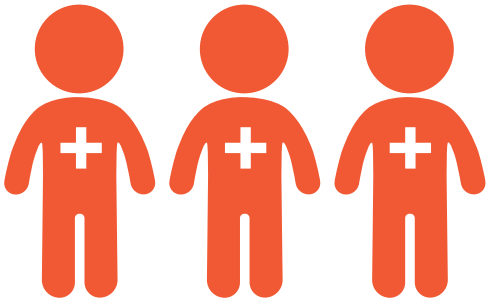
GOMO

Human-centered design can alleviate stress
in hospitalized children.


PAMELA G C KNAF

RESEARCH

What are the main causes of anxiety in hospitalized children and how can we limit this stress?



3 million children are hospitalized each year in the USA.

Preschool-aged children are particularly vulnerable to the effects of stress and fear during hospitalization.

Hospitals can take away freedom, consistency, choices, and have an overwhelming number of new faces.

Physiological stress responses can directly influence wound-healing processes.

INTERVIEW INFORMATION

Claire Foley, RN

"I worked in Pediatric Hematology, Oncology and Bone Marrow Transplant. Our young patients had central venous access devices of various kinds. One type was an implanted port. This port had to be utilized when they arrived back at the hospital so we would have intravenous access. This involved using a fairly large needle and caused many patients a lot of distress; they dreaded having it done. We did use some numbing cream to help alleviate some of the discomfort, but we also tried various strategies to distract children, talking to them about things they were interested in or telling them funny stories. We also tried to give them some control when we could, letting them decide where to position themselves, whether to have us count to three or not, whether to hold someone's hand during the procedure, if they wanted music or TV on as a distraction. Effectiveness varied by individual, but I would say that overall, giving them some sense of control helped most, though what that meant for each child might be different. Another thing that made patients nervous was starting chemotherapy because they often experienced a lot of nausea and/or vomiting. They would dread having those symptoms. Interventions for nausea were mainly via medication, but giving patients (especially the ones who were a little older and could communicate the onset of symptoms more reliably) some information about when to ask for support/medication (i.e., before nausea became severe or progressed to vomiting) helped to alleviate some of the anxiety. Other types of pokes, such as starting IVs or drawing blood, also make children anxious.

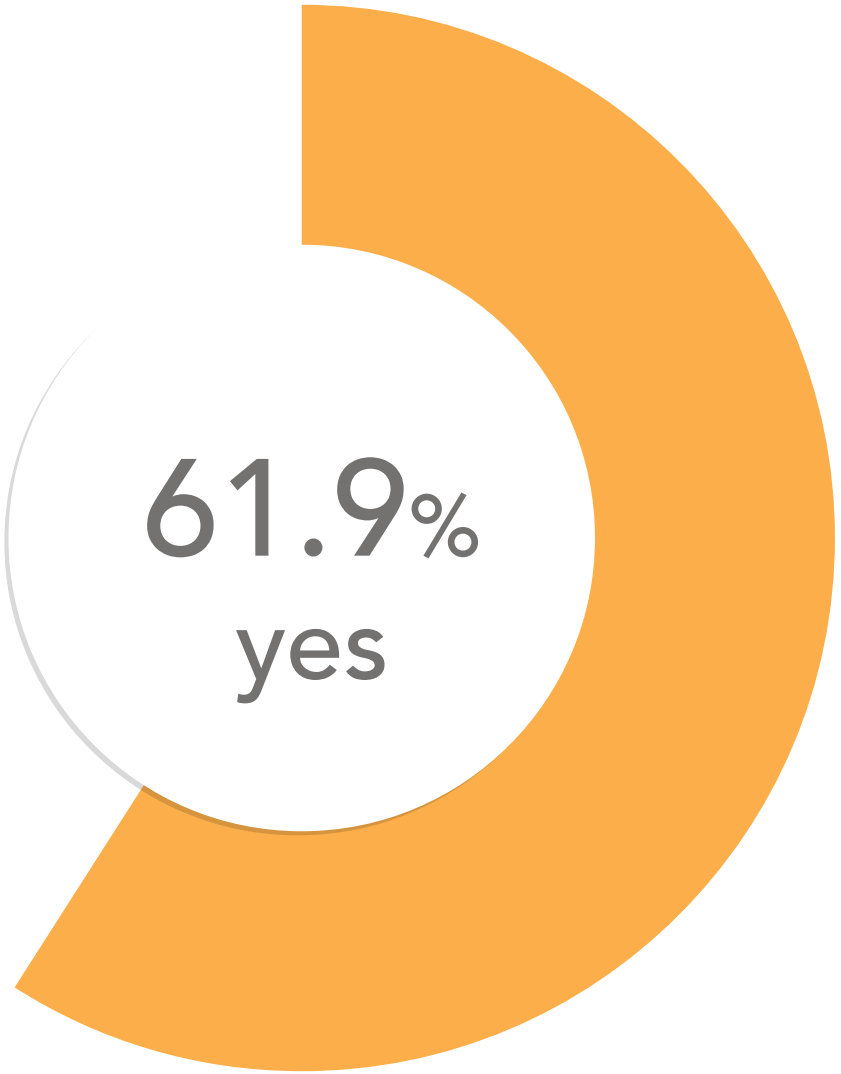
Again, giving the patient some say in how to proceed with the procedure helps. Distraction helps. Sometimes using dolls to demonstrate to the patient what will happen helps. Also, for children more experienced with these procedures, pretending that a doll or toy was a patient who needed a procedure could help. Having the child tell their dolls or toys what will be done and letting them reassure their toy about it sometimes helped."


