



Let's walk!

Design the gait test station for children

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Appendix A1

Interviews with Lab GenR

Interview of the gait test procedure

Interviewee

Associate Professor at rehabilitation medicine, the Department of Rehabilitation Medicine at Erasmus University Medical Center; Lead Ph.D. on the project for the parent MRI (Magnetic resonance imaging); Focusing on the parent part of the generation R

Interview results

Gait test in GenR

- Parts for both parents and children
- Children are at the age of 13 (start at 13) Interview with L&A 12-14
- They do a gait as well as a muscle exercise
- Children come individually or with their parents (individuals asked further)

Set up of the gait test

- It is situated on the hallway because the mat is too long to fit anywhere
- The gait software on the laptop is user-friendly and easy-to-use.
- 10 mins introduction for test conductor so as to practically do the measurements (mostly learn how to walk with the laptop, then the instructions)
- The instructions are written down to tell them what they have to say;
- For the learning of the software, learn how to start it up, what to click or not, how to save data

Protocols-procedures in GenR (Figure)

- Protocols (the same with Rotterdam study): initiation walk and normal walking 6 times in

total-> turning in the middle of the mat once
->tandem walking -> dual-task walk

- Dual-task walk importance: they keep walking while thinking. Even if they don't know the answers, they should be encouraged to keep walking. (speak out a number is more important than the actual number)
- Explanation of the protocol: I think the explanation is quite simple;
- Children are not explained a lot of what the gait actually measures because they are not quite interested as parents are.
- But it is easy to tell children what to do;
- Compared with MRI for 40 mins, a gait test is actually fun;
- Extra mats less than 1m is set in front and at the end to let users think they're actually walking on the mat (so as to don't abruptly stop for the measurement)
- Initiation walking is important to record for analysis (Parkinson disease, already hard for them to start)
- Children don't need to take off the shoes (flattie instead of stiletto heels).
- The patients imagine an orange cone in the middle and then turn around. A real cone can not be put on the mat because it will be recorded;
- Some confusion among students, some let participants have shoes on and some off.

Suggestions to gait test station in Child Brain Lab

- Need to have space and It also has to be a bigger hallway;
- If in the hallway, people have to walk past it, have to make sure there is no damage to the

mat and need cleaning carts

- A tiny table is needed for the laptop
- The gait test is one of the tests, all the four parts in the whole surgery.
- Keep the specific order of the protocol (important!)

Interview of the test conductor's working experience

Interviewee

- Two medical student, who have conducted the gait test with children at the age of 12-15.

Sensitizing materials

Consent

I would like to record your voice during the interview. There is nothing right and wrong about what you say. All your expertise and opinions are valuable to the project.

A transcript of the interview will be made and used for this project. I would like to ask you to check the transcript after the interview if you want.

Preparation before the interview

To accelerate the interview, I would like to ask you to fill in two journey maps. One is the most fluent gait test experience that you have with one child. And one is the most exhausting test experience. Then, think of your expected children's gait test station. I give you the link to this map. You have to have an account on this website. If you are not willing to sign in. You can use the format below to write in an excel sheet.

Edit link to Medical student 1

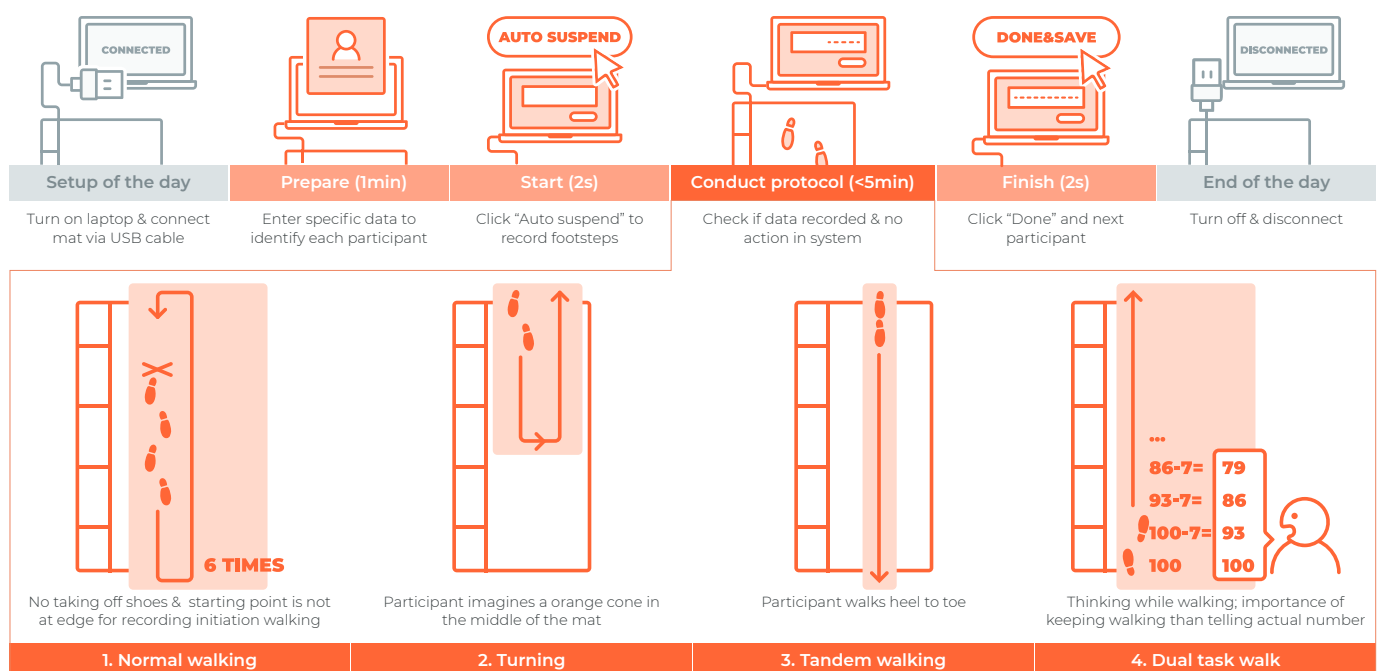
<https://miro.com/welcomeonboard/DCCLnfsjrXBh2Zx0RBHzxVpOJ60hRWPvURam1ZFeCmx7pbi68wUod2oNUUR760St>
Edit link to Medical student 2

<https://miro.com/welcomeonboard/LEqxHnWQCcOIOG2GLZgnsPFBBGXu7IkMxDn3dBCIz93DhjV50yJ7Gp98NmPyDGdO>

Interview Questions

- The interview will mainly talk about the journey map above with some other short and quick questions.
- Some listed questions (about children)
- Any other highlighted and frustrating moments?
- What's the difference when you talk to a normal child or child with an intelligence problem?

Flowchart of the gait test



- Can children understand the test process (at different ages/different problems)?
- Is there a big difference when testing with different children?
- Do you think test with children has more disturbance?
- Would child emotions affect the research?
- What're the suitable emotions that children should have in the research?

Your advice for Child Brain Lab

- Do you have any other suggestions on design the gait test station? (Hygiene, security, etc.)
- What gait test facilities do you advise to be used in Child Brain Lab?
- The sensitivity of the mat (is there a problem?)
- Orders / sequence of the tests, recommendations?

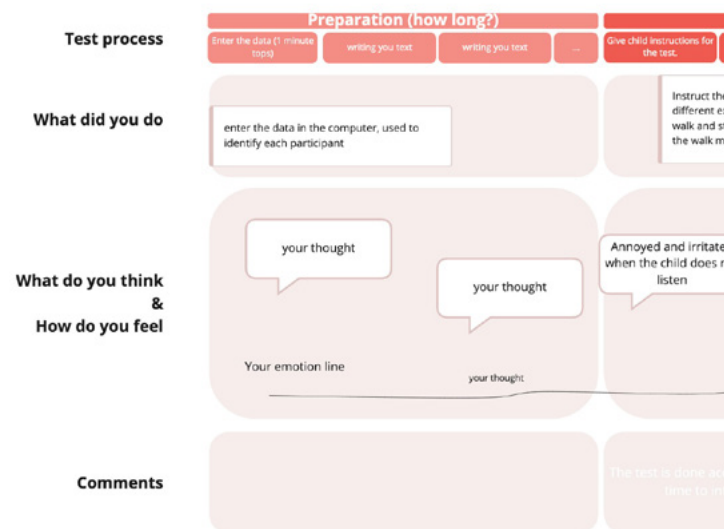
Interview result: medical student 1

Journey map of the gait test with children (the most fluent one in your m
Please try to memorize as much as possible



Interview results: medical student 2

Journey map of the gait test with children (the most exhausting one in y
Please try to memorize as much as possible



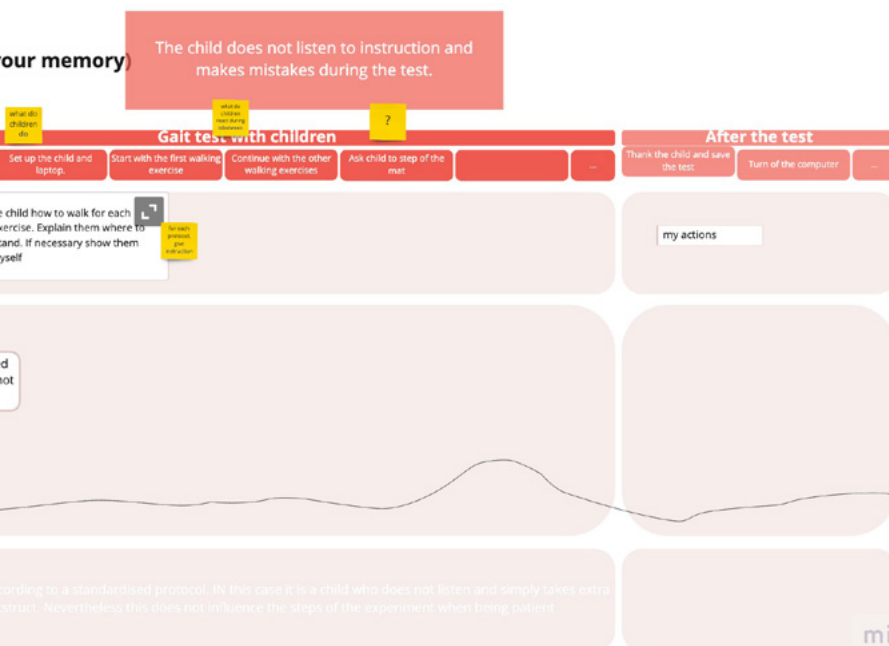


Your desired gait test station

What do you expect at a child gait test station? what do you want for you what do you expect for better communicate with children? & what else c

Please draw you expected child gait test station here.
You can draw on paper and take a picture here.
Or you can open Miro via phone and finger drawing...

I don't understand what I should draw?
However what is needed are all the appropriate equipments: e.g gait mat, functioning computer with the program gaitrate, some tape to mark specific distances etc. for the experiment and enough space to walk around.



Your desired gait test station

What do you expect at a child gait test station? what do you want for you what do you expect for better communicate with children? & what else

Situation 1: the most fluent gait test: a child **who understands** all the exercises **after explaining it the first time**, who likes to do the gait test and who can **walk fast** (so it save you more time ;))

Situation 2: the most exhausting test experience: I don't really such an exhausting experience, but can imagine one when a child thinks the test **makes no sense and a child who doesn't understand the exercises** after explaining it for more times in a row (and show an example of it by doing it yourself).

For, example we have one exercise where the kids have to walk to a point (halfway) and then make a small turn (turn around) and walk back. With such exercises **it's actually necessary to have a marking on the walking mat**. Then it's easier to explain and to understand for the kids (more efficient), and then the kids will do the exercise more in the same way.

Moreover, it's important to explain exercises in the easy way (better communicating with children) and it really helps to show an example of how you expect them to do the exercise.

Appendix A2

Child expert interviews

Conclusions of the 4 interviews

Communication with children

- Children are easily instructed and taught; self-study is in low efficiency to children;
- The instruction to children should be short, clear and firm; keep the instruction flexible when doing; Use body language to communicate when necessary;
- When they become familiar with one activity (for years in PE lessons), you can tell children why you have this activity and how to do it better.

Encouragement

- High five and praise compliments are for PE lessons instead of stickers; there is no place for the sticker sheets;
- Children need positive feedback when encountering difficulty;
- For older children with fewer interests in activities, give a sense of necessity is necessary;

New environment

- When children are in a new environment, there is a transitional period of insecurity; they watch around and fix their sights the objects or people that gives them a feeling of security.
- Not all the children have the transitional period of insecurity, but for the younger and the shy, it takes more time for them to overcome this phase.
- All the children are willing to explore in a new environment. Different behaviors are performed here: some just look at what interests them, and others will walk over to play.

Attention & distraction

- They can focus on something that they are interested in;
- In general, children nowadays are easy to lose their attention because more options are accessed to them;
- It is hard to get them focused on one activity for a long time, and they quickly get frustrated (a sign of losing interests in one event)

Fun and challenge

- Children at the age of 4-10 are still easily motivated;
- Some children are willing to have challenges, and the challenge is to improve the activity itself;
- Fun is designed to motivate children with fewer motivations in physical activities;
- Liveliness and interactiveness can be the features of fun;

Children

- Girls are earlier getting mature mentally than boys. Hence, girls mostly look more compliant and listen to others.
- In physical activities, children are easy to show their naughty;
- Younger children are easy to get excited and competitive;
- More options can increase children's inquisitiveness;

Value beyond children

- When asked what is meaningful to children, one expert answers that meaningfulness is too abstract even for an adult; children cannot answer what is meaningful to them at a gait

test station; adults should define it;

- Children are easily instructed but need inspiring as well;
- One expert mentions a school mission: physical activity at school is to modify some of the characteristics because some children have few sports activity at home and lack the motivation in physical activity.

Research tips

- Children's logical thinking are not fully developed. When they are not able to answer the question, they say what they observe;
- Observation is more useful for younger children and observation should be checked with parents;
- Children can detect emotions via real face.

Peers

- Children with similar personalities like to stay together and are more comfortable to stay together;
- Children at the age of 6-8 have more interests in playing together;
- Older children like sharing;

Child expert interview 1

Interviewee

Kindergarten teacher in Hangzhou, China; full experience with children at age of 3-6.

Interview questions

Child psychology

- What characters/features do children have now?
- Compared with our childhood, what the most special features that children have now?
- How do children change their points of view to the world when growing up?
- In the final year of kindergarten, what is the status of children?
- How do children's mental reaction change when they go to primary school (new environment)?

Child communication

- When you communicate with children, do you communicate with them from a child perspective? (playing the role of a child)?
- What should be paid attention to when talking to children?

Child life

- What picture books/toys do children like now?
- Do you have some recommendations on the child products?
- What do you think of the usage of electronic products for children?
- What about the electronic devices used in kindergarten? Is there a lot used?

Interview results

Top interesting points

- Shi mentions that in the final year of kindergarten, children are arranged to visit a primary school, where they can know the new

environment. Teachers communicate with each other as well, so that teacher in primary school knows what to tell children about differences between the primary school and kindergarten.

- Shi mentions that catching children's attention is more important for a teacher than perceiving their understanding ability. Children with normal intelligence can understand things with proper ways of explanation or proper reading material. But losing attention would affect their receiving information.
- Shi mentions that the bright colour is not supposed to be used in the interior design because it may arise the emotion of nervousness or restlessness. The colour used at the test station can be a little bit greyish. For younger children, more colours can be used.
- Shi mentions that younger children like repeated things in the picture book and have interests in repetition (e.g. you have a blanket, I have a blanket and she has a blanket, as well...).
- Shi mentions that children have attachment by themselves and it could be useful to bring it in a new environment. But it is a phenomenon instead of a normal state for all of the children.
- Shi mentions that "Cool technology" is an expression for some of the children with strong willing of expression, or for some boys and not for all the children.

Children's interests

- Trends exist and depend on what children meet with currently;
- Some toys are always popular among children. Children always love LEGO; some children always like dinosaurs, but some are not and indifferent to it; Girls are fascinated by Frozen in recent years.

Parents' concerns with interventions

- Medium such as TV and videos is unavoidable to children, but meaningful content is encouraged and allowable to them;
- For parents, it is more important to judge the

content instead of choosing ways of acquiring new things

- Once a child imitated bad behaviour such as violent behaviour from the medium, they would immediately take actions to stop.

Peer sharing can be intervened by teachers with a positive development, and quality of sharing is affected by characters of children

- Once teachers find children are sharing knowledge, they can divide them into small groups of 3-5 and ask them to find ways to present the new knowledge. (e.g. share what is avocado via silly putty)
- "Birds of a feather flock together", which applies to children as well. Children with the same characters can easily play together. Extroverts have more information sharing with each other due to good expressions; Introverts feel comfortable with each other and focus more on toys in hand instead of communicating

Environmental features create emotional impact of security and calmness

- The expert suggests creating a safe and warm environment with low saturated colour, and visual impact of nervousness and restlessness should be avoided at the test station.
- Safety is the base in the physical environment
- If using multi-colours depends on ages. The younger the children are, the more colourful the environment can be.

Specific features for some children

- Attachment can create a feeling of security for children, but not all the children need attachment.
- Children speaking out about "cool technology" means that they accept new things easily and are willing to express themselves.

Relations among children's interests, attention & understanding

- For teachers, grabbing children's attention is more important in the case that teaching material from school must be understood by

children.

- Choosing materials based on children's ability of understanding, therefore preparing different materials for different ages are important. Too easy or too hard materials are both not suitable
- Listening(interests) -> focusing(attention) -> understanding(ability)
- An explanation can increase the interests of children. Self-learning is in low efficiency for children and they can easily lose interests

How to better communicate with children (tips from experts):

- Build trust in advance with new people (this is my parents' friend)
- Interesting expression and tones can attract children immediately
- Use short sentences and repeat these for young children
- Treat old children as a friend and long sentences can be used.
- Encouragement/positive feedback applies to all ages of children
- Tell difference with their familiar environment
- Reward system can be built after the test

Child expert interview 2

Interviewee

PE teacher in Interactional School Delft.

Interview questions

The same with child expert interview 1.

Interview results

What characters/features do children have now?

- with the little one, so four or five, six-year-old, a lot of imagination comes into play whenever they're playing games, or whenever they interact.

- Lively imagination; pretend games with the little ones. Let's pretend we're an animal, let's pretend we are walking quietly like a mouse or something like that.
- Animals depend on the purpose; If I want children to crawl for example, on their hands and knees, I will say let's pretend to wear a cat or a dog or a tiger. walk on the street, dos. I will, for example, pretend were a giraffe was really, really tall; be really quiet, or like a slow walking step, you could use something like a mouse -> animal relates to the task purpose
- Tandem walking -> artist walking on tightrope or snake
- it really helps to relate it to something that they can pretend or imagine is you know, that a fantasy with older children still works; et's pretend is much more successful usually
- Pretending makes it more interactive and more lifelike.
- Younger children are very easily excited; when it comes to when they get a little bit older eight 910 year olds, it's sometimes it's more difficult to get them interested into something; That's when somebody becomes really difficult to motivate children. But aged four to 10. I think it's usually quite alright to to motivate children still.
- But it's also sometimes a fine line because some children that are 10 years old, are very immature, and still really like to pretend to be animals and still relate to games
- Whereas with the older children, when you have like eight 9 10 years old, you can talk much more about why you do something and how you do something. with the older children, you can much easier relate to why do we do this kind of test? Or why do we need to walk like this? Or why do we need to run or something like that

- how about the children? Like at age of seven or eight? Yeah, I think that they're like, in between
- Bonus is not so interested for smaller one, because they have much sense of competitiveness And they're easily or easier to be entertained and to try something. But when they get older, it might be very interesting for them to have some sort of incentive to do something.
- And some children that then or I think most children, then do like that more series approach and say, Hey, and talk to them like an adult and explain to them like an adult, why you do this and why you want them to do a certain test or activity, because they understand why a lot more and they also become more curious to understand
- For older children, gamification with scores, but not so competitive one, if you got 10 you... if you got stepping to the side, you score one point...

Compared with our childhood, what the most special features that children have now?

- the easiness. And accessibility they have to digital equipment. Except for maybe concentration
- better at concentrating on one activity for a longer time than
- it might be more difficult to keep someone interested in an activity.
- it's very easy to to switch and like a daughter, a friend of ours, who's two years old, watches a movie on YouTube and she never finished a movie. She watches for 10 seconds. 30 seconds and goes. Okay. And when we grew up, I mean, there was one movie on TV and that was it.
- AR: especially for older children, it could help to liven things up.

- Balancing, narrow beam -> you could touch little fish on the floor. Or you could stop to pick something up

How do children change their points of view to the world when growing up? How do children react when in a new environment, e.g. from kindergarten to primary school?

- their first reaction is a bit of Shy hesitation first observe and watch and see if they know or trust something before they do something new. Of course, there are children who will come in and walk to wherever they find interesting and just start playing or start running around for, So they'll probably cling on to whatever they know is probably a parent or a teacher or you know, someone they already know.
- eight, 910, Seven, six as well if they find a new place and you see a lot of really interesting stuff in there, like in laboratory in Museum, then they want to go and look at everything and maybe touch everything that they're not supposed to.
- Younger familiarity older find something new; young children who will want to explore as well. But it usually takes a bit longer. They acetate first and they're like, they're very shy

How do you communicate with children? (when teaching new things, encouraging them, etc.)

- with the younger children, with the with the four year olds, if I tell them something that's more than one sentence, that will probably forget what you said. And only remember try to just did some something by doing, showing them how to do it. keep instructions very short. And just like maybe two or three things that I really want them to remember
- So every, every time for example, we do a forward roll, it's important that they put their head down. So I will tell them, you know, head down, rolling your back and stretch your legs and those three things.
- All I keep repeating head down on your bank

statement next.

- Older and my instructions are gone bit longer and a bit more like why, why do I put my head down? Why do I roll my back?
- the three things happening repeating for years. And then they can repeat it back to me and they know no one understands why.
- the older they get, the more you can talk about it to how and why and the less on demonstrating and showing is still important, but it becomes less important than that.
- Details video analysis or video feedback

What should be paid attention to when talking to children?

- try to keep explanations as short as possible
- When it comes to encouraging them, and you know, how to get them to do things. My approach is always positive feedback. See if I can mean anything they do well, I guess gives them a lot of compliments to encourage them that way.
- if someone cannot jump 10 meters then maybe they can jump to meters and then a little progress from two-three meters will be a very good step. Small steps focus on the positives that way

Can you give some examples of what children play at different ages

- A bit of gaming involved activities, where they play a game, they can win sometimes, or they can be together to win sometimes. And yeah, the more the more fun. I always try to create by adding any game element into it.
- Yeah, I can tell the children bounce the ball as many times again. Or I can challenge them and say, Hey, who can bounce the ball at the most times in two minutes?

- And it's more difficult, of course. Yeah. Because a, they have less interest in other children, they're less interested in winning or losing when they're really young. But if you challenge them in any way, then it becomes more interesting
- different challenges for individual games, but especially the age of 6/7/8. They become much more interested in playing together.
- normally they play in group or you group them in like two people and then they can have a match to play with each other.
- they don't always, not always children like those kind of activities. I usually try to pair them a little bit to their level.
- I think the most important thing is to keep them challenged to make sure that they're doing something that's not too easy, and not too difficult.
- I do know that some like cleaning class teachers are they do their work really well they can get like a sticker or they get like little little things to collect. And it's not very practical interview lesson.
- Okay, cuz we don't have we don't have physical work I don't have a piece of paper that I could put a sticker on for example. So it's usually comes to you know, praise compliments or high five something like that.
- And I five or something like that. works better with younger children. The older children are not really that interested in the high five Or anymore. So it just becomes more important to, I think, yeah, give them that sense of accomplishment
- they don't really know automatically if they did well or not. So positive feedback is really important. Okay, and it loses effect kind of as they grow.

What do you think of the usage of electronic products for children? What about the electronic devices used in kindergarten? Is there a lot used?

- And the longer they spend on a electronic device, the less they get better at it. And if it's, if it's looking at a video or looking at themselves in a video to get better at it, then that's fine. I don't really want children to sit down and look at devices for 10 minutes. While they could be moving for diamonds, yeah.

When do you think they will be reluctant during the activity and how do you deal with it?

- Not pushing but encouraging

Repetition of the things, do you think it is necessary?

- Keep repetition

Trends of the interests

- And then it's usually easier to find out what they're interested in.
- So, but for the children, for the older children because they would talk, they would like to talk more and share things.
- And then it's usually easier to find out what they're interested in.

Child expert interview 3

Interviewee

PE teacher in Interactional School Delft.

Interview questions

The same with child expert interview 1.

Interview results

What characters/features do children have now?

- Physically speaking I can see a complex range of features. You have children very committed to do sports and willing to have new challenges

every day. On the other hand, you also have children who are not motivated to do anything or to do any effort for moving or playing. Between these two cases you can see a great variety of features and attitudes. Which is maybe the most common is that they move less, and they try less. Lack of patience in some of them requires more effort from the teacher. Some of them seem to need to be entertained and some of them are very independent. One of the reasons for this huge variety of behaviour can surely be related to their family environment and how much the parents motivates them and how sportive they are too. Schools are very important to increase the interest of children and modify some of their characteristics. Regular schedules for sport and good and challenging sport programs help a lot.

- Regarding other features I must say that children now are complex, some of they are committed with environmental problems and animals caring for example.

Compared with our childhood, what the most special features that children have now?

- I am almost 51 and I came from Uruguay which is a very different country compared to The Netherland. My childhood was not like childhood nowadays. We spent lots of time playing/sporting outside. We did everything just for fun. We did not spend many minutes sitting, we did not watch a lot TV, we did not have many screens... We never got bored. I am not in this country since a lot to say that they move too less than we did before. The Netherlands is a cosmopolitan country and in the International school you can find children from all over the world because of that, you find too many different types of children regarding doing sport. I think that one of the characteristics that amaze me since a long time in Uruguay and here too is that they are much more inquisitive, they question everything in general. I really like that. They are much more informed than us back then. As I said before they are less patient in general too. They get frustrated faster now, which sometimes is a

problem.

How do children change their points of view to the world when growing up?

- Maybe this is a question for a Psychologist or a full-time teacher, like Primary teachers. I can not answer this question properly.

How do children react when in a new environment, e.g. from kindergarten to primary school?

- I do not have experience here, but it shouldn't be different from my country. Depends on the good approach of the school and the parent's commitment.

How do you communicate with children? (when teaching new things, encouraging them, etc.)

- Body language is very important for communication with children. If you want that they move, then you
- move too. Be active as a PE teacher. Be clear and firm with rules but flexible when you can. Challenging them always is a good way to communicate that we can always improve. Competition is very good when it comes to be better but never promote that as the more important thing. Teamwork and team effort are my motto when I work with children. Sometimes is very difficult in this competitive and individually-focus time.

What should be paid attention to when talking to children?

- Again, be clear. Be nice and firm at the same time. Read between the lines and study their reactions. Get to know them as much as possible.

What do you think of the usage of electronic products for children?

- I do not have children my own, but I have many friends who have. Some of them spend a lot of time behind screens. It depends of the parents to help them to make good balance between electronics and other ways of learning and playing.

What about the electronic devices used in kindergarten? Is there a lot used?

- I do not have a thorough idea what happens here exactly.

Child expert interview 4

Interviewee

Mother with psychological background in Shanghai

Interview questions

Random questions via message

Interview results

- People have the awareness of being better, but children doesn't have too many such consciousness.
- Meaning is for adult, not for the children.
- Questions to children need to be repeated and confirmed with parents, because children's answers may come from what they see in their lives, not from themselves;
- the child mood it is hard to capture
- Some parents may think finishing is good enough (because children introverted), Some may think it is necessary to know the importance of walk
- girls' mental development is early
- Real human face is very important for children to select mood, because of sophisticated muscle movement, which is easier to identify. Emoji is too abstract for children to select emotions

leahyeah: 我又来问小朋友的问题了[皱眉], 想问下对4-5岁小朋友来说, 想了解他们的注意力, 以及让他们和我分享一个学习场景, 并且了解到他们收到奖励的时候是怎样的感受, 我应该怎么问? (比如我想到说一个我自己的学习场景, 给一个例子, 让他们照着例子去说一个类似的), 但这个学习场景订哪一种比较好? 我怕太复杂他们也不懂

Uru: 那你分享的话, 可能要说大致的, 不能太具体, 不然可能会引导。大致的, 例如问英语课, 幼儿园的绘画、唱歌、讲故事, 学而思的上课, 足球课, 篮球课等等。因为每个孩子的经历不同, 所以最好先采访了解小朋友, 再根据他的经历提问, 例如提问何老师奖励过什么? 跳绳, 绘画……? 学而思的张老师表扬过你吗? 为什么等等

Uru: 小孩子不知道场景是什么意思

Uru: 就问, 老师表扬过吗? 夸过你吗?

Uru: 另一方面, 小孩子的思路是需要启发和引导的, 所以可以详细问细节, 甚至多问几次

leahyeah: 我本来是想说用故事书的形式说我的故事, 然后旁边放一些问题在旁边

启发他们去思考，你是怎么做怎么想的

leahyeah: 但是这样问细节会引导是吗？

leahyeah: 瘫了瘫了，那我可能要把这些问题甩给家长让他们去启发小朋友说了

Uru: 对于小孩子，容易引起引导，另一方面他们又是需要启发的

Uru: 你可以讲故事，会启发他们，同时一定要问细节，因为小孩子的逻辑是不一样的，他们不会主动讲细节，或者讲的只是一方面的细节

Uru: 如果追求真相的话，一定还要再跟父母求证，他们不认为瞎编是说谎，同时因为表达的方式，会让成人的理解有误，或者他可能在说动画片里的情节，结果大人理解为孩子自己的事

leahyeah: 是的，我想到了他们肯定不会想细节，所以我就很头痛要在编各种问题，或者例子，试图让他们去说

leahyeah: 追求真相这个我还真的没考虑到

leahyeah: 这个记下了

leahyeah: 吼吼吼，我再去看一下～

Uru: 对于细节，我觉得你要多问，多问几次求证，多问也会有助于他们表述细节；你不需要太心疼自己编例子，因为例子的作用很可能对孩子不大

Uru: 用孩子的经历来问孩子

leahyeah: 小朋友们都是荷兰语…所以我才如此大费周章的去搞一些能让他们多写多画多说的东西

leahyeah: [捂脸]

Uru: 有点像沙盘游戏一样，你估计需要准备比较充分的材料，例如图片，玩偶，小朋友可以取用来辅助描述的

leahyeah: EVa下午采访小朋友让我快速来问个问题

leahyeah: 你觉得怎么问小朋友

leahyeah: 你觉得怎么样？

leahyeah: 你的感觉是什么

leahyeah: 这样的话题

Uru: 你可能要给个提示词，有的小朋友不懂得你的问题是怎样

Uru: 譬如你需要问一些通用的感觉词来提示，开心，难过，生气

leahyeah:

leahyeah: 看来我要准备一个sticker了

leahyeah: 情绪贴纸

Uru: 嗯嗯，是的

Uru: 有的小朋友比较厉害，善于表达；有的小朋友可能就不懂你在问什么，需要提示

Uru: 还可以问，愿意再次玩吗？来看他对事情的态度

Uru: 玩多久？频次，等等…应该也能看出孩子对一个事情的态度

leahyeah: 有道理

leahyeah: 可

leahyeah: 我记一下，下午用

Uru: 觉得你的测试很好玩，回头讲给荷兰小朋友是怎么回应的[偷笑][偷笑]

leahyeah: 今天是一个中国小朋友哈哈哈

leahyeah: 所以我还不担心

leahyeah: 回头说

Uru: 好[嘿哈][嘿哈]

leahyeah: 今天测试完小朋友好开心！随之而来又有一个问题，[捂脸]，我问题太多了，比较想问一下，对孩子来说，什么东西是有意义的？对家长来说，什么东西对孩子是有意义的

Uru: 意义这个词太大了，你问这个问题问大人，大人都难回答。小孩子是不懂什么是意义的。

Uru: 就是说一这个词呢，有点大，就是比如说你要问大人的话，你觉得一个是就是一个活动啊，有什么样的意义的话，对大人来说的话，他的更多的是一些其他的词来描述，比如说他是觉得让人开心啊，让人喜欢啊，更留恋啊，这样的词他会觉得是有意义的，或者有一些大人，他更多的是它有不同的一个认证标准吧。比如说，他认为金钱啊，或者是一些职业上的提升啊，地位上的提升啊，或者是一些人际关系的改进啊，价值观的一个树立呀，他觉得这些是有意义的，所以其实这里面有看到说嗯。

Uru: 其实你会看到这里就是意义，这个词是比较抽象的，他可能还不太等同，一向开心悲伤难过，这种比较单一基本的一个情绪的一个词汇，所以如果这个问题问孩子的父母的话，孩子的父母可能会说，我认为小朋友开心是有意义的，我认为小朋友学到东西是有意义的，那么你可以再进一步问他。你怎么觉得小朋友开心？比如说他可能是通过问小朋友，小朋友说我很开心，或者是他观察到小朋友在做这个事情的时候很开心，所以我想说的是，我们应该把这个意义这个词更具象化，尤其在问小朋友的时候。

Uru: 当你问小朋友说，这个你觉得什么东西是有意义的时候，很可能小朋友给你回答，是啊，什么是有意义的，具象的词就是刚才我们其实问问大人的话，当然已经有点表述了他，比如说他觉得孩子开心是很重要的，孩子学到现在东西是很重要的，孩子去尝试一个新鲜的事物，他觉得是很重要，其实你就可以拿这些具象化的问题来问小朋友，可以问他。你觉得什么事让你开心的？然后或者你观察到，其实行为观察也更为更重要一点，你观察到说小朋友很喜欢看大片，小朋友晚上很喜欢阿，你跟他玩象棋，讲故事，但是你也可以去主观地问他你喜欢什么，因为有的时候可能是由于客观条件，比如说晚上不能出去，他才不得已而退，而其次去选择动画片选了下。

Uru: 所以可以问小朋友，一方面是问小朋友主观的来问他啊，你觉得什么样的让你开心？你愿意花什么样的时间？比如说如果你最想做的是什么，不考虑其他因素，如果说也不能说不考虑其他因素，我估计小朋友也不懂这个，你就问他最想做的是什么，然后其次是什么，而且还要问他为什么，我觉得你把这个意义这个词把它分解出来，分解成这种可以考量的可以治像话的问题，再问小朋友。

Uru: 其实同样对大人来说是一样的，当你问意义的时候，当然的回答也是千姿百态的，就是它汇聚每个人的回答会拒绝我啊，金钱啊，那个地位啊，刚才我也讲过了，所以我们就不如把它具象化成小朋友能够理解的和接受的，然后得到这个回答，你一方，你可以从三方面来求证，比如说你观察到小朋友这个行为，然后你主观的去问他，然后还有一个是第三个是你从父母那边去求证这个答案是不是孩子真的喜欢这个活动之类的。

Uru: 而且你在报告里是不能够说什么东西对小朋友是有意义的，因为在你，因为首先孩子不能理解什么是有意义的，其次呢，你要为了可行性，你只能把它具象化，分解开之后，你得到的答案也是说给小朋友很喜欢动画片，小朋友很喜欢去尝试一个新的事物，然后她在上面花的时间更长，然后更愿意去做这个事情。其实你得到的是这样的一个一个很客观的描述的这个活动，当你说因为小朋友愿意在上面花时间愿意从事这个事物，以及，他说我愿意多次的去进行这个活动得出来的结论，可以说，这个事情可能对小朋友来说是很重要的，对小孩子来说是有意义的。

leahyeah: 结束了一天的分析来重新听语音

leahyeah: （我觉得我可以用这个去怼同学的毕设了，一个儿童医院项目三个人做了不同的内容哈哈哈

leahyeah: 我问这个问题其实也是想说把它具象话他对儿童是什么，比如昨天采访的小朋友，我会觉得开心对他就是有意义的（太积极乐观的小孩子，所有sticker都选笑脸

leahyeah: 然后用来思考设计

leahyeah: 来聊聊今天的一些insights，我发现4-5岁的孩子对sticker无法做到选择情绪，而是选择她们最喜欢的，大一点的孩子10岁了也是很难在sticker里选择（可能我的给太多了）

leahyeah: 因为我是做步态测试的体验，我让今天问了几个中国家长做了几个小孩子测试，包括昨天带孩子的时候汇总一下发现，她们对他们的performance还挺在意的，但是角度不同，小孩子在观察自己（但其实这里有疑问是不是一种好奇），小孩子更多是要表现完美

leahyeah: 以及小一点孩子在重复一遍之后表现出来的破坏天性很有意思。leahyeah: 我问有意义这个问题是因为我发现小孩子如果我很简单设计一个内部奖励游戏在里面，小孩子会开心，但我不知道这个开心对他们来说是不是有意义的。这样的设计只能说是做到了情绪上的好的效果，但是我不知道怎么去确定产生了怎么样的影响对小朋友

Uru: 陈燕，就像你那个speaker的话，我觉得你可能只能用于启发，而不是让用，而不是让那个小孩子来选，因为其实的壳儿来讲的话，怎么说呢，他是你的一套思想出来的一些东西，所以其实对于小孩子来说的话，它需要先去理解你的这个思想，然后他才能去选出来阿斯科尔，所以我说你的speaker更多是用来启发他，真的要知道阿，在问题的答案上应该还是听小朋友讲。

Uru: 然后第二点要说的就是，其实我们大家都知道，对于意义来说，每个人的阐述是不一样的，所以可能啊，你也想到了，说我要把这个问题具象化，其实我看你最后一个一段话讲的就是说，你想知道你的设计，对于小朋友来说，是不是有其他的意味，因为你觉得可能我当时玩的比较开心，但我不知道说。这个就是你知道吧，因为你最后一段话，其实对于我来讲还是有歧义的，就是我不知道你真的想考察的是是什么，你是真的想考察说我的产品用户会影响力很大，一直很想玩，还是说嗯，就是你的里面说的那个意义是什么意思？

Uru: 如果我理解的话，就是说你理解啊，就你最后一段话，你的原话是说我不知道这个开心对他们来说是不是有意义的，那么我理解的说你，你是不是想把你设计的这个东西让他们觉得有意义进而你的目的是什么呢？比如说你的目的是说我想让小朋友更长时间来使用，我这个产品，或者说。我想让小朋友在玩的时候有很好的一个正向情绪的一个产生，就是你，就是我想说的是，你的这句话对我来说我不是很懂，就是说我不知道阿，你说的对他们来说是有意义，你的这个是想表达什么样的一个目的？

Uru: 然后最后我想说的是，其实你去看一些，就是行为学家，包括心理学上的一些，他们去研究小朋友的时候，就是他们一般研究会研究幼儿园的小朋友，其实大概就是五岁左右，四五岁这样的一个小朋友的，这个年龄段的时候，他们更多的是用一些behavior的一个观察，较少用主观上的一些回答来作为。而作为你的那个思考的一个思考的点，因为本身小孩子的主观回答是非常随意的，因为他并不是有真有假，他并不是说故意要去说谎话，而是说他这个年龄段的话，他本性是比较随心和随意的，所以他可能想到什么就是什么。

Uru: 如果我我有在led上，其实ti Li Hai led踢地上有一个很出名的演讲吗？就是一个美国的心理学家阿菲是Allen，他这个人其实更多是研究一些爱情心理学，然后他讲过一个很就是一个比较有意思的实验，他的观察对象其实就是幼儿园，他做的其实就是观察，因为对这个年龄阶段小朋友收集主。客观的反馈是没有很大意义的，它更多的是一些观察，我举个例子啊，如果这个时候你给小朋友玩什么东西，他说，我好开心，但其实这个时候的反馈，很可能是来自于他这个moment，他觉得很开心，比如说我给我家小朋友买玩具，他经常玩过一段之后撂它就不再玩啦，他当时玩的也很开心的，玩过两天没意思，然后他就不再玩了。

Uru: 所以对这个嗯小朋友说的话，也可能观察behavior更重要，大人能做的事做

一些，比如说他那个实验当中就是观察小朋友的一个行为，他能控制的就是说，比如说嗯，他不让小朋友去吃那个糖啊，因为他是观察小朋友的，一个不同的人的，一个面对诱惑的一个就是。就是延迟满足还是及时满足他不这么一个事业嘛，然后她能做的就是尽量劝阻说，两个小时之后你再吃糖，但是他并没有收集一些主观反馈，也就说对他这个年龄阶段的人来讲的话，主观反馈首先很难收集，其次反馈来的信息没有很大用处，也就像我说其实没有很她的这些信息是没有很大真实性的。

Uru: 我理解的是，你们在考察小朋友参加测试中的情绪体验吗？设计了内部奖励游戏，目的是什么？是为了让小孩子在做测试中更加专注，不要跑神？是为了鼓励他将测试进行下去？你们是不是要考察这些奖励设计是不是对小朋友参加测试的体验产生了正向影响？或者什么影响（包括正向、反向）。1. 那可能要从小朋友参加测试的情况来看，这些游戏的设计是不是产生了影响。（例如参加测试的时间，回答测试的情况（不知道测试考察有没有标准答案），投入力度（靠观察）等等可以从考察小朋友参加测试情况来推理奖励设计的影响）。2. 单纯去看游戏设计及小朋友反馈，那就成了考察“奖励机制”对小朋友人类的影响。我觉得我们可以微信电话沟通一下，我也很感兴趣你们在做什么测试。你可以趁着你中午饭的时候。

leahyeah: 好的!

leahyeah: 让我出去囤点吃的日用再去打印点东西

Uru: 我看了你的视频，突然想到可不可以设计的像keep一样，让小孩子边看边做同样动作，这样他不会显得无聊，也不用记得该怎么做

Uru: 视频用孩子喜欢的人物，譬如我家最喜欢奥特曼

leahyeah: 是一个新的idea~~~对我来说（但是有反驳的地方哈哈），就孩子喜欢的东西我之前有发问卷调研过，感觉要每个孩子自己选了，不过医院有自己的吉祥物，倒是可以用

leahyeah: 然后第三四个动作，我觉得测试来说，简单的看视频模仿是不够的

leahyeah: 一定要有现场的人带着走一遍

leahyeah: 效果最好

leahyeah: 而且工作人员问的时候大多都觉得还算乐意和孩子交流，所以这部分设计我还要把控好

Uru: 嗯嗯，是的，后面比较难，而且还需要中间提醒

leahyeah: 孩子自主学习和一个知道过程，怎么协调一起

leahyeah: 指导*

leahyeah: 对的

Uru: 是的，是的

leahyeah: （没事有问题有idea了，接下来我就是迭代了，关键是要有一个大的问题总结

leahyeah: problem statement，以及design goal

Uru: 这些好难……精华浓缩

leahyeah: [捂脸]但是要有，我整个研究生阶段一直卡在这里

leahyeah: 克服不了，所以最后一个自己的课题，一定要克服

Uru: 嗯嗯，加油[嘿哈][嘿哈]

leahyeah: 还有问题[捂脸]快速问一下，想问从心理学角度说，小孩子不是觉得困难的时候回大笑，疯跑

leahyeah: 这是一种怎样的心理呢

Uru: 他不觉得困难，然后会大笑和跑，对吧？他们比较“不正经”[偷笑][偷笑]，他们这个时候不太会严肃，除非是老师

leahyeah: 但其实是他们的天性对吗

leahyeah: 这个时候即使感到困难，但是还是很放松

Uru: 是的，你像老师一样强迫他们严肃，这才是不正常的

leahyeah: 昨天晚上想来想去靠curious，meaningful定问题太难了，她们啥都不知道，后来去扒了马斯洛需求理论终于找到可以定的问题点了

leahyeah: 我能说其实这种释放天性，笑的时候，或者更小的时候观察自己走路的样子算是最高层的自我满足吗

leahyeah: 对孩子来说

leahyeah: 其实如果是任务，小朋友的反应其实更多是完成它，以及看大人的反应

leahyeah: 但是如果能说测试过程中他们依旧在needs最高层

leahyeah: 其实就是为儿童设计的好体验了

Uru: 我回去翻一下发展心理

Appendix A3

Physical therapist interviews

Conclusions of the 2 interviews

Child's walking capacity (Motor movement) - footstep recording on the gait mat

- Child's walking capacity can affect the footstep recording during the test;
- Children with poor walking capacity have to walk more times to collect good footsteps;
- Children with different walking capacity are able to walk on the gait mat and can finish a 5-minute walking because the walking is easy;
- Children with supports can result in false measures in the computer system

Child's intellectual capacity - instruction

- Some children with intelligence problems have their own tools for communication (a small computer);
- The given instruction depends on their cognition, which is related to intellectual capacity;
- Parents as experts can support during the test, they know how to instruct their children;
- Children who have limited intellectual capacity need more instructions during the test because they might stop for a few times.

Preparation before the test

- There is no need for children for preparation;
- For younger, a small conversation is needed to get familiar with the test conductor;

Working experience of a test conductor

- Neither test conductor nor parents have a special feeling during the test;
- Parents are well informed and not excited because they know their children have to do a

test;

Child walking experience - the motivation of walking

- Fun is used to motivate children in the test when there is lots of information or when children get frustrated in a difficult task;
- Repetition of children happens, but it depends on how fun it is for children.
- Some children feel reluctant with several times of walking, but as they are informed the reason for doing the test, they accept to finish the test;
- It is important to reward their efforts for children with physical disabilities;
- Some children with a lot of hospital visit are unwilling to do the test;

Environmental factors to children

- The environment must be with fewer distractions;
- Distractions include toys, parents, and too many people around;

The worst scenario at the gait test station

- Children can finish the test. It takes some time to instruct, for children with lower intelligence or motor problems.
- The worst scenario can be they refuse walking, or they cry, or they run away.

The expectations of the physical therapist

- They conduct the gait test for research and for children's walking developments; therefore, their expectation is to let children go better in the future, rather than the setup of the gait test station.

Device

- Sensors on the mat may affect the data recording for children with poor walking capacity;

Protocol

- Different protocols are used for different research purpose

Physical therapist interview 1

Interviewee

Physical therapist in GenR

Interview questions

General question

- A short introduction to each other
- Facilities of the current test station(how much area; is it in a separate room in future or shared space)

Talking about the journey map

- We will discuss the test process based on the journey. I will ask some questions in the discussion if needed

Some listed questions (either for journey map and supplementing)

- Some highlighted moments that you communicate with children
- Some frustrating moments that you communicate with children
- What's the difference when you talk to a normal child or child with an intelligence problem?
- How much that children with intelligence problems can understand?
- Is there a big difference when testing with different participants?
- Are there different tasks for the gait test?
- How do you record the test data?

Parents

- Have you communicated with the parents?
- Do you know any concerns from the parents?

Your expectations

- If you worked at this test station in the future, what would you expect?
- Do you know what should be taken into consideration especially? Hygiene, safety...

Interview results

Iterated research questions

- -> In the child brain lab, what's the vision of the Child brain lab? In terms of gait assessment, what kind of research is planned by different therapists in the future?
- -> consider children with different needs - contact lab generation R
- -> will parents be allowed at the gait test station to help to facilitate the test?
- -> Protocols & why 3 steps
- -> to support the research, what good quality of props(gait devices) should be there. Are there any other pops that expected by the researcher?

Interview comments & insights

Test coordinators

- Each physical therapist has their own research project to work on.
- The therapist is in a team, researching one group of children with Angelman Syndrome and she is now researching on their walking develops. True, but for the study, I did now I wanted to know if gait analysis were possible by children with the Angelman Syndrome (AS and what works the best.
- My goal is actually to see a lot of children with the syndrome and to compare them to each other, but also to compare a child every year to see how their how they're walking develops.
- Currently, for this therapist, she tests 2-3 children on one day per month, it takes months to collect all the data; also this was during this study, in the future, for another study, I wish to see more children on the walkway each month..
- the test data is processed by others
- For the therapist, test is for research. The happiest moment for her is to see the differences of children walking year after year;
- "I would be very happy when I saw children walking with one problem. And I will give some

advice and I would see them later and I would see they would go better. That would be a very happy moment for me. But for now, I didn't see that. Or when I'm doing some tests with a child and I give them some little cues and they are doing its way better, then I have happy moments."

Children

- There are different walking types for children. Children with AS have different walking capacities. Some of them need extra support;
- All the children were able to walk on the gait mat because it is easy. They all walk over the mat and able to walk back;
- Some children, with much-walking difficulties, are not to able to walk often/for several times (data of good quality might not be collected);
- The children were between 4 and 18 years old and all diagnosed with Angelman syndrome.
- We know they have a low IQ, max. functioning on the level of a 2 years old child

Test coordinators & children

- The instruction is a little bit difficult for children with Angelman syndrome to understand, but for the physical therapist, it is not really necessary to get a result.
- Parents as experts can support during the test:
- They are informed clearly of what to do during the test, and analysis taking time, etc.
- They are asked in advance about how to give the most helpful communication with children;
- During the test, parents give cues and help besides the mat; the test coordinator follows the cues as well;
- It is no big deal to explain to children in good mental health or just a little problem in mental health;
- Children who have good walking skills and qualities are asked to try at least five times (walking) to ensure the quality of the collected data;

- It's not a necessity to ask children well prepared in advance;

Process

- Children with Angelman syndrome always feel a little bit excited before the test because they see new space and new person (they forget they had the test last year); they feel curious about what's going on;
- There is no special feeling in the test; they are not excited because they have to do a test, but it is not a big deal to them;
- Neither for parents (no special feeling) because they are well informed at the beginning and the test doesn't cost them lots of energy;
- Before each test, the mat would be set up once again (10min);
- Good protocol prepared (about how far the children should start and stop from the carpet) and good instructions for parents would help go through the test;
- Except for walking on the mat, walking on random at the test station is also asked;
- Children with poor walking quality have to walk for several times (e.g. 10 times);
- Children with pretty good walking skills can make at least 20 good footsteps for analysis;
- The test takes a very short time, only a few minutes;
- After one or more times of walking, some AS children feel reluctant with doing it again and again; but they accept to finish the test;
- The therapist says well done or gives applause, etc. after the test and therapist and children walk through the gait laboratory for the next part;
- The therapist cannot say it is the right data without analysis. The only thing can do during the test is to make sure there are enough footsteps collected;

Props/devices for gait assessment: gait mat

- The software is old, hard to install, and needs

installing again once with a new mat;

- For a new test, it takes around 10 minutes to set up the mat and link it to the software;
- The sensor in the mat is not sensitive enough to collect the data for children with poor walking skills;
- Children with supports may result in false measures in the computer system
- -> Children have to walk more times to get right data (at least 3 footfalls in good quality)
- -> the research might miss the data or give up the use of false data;

Physical therapist interview 2

Interviewee

Pediatric physical therapist at Rijndam rehabilitation center

Working with children between 4-18 with physical and mental disabilities, lots of them have questions about walking;

As a therapist: use test for analysis, now use videos from Erasmus for analysis, and try to fix the problem with a splint or shoe or therapy or medication. Joined a few time of the gait test via EMG and force plates.

Interview questions

Consent

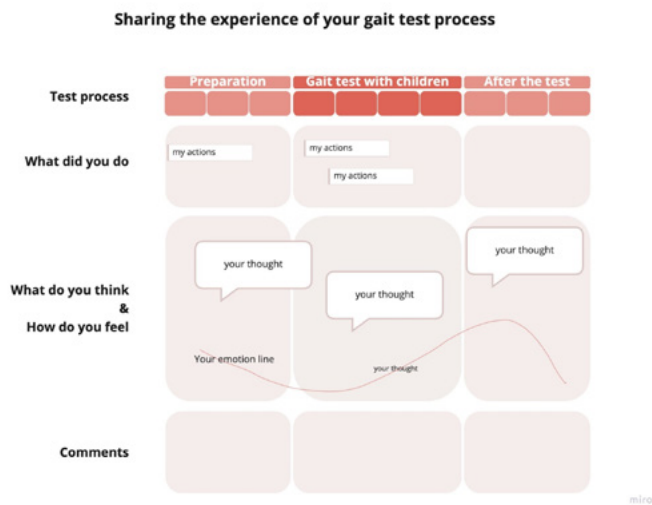
I would like to record your voice during the interview. There is nothing right and wrong about what you say. All your expertise and opinions are valuable to the project.

A transcript of the interview will be made and used for this project. I would like to ask you to check the transcript after the interview if you want.

Before the interview

Before the interview, I would like to invite you to

memorize the gait test with Children. The image below is a journey map that helps you memorize as much as possible.



General introduction

- What kind of disabled children you are working for?/is there also normal children?
- What's the main research goal of the rehabilitation center?
- What test facilities are used in the center?
- What kind of gait test/protocols/assessment/suggestions you have done for the children?
- In the protocol, do children have some repetition walking?
- How much space is needed around the mat, especially the front and end?
- Do children take off the shoes when test?

Talking about the journey map

We will discuss the test process based on the journey. I will ask some questions in the discussion if needed

Some listed questions (either for journey map and supplementing)

- Some highlighted/frustrating moments that you communicate with children
- What's the difference when you talk to a normal child or child with an intelligence problem?

- Can children understand the test process (at different ages/different problems)?
- Is there a big difference when testing with different children?
- Would child emotions affect the research?
- What're the suitable emotions that children should have in the research?

Parents

- Have you communicated with the parents?
- Do you know any concerns from the parents?

Your advice for Child Brain Lab

- Do you have any suggestions on design the gait test station? (Hygiene, security, etc.)
- What gait test facilities do you advise to be used in Child Brain Lab?
- The sensitivity of the mat, is there a problem?

About children (How old are your children? Can I ask any questions about the topic of children?)

- Compared with our childhood, what the most special features that children have now?
- How do children change their points of view to the world when growing up?
- How do children react when in a new environment, e.g. from kindergarten to primary school?
- Can you imagine what your children's reaction to a gait test?
- How do you communicate with your children? (when teaching new things, encouraging them, etc.)
- Can you give some examples of what children play at different ages?
- Do you have some recommendations for child products?
- What do you think of the usage of electronic products for children?
- What about the electronic devices used in

kindergarten? Is there a lot used?

Interview results

Facilitation with children

- Know each other first, give some info to parents and children, and show them the instruments;
- Important to let them feel safe and comfortable;
- Even if you make a video, it is important to explain what you expect from child clearly;
- The most important preparation and during the test. It's important to let them motivated;
- How many instructions given depends on their cognition
- How to motivate: use parents and toys or other types of motivation
- It's important to reward their efforts (sticker, compliment) so as to let them know they did good and they did their best;
- Children need more instruction because they have limited cognitive capacity; you have to stop maybe a few times during the repetitions or give extra motivation;
- Extra instructions make the facilitation easier;
- They're distracted from the environment (during walking)
- Distraction: toy, parents, or they just walk away instead of doing what is asked;
- The worst scenario is that they don't walk or refuse/cry/running away
- The worst scenario happens with younger children (before 4) or children who have maybe behavioral problems; -> reason for the preparation and rewarding
- All ages possible, 4-6 I think they are difficult; but sometimes 12 as well, then, you need parents;
- For younger children, start with a small conversation and be familiar with them first
- Why unwilling to do the test: children with a lot

of hospital visits, sometimes they don't want to; important to tell them why if they are smart; mostly it helps

- When the information is too much, fun is important
- Right communication and to create an environment with fun and less distraction;
- Achieving the goal is nice but also have a good conversation with children, in which situation they can also tell what's in their mind, what's the matter with them -> a positive moment
- Verb explanation is enough for normal children;
- Children with intelligence problems, use pictures or signs to let them know what to do and what you expect;
- Pixel pictures: some children use it all day with a computer
- For children with disabilities, they will get frustrated but it depends on how fun it is and how difficult it is;
- Autism likes repeating if it's fun a lot; most of the children like to play different games and it depends on what you do and their likeness.
- Five minutes of walking is not difficult for them.
- But for children with lower intelligence or behavioral problems, it would take some time to let them do it.

Suggestions

- A pleasant environment to be in;
- Not