-operative, post-operative, infusion, chemotherapy, and radiation..

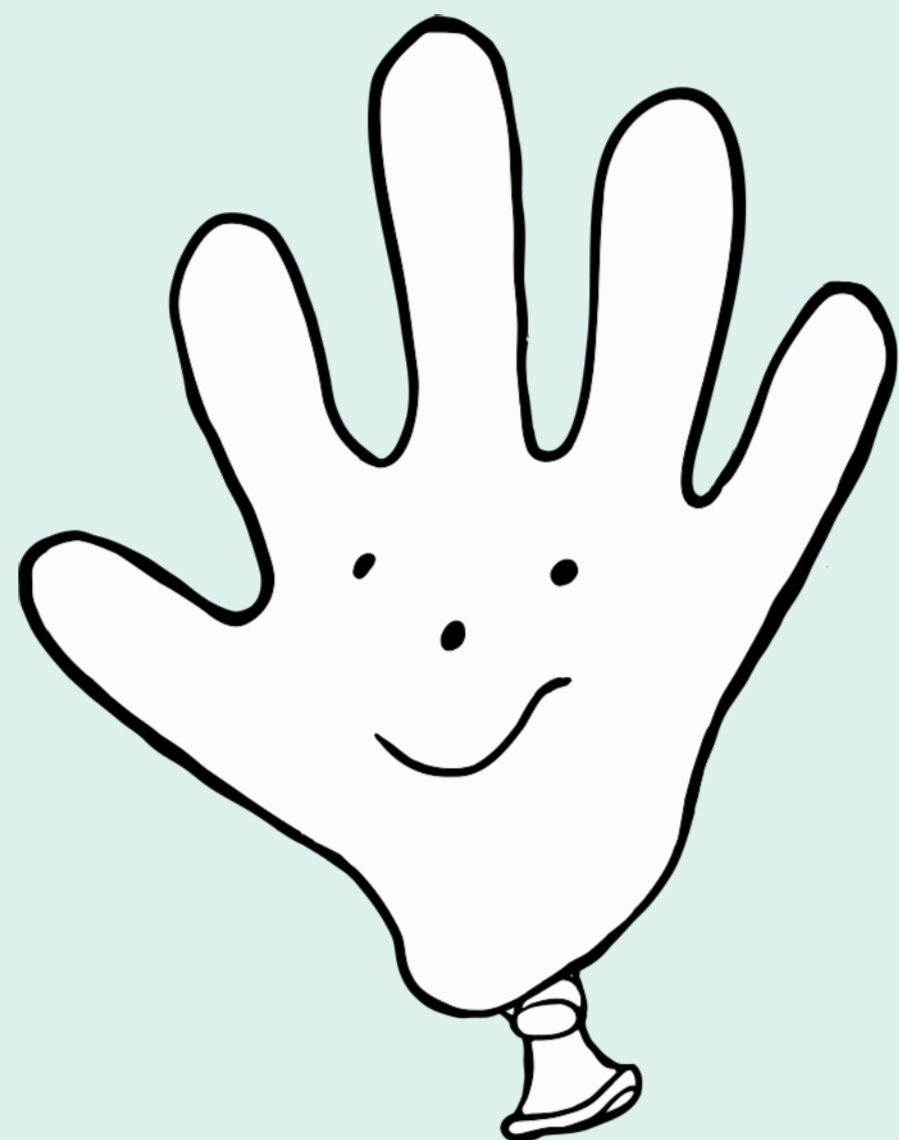
An optional item for the medical bundle would be Max's stuffed dog. The dog would have a bandana around its neck for each of the medical facilities to have personalized. The posters could also be personalized with the medical facility's information.

The medical facilities bundle would also include instructions for medical professionals and advice for parents on how to use the book and posters. The instructions and advice will include information found in the research of this thesis. This may include information that advises adults to read the book to the child a week before going on a medical visit. Another suggestion would be for medical practitioners to provide slippers to children who are going to be admitted to a medical facility for surgery before their visit.

At booksellers, the packaging bundle will include the book along with a pair of slipper socks and Max's stuffed dog. The slipper socks and the stuffed dog will help the reader feel connected with the characters in the book as well as provide tangible reminders of coping strategies that they can use while at a medical visit. A card with coping strategies on it will also be included in the bundle for parents to place in their wallet and take along with them to refer to while at a medical visit.

Further Designs

In addition to the book and posters, there are other designs for coping that can be utilized to meet the stakeholders' needs. These include a website, an app, a kiosk, and videos. The website would provide all the coping strategy resources and links for medical practitioners and parents to refer to. Ideally, it would include short animations with May and Max practicing the coping strategies for the viewer to practice along with them. The app would be filled with animations of May and Max showing how to use the coping strategies in each scenario. The kiosk would be an interactive platform specifically designed for waiting rooms at medical facilities for children to interactive with May and Max while they explore the medical facility and coping strategies. The videos would be of May, Max, and the other characters in the book describing how to cope in stressful medical situations. These videos would be on the screens of the medical facility for all the patients to view.



Appendix



Cover of Ready for Anesthesia by Holly Cordray

Email Conversation with Holly Cordray

Dear Ms. Jones,

Thank you for your lovely email; I'm honored by your interest in my work. Please use this link to access a video of the anesthesia-focused pop-up booklet that we used in the study (<https://youtu.be/aVns1FLoSx8>), and this link to access a video of the complete prototype book on tonsillectomy (<https://youtu.be/3EPS8zNd0Hw>). I've attached a couple of photos as well.

I'm excited to hear about your thesis and your project. I think child-focused tools for patient education are so valuable, and it's great to hear that you're working to create more. My book is not available for purchase because I found that pop-up books are extremely difficult to publish as an unestablished author. The publishing houses that have the infrastructure to produce pop-up books only accept solicited submissions, and I wasn't able to find a landing place for my book. I think the pop-up format has many benefits in this setting, but ultimately it wasn't feasible, and I wouldn't want your project to hit the same brick wall. Yet I think there's a lot of potential for designing an interactive book that doesn't have the same publishing difficulties. Please keep me updated on your project and ideas—I would love to see what you produce. Also, I'm currently working to develop a mobile app with the same goals as my book, and I would be glad to share that with you once we launch it in the next few months.



An image of the *Ready for Anesthesia* book discussing how anesthesia and vital signs using flaps to engage the reader

Here are few thoughts on content, design, etc.:

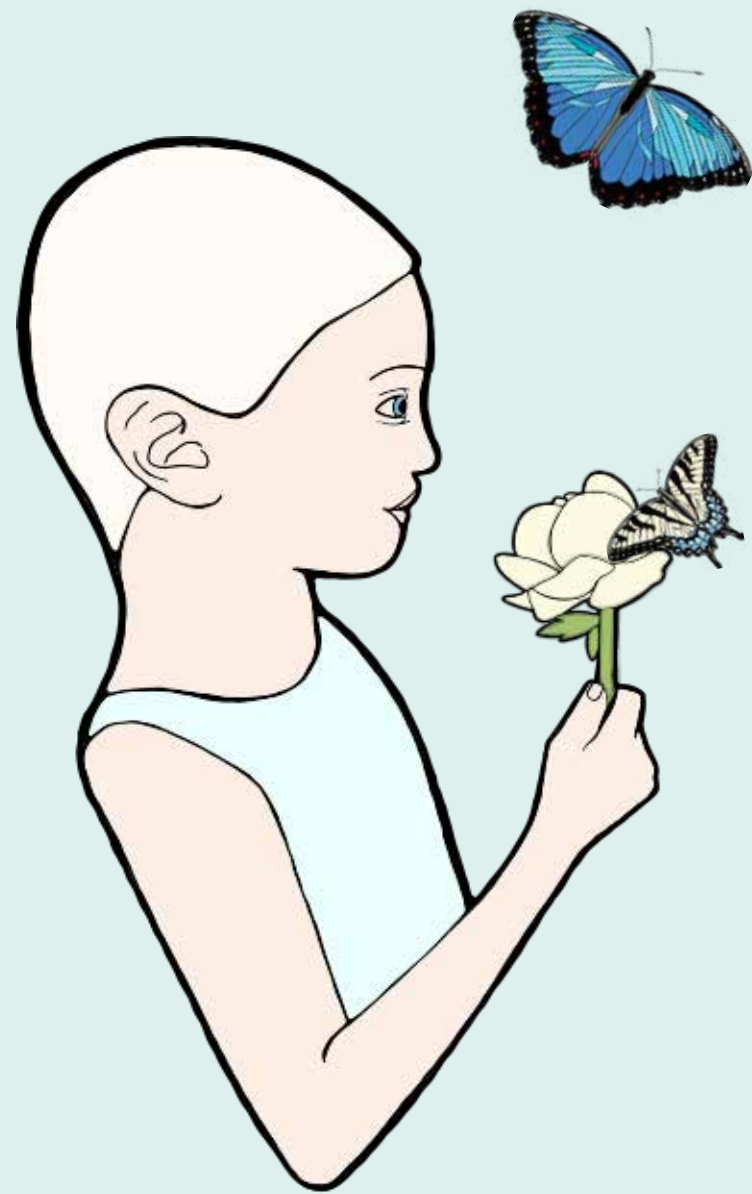
For any disease, procedure, or treatment process, there is a mountain of information available, and I think a key step of designing a book for children is to determine what subset of that information is worth conveying. Try to strip out extra details that might be distracting so the amount of material for your reader to learn isn't overwhelming. In the same vein, the Flesch-Kincaid readability scale is a helpful metric for making sure your text is digestible for a child. Shorter sentences are a big help.

Do you know what the topic of your book will be? It can be helpful to shadow a doctor with expertise in the condition you're discussing, which gives you a firsthand view of what the patient experiences. Good to have someone review your final product as well. To make your book more generalizable, I recommend avoiding giving any medical advice or including any details that may be institution-specific (setting up expectations that might not be the case for every reader).

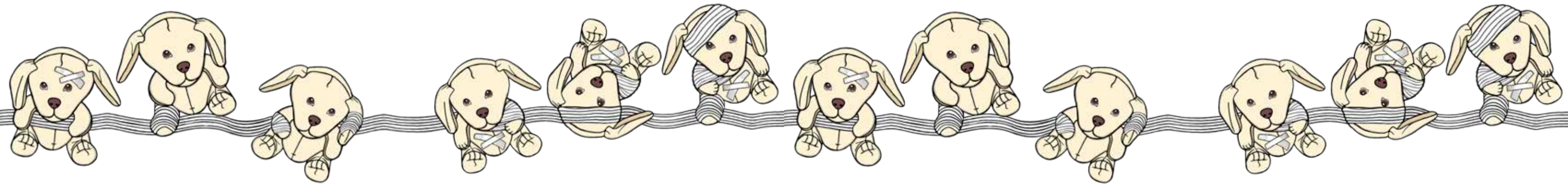
I would also encourage you to include suggestions for positive coping strategies. Are you planning to write your book as a narrative/with characters? Giving your readers specific ideas for ways to approach the procedure or manage their condition positively may help make their coping more active and concrete.

Please feel free to reach out with any questions, and best wishes for your work! I am glad to have you include the appendix and images in your thesis and website. Thank you for the opportunity to review it.

With warm regards,
Holly Cordray



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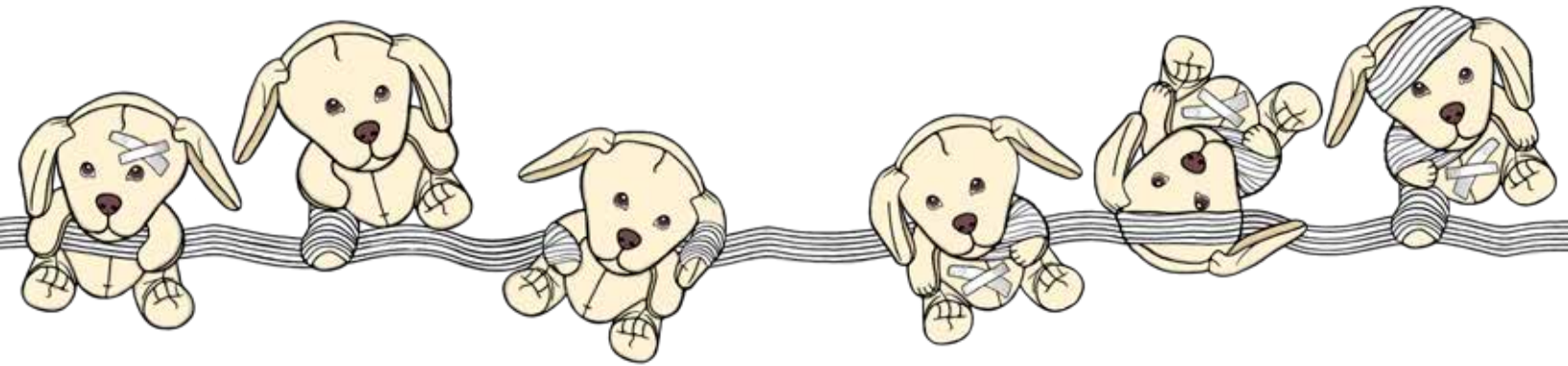
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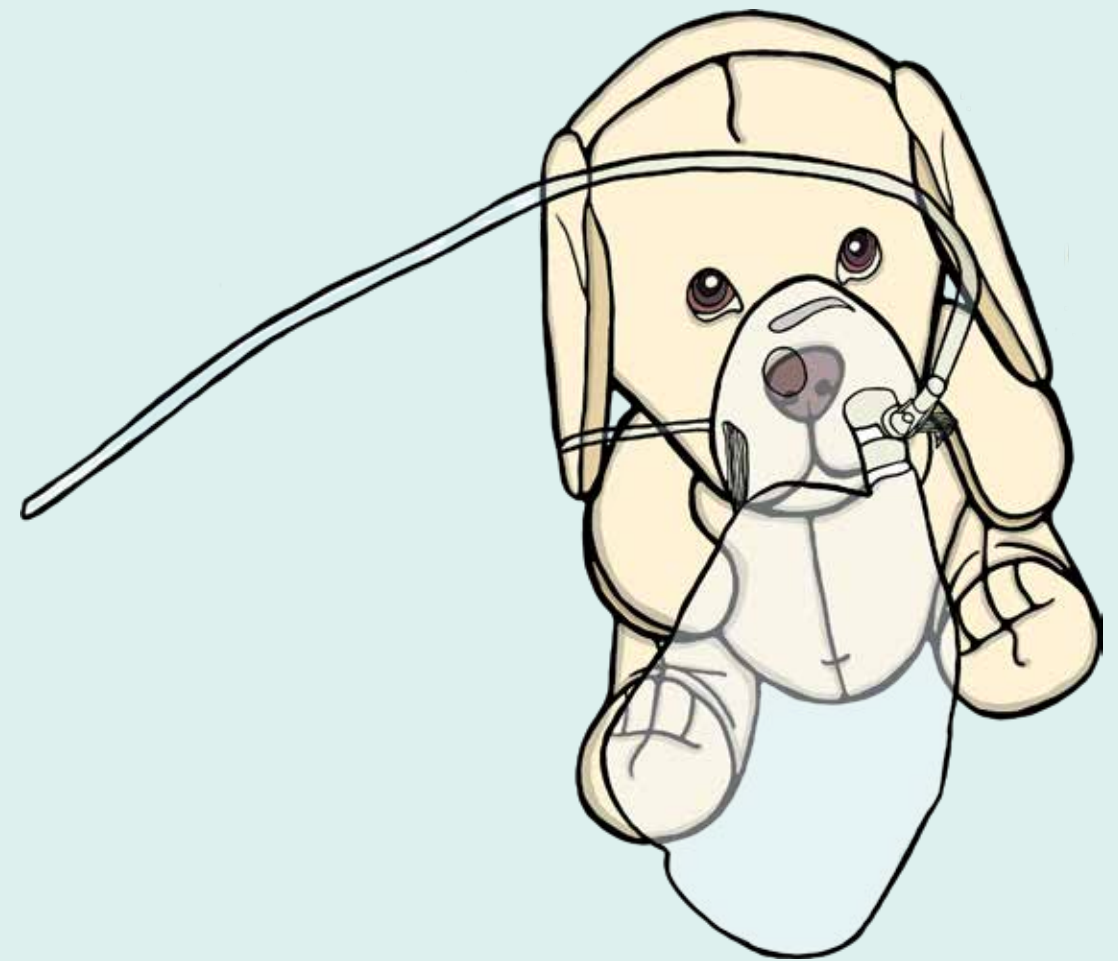
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