AMELA G C KNAFL

SURVEY RESULTS

To better understand a child's perception of going to the doctor, I asked a sample group about their experiences as children.

Did you experience fear or anxiety when going to the hospital or doctor as a child?



Please describe your best experience at the hospital or doctor's office, as a child, in a few words:

"I Got stitches when I was 8 and they let me watch after I asked them a couple times."

"When I went to the U of M children's center for a heart monitor, the staff was very child friendly."

"Best was when the nurse discussed the emperor's new groove with me."

"Friendly and playful doctor's approach."

"Good nurses who take the time to explain procedures/surgeries."

"Kind words, eye contact, even flow of time/events."

"Doctors who tell jokes."

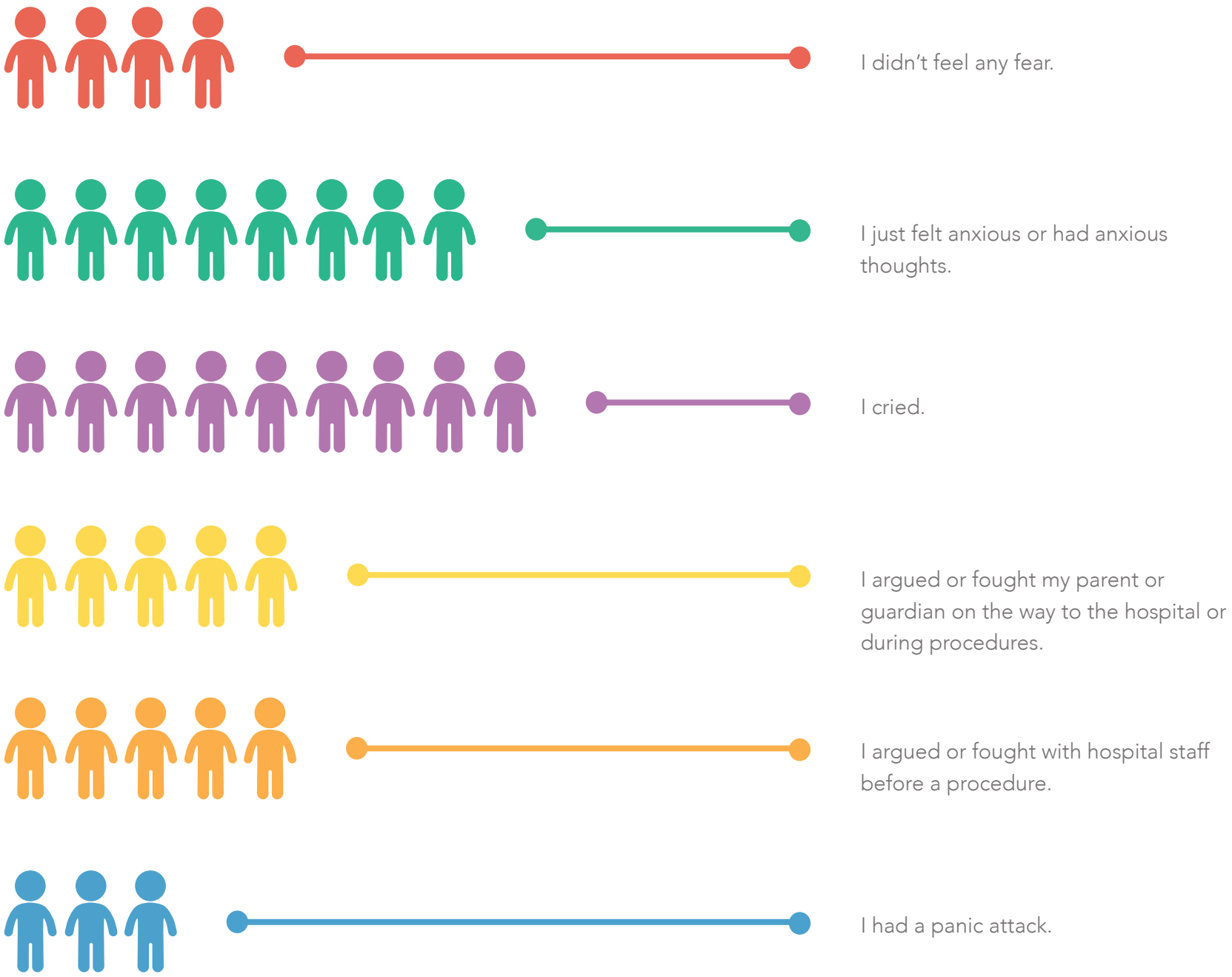
"The doctor was nice and had a charming voice. We were talking like friends. The nurses made jokes and comforted me when I cried after the injection. I felt cared for and respected. I wasn't being blamed or treated as an object."

"When I had my tonsils removed, I got ice cream."

"It was in the ER. I felt like I wasn't in danger because everyone was calm. I figured out how to change my heartbeat and messed with the nurses."

"Best was when I had encephalitis and the nurse rolled a hand-made toy car in through the door that a local man had made for kids at the hospital."

IF you experienced this fear how did you express it?


I didn't feel any fear.
I just felt anxious or had anxious thoughts.
I cried.
I argued or fought my parent or guardian on the way to the hospital or during procedures.
I argued or fought with hospital staff before a procedure.
I had a panic attack.

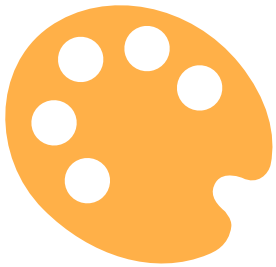
What would have made you feel better about going to the hospital?

Playing with toys that represent hospital equipment

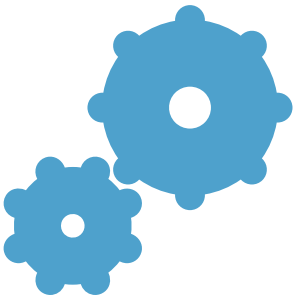
Toys or games in general to distract you

Rewards for procedures

Parent explaining what was going to happen



Improved environment such as lighting and colors



A virtual companion

Being in control of minor aspects of the situation

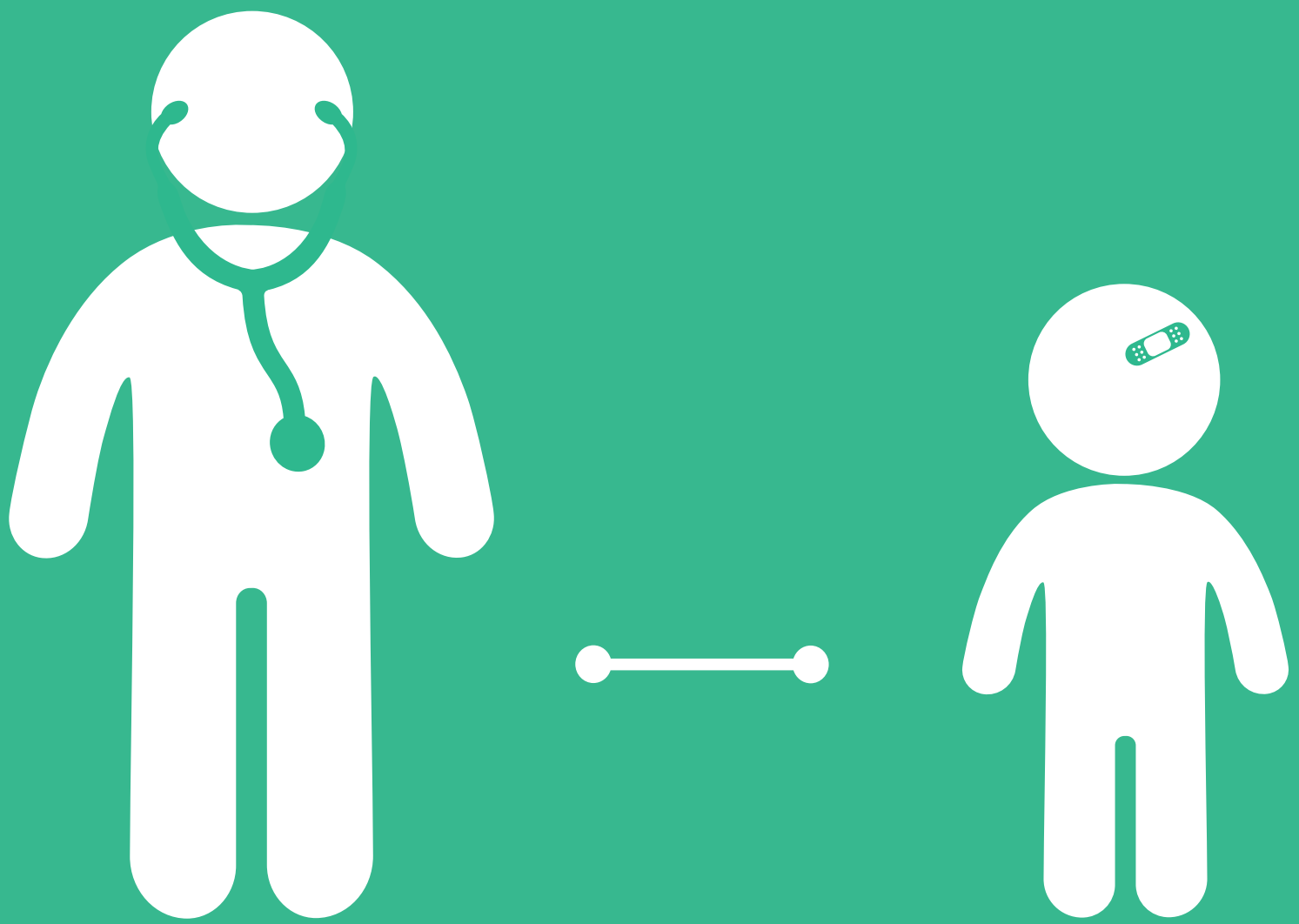
Improved hospital gowns

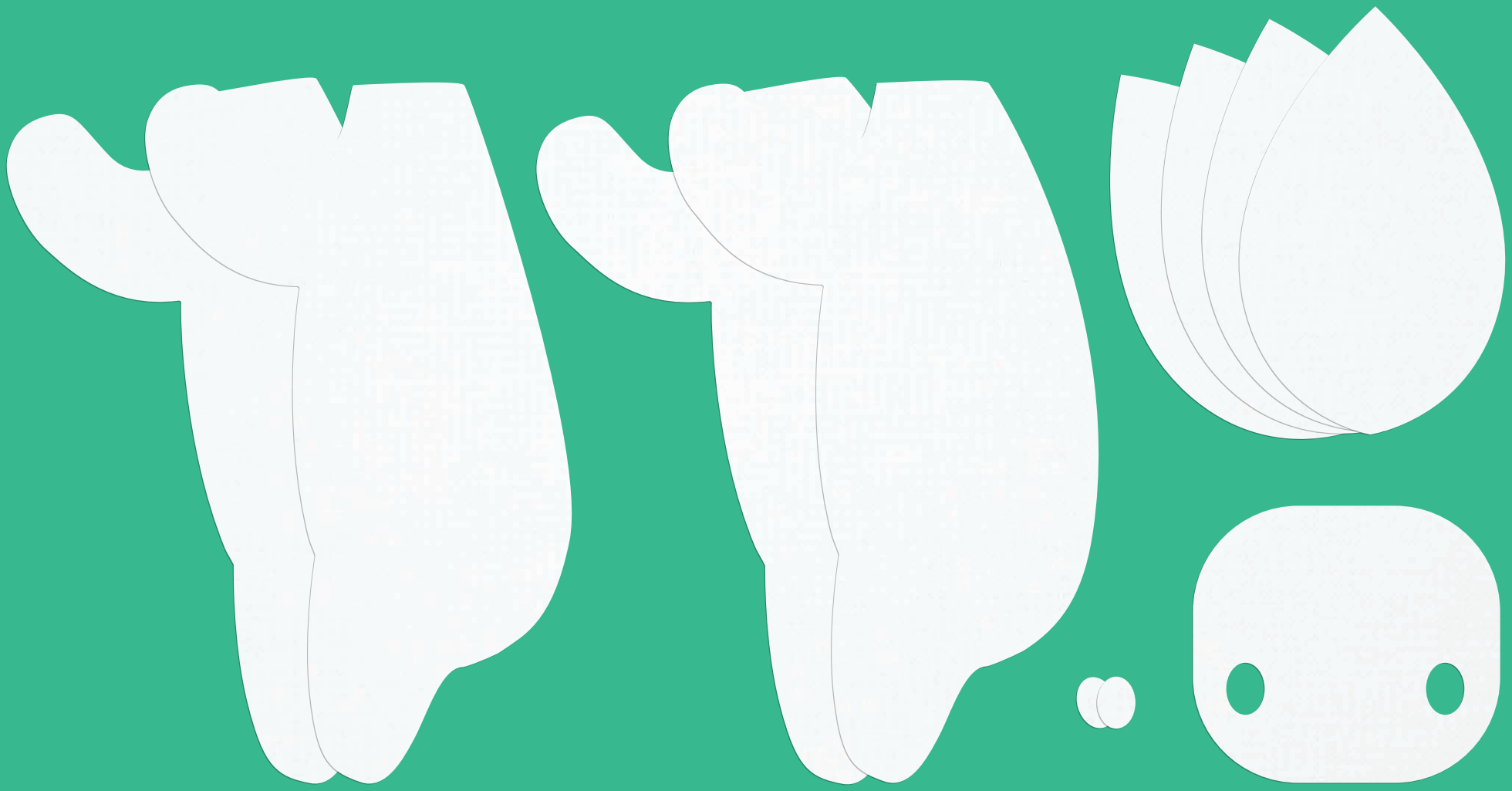
CREATING GOMO

Gomo: A plush toy that promotes positive interactions and helps the child understand his or her circumstances in a fun and relatable way.

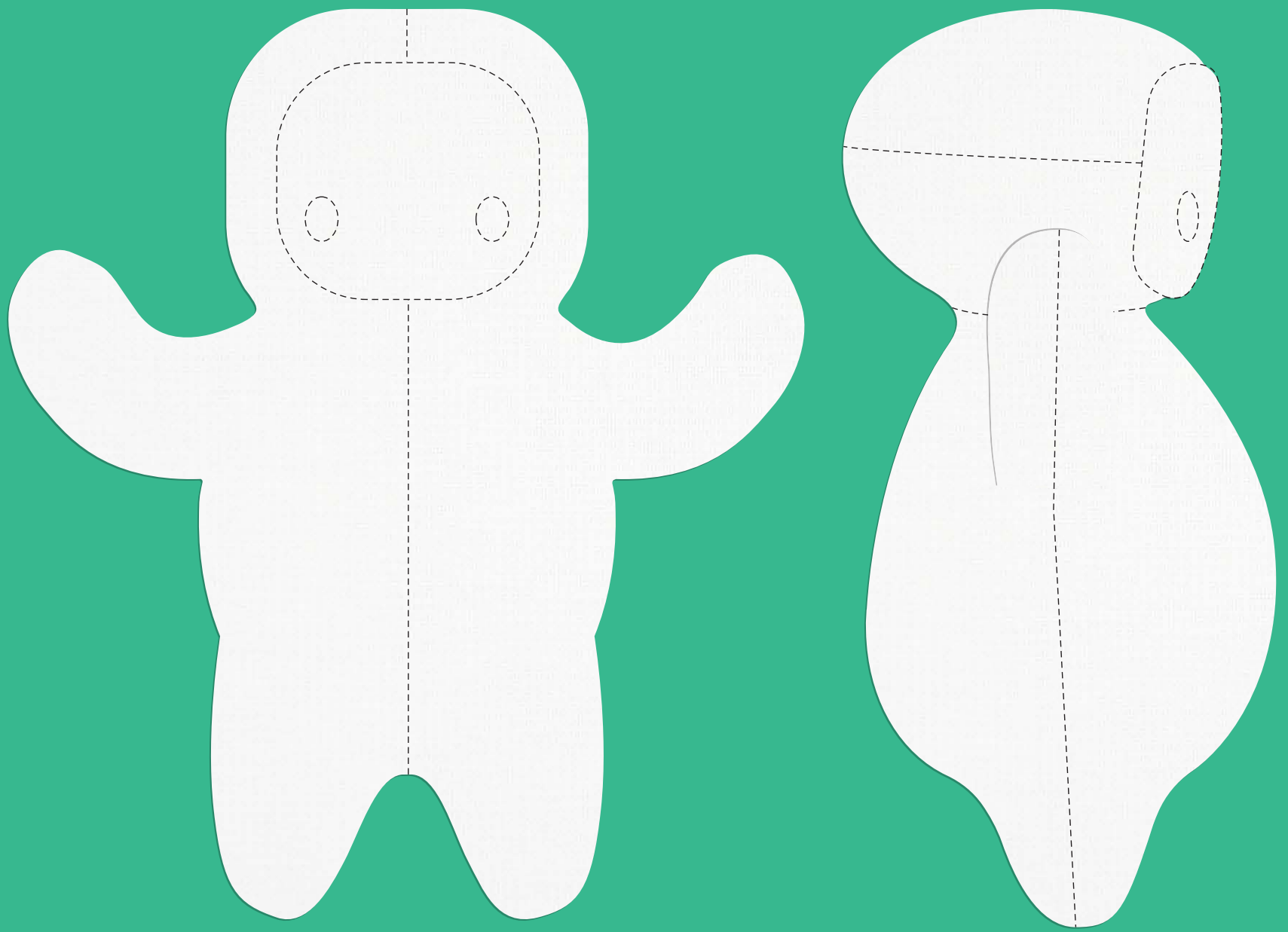
INSIGHTS

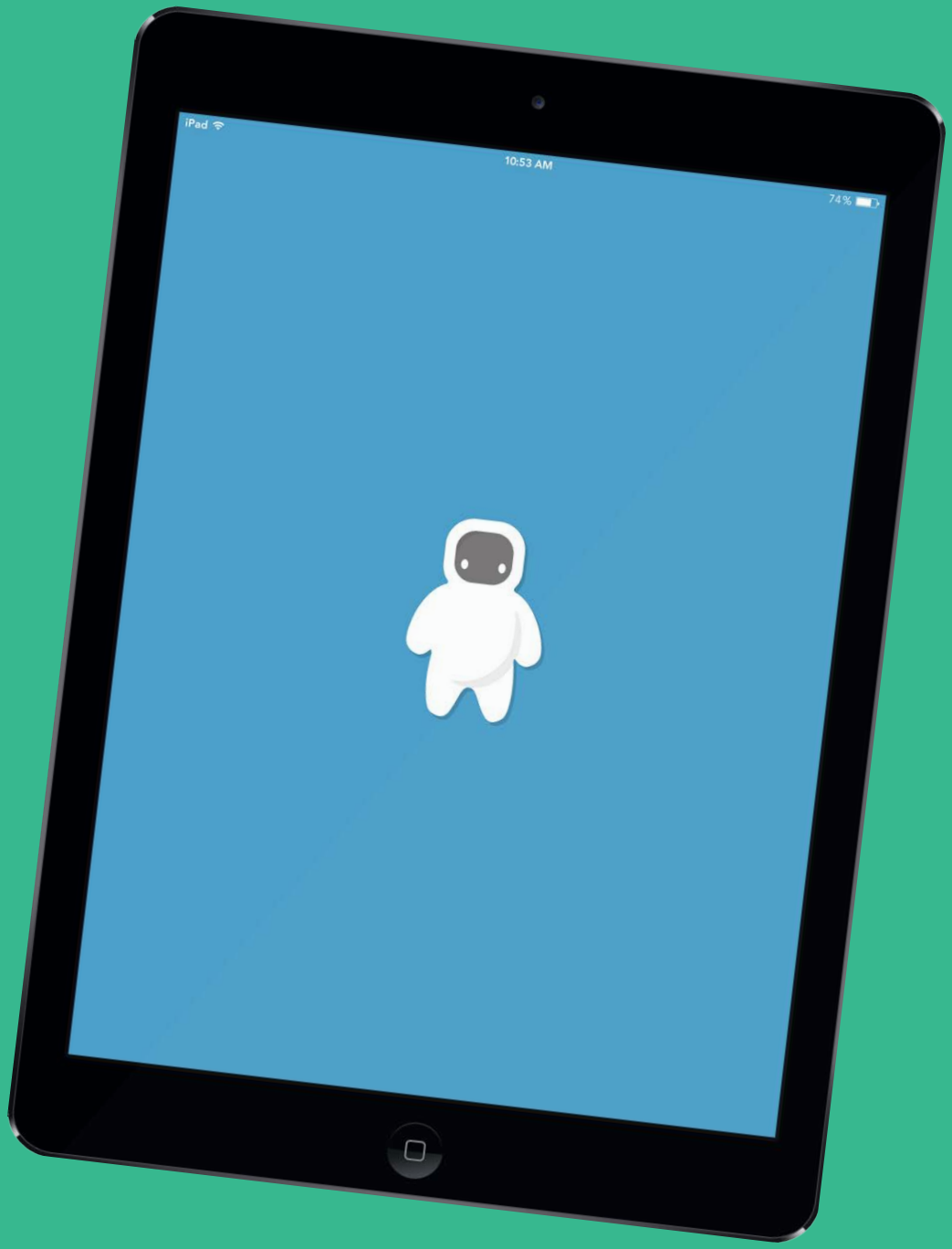
After sifting through my research, I realized that a positive interaction between staff and the child really made the difference in a child's experience. Children felt less anxiety when adults explained what was happening in simple language and let them participate in simple choices. Distraction, in the form of toys or games, also helped kids deal with anxiety. Consequently, I created Gomo, a plush toy that promotes positive interactions and helps the child understand his or her circumstances in a fun and relatable way.





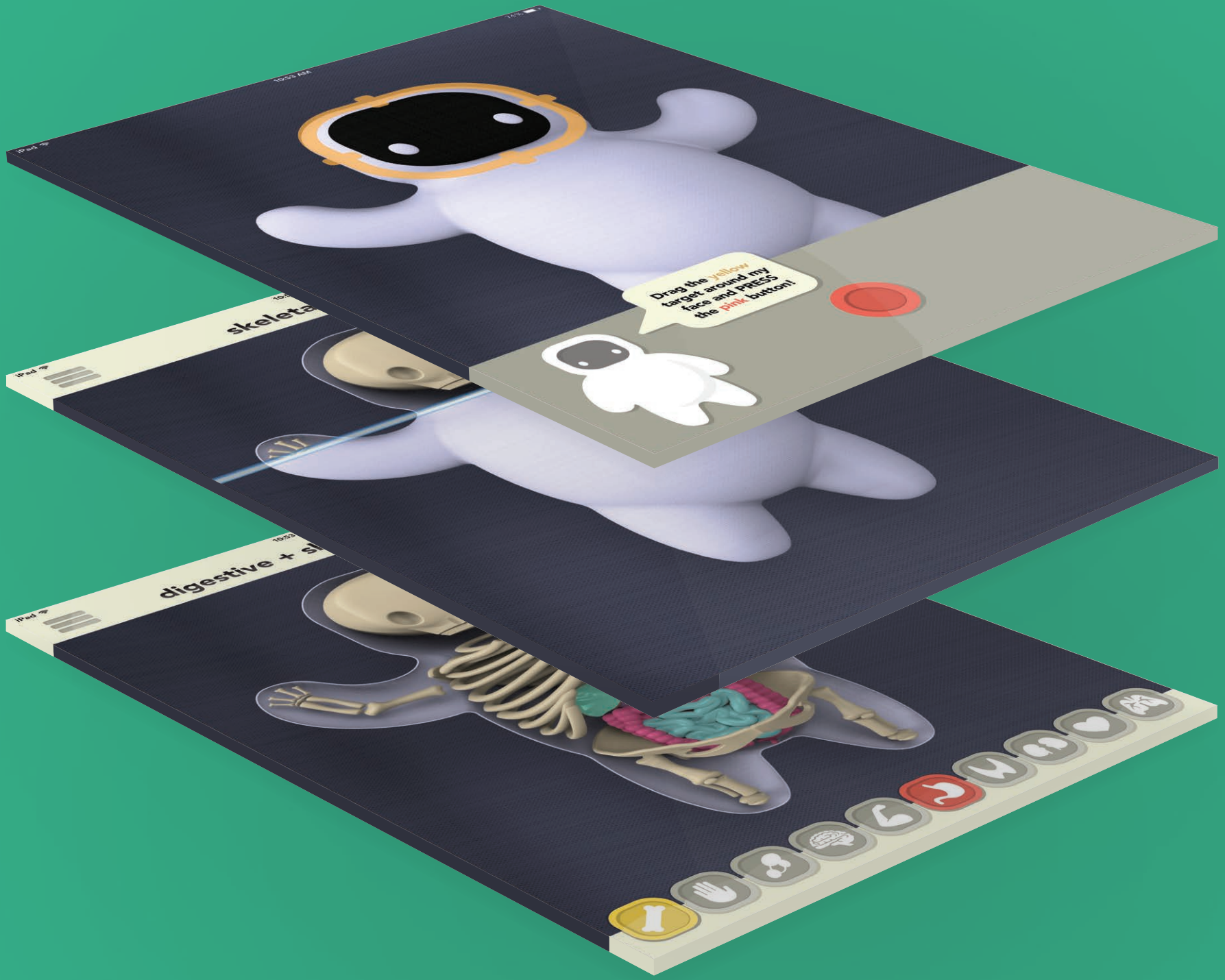
PATTERN





WHAT IS GOMO?

Gomo is a plush toy that interfaces with an augmented-reality point of care iPad app. Gomo is designed to use as a tool for hospital staff to explain illnesses and injuries to preschool-age children. When the Gomo app scans the stuffed toy, it projects the body systems in 3D onto the surface of the toy. The Gomo app features ten body systems: the skeletal system, integumentary system, immune and lymphatic system, respiratory system, cardiovascular system, nervous system, muscular system, digestive system, endocrine system, and urinary system. When Gomo is not interacting with the app, it is a metal-free toy that can be held for comfort during procedures like CAT scans, MRI, and X-rays.


Drag the yellow target around my face and PRESS the pink button!
digestive + sk

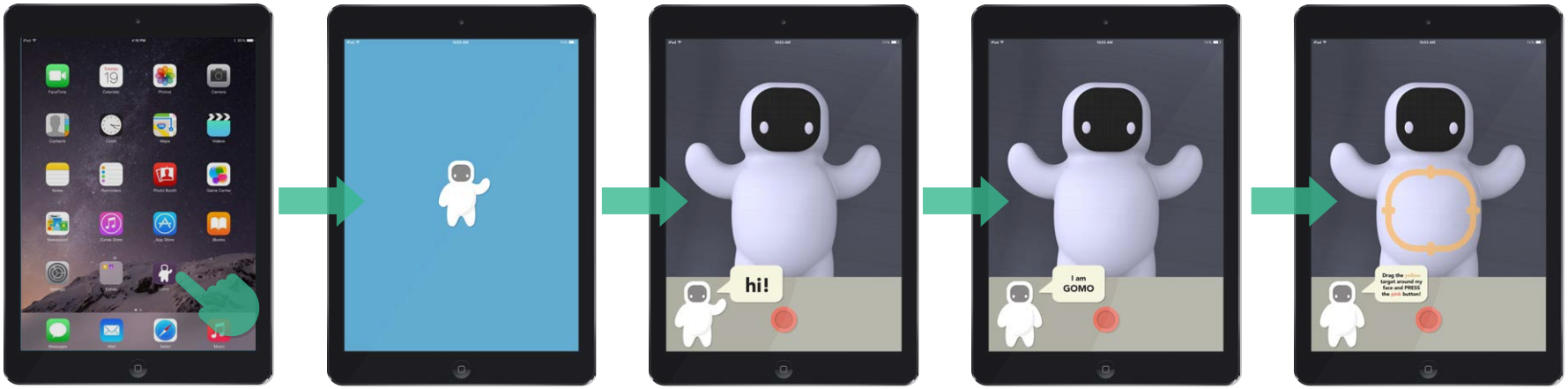
click on the Gomo app

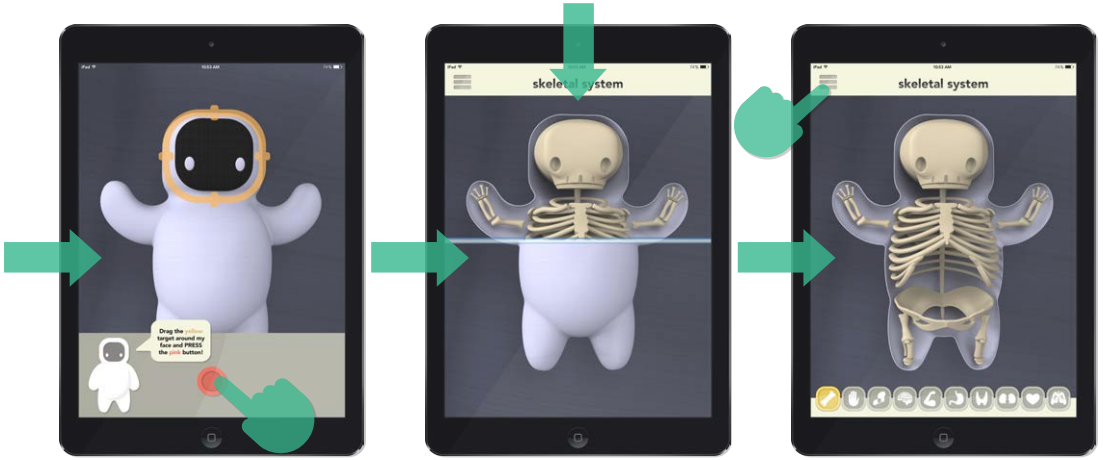
load screen

place toy under Ipad

Gomo greets user and gives directions

line up target with face





click on scan button

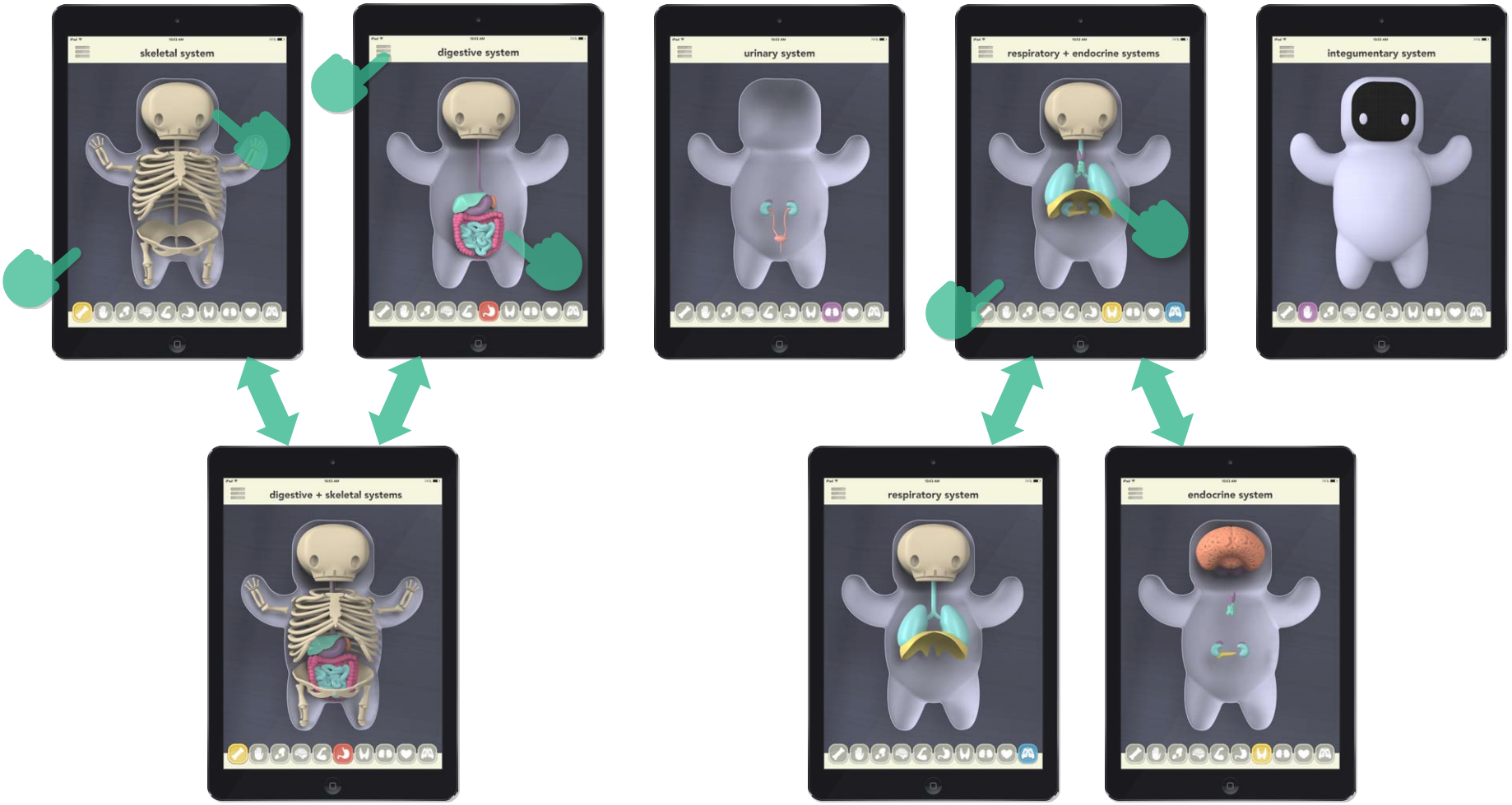
app scans toy

reveals 3D organs superimposed

APP FLOW

click on icons for different systems

click through ten body systems



click icons to add systems

click icons to add systems

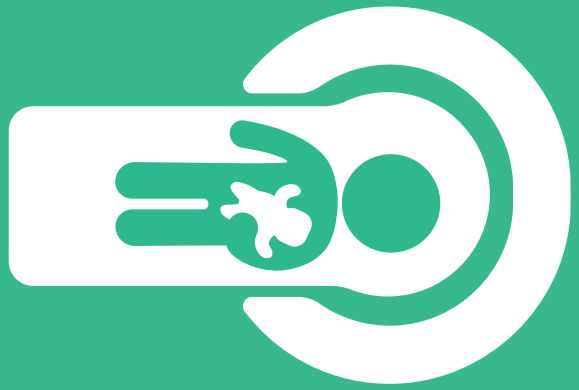
click on individual organs for close-ups

Gomo is given to child
by hospital staff

Staff uses Gomo as a tool to
educate children

Child can use Gomo
for comfort

SEQUENCE OF USE



Gomo is metal free, for use during hospital procedures

Gomo can be washed using standard facilities

Gomo is cheap and easy to produce

THANK YOU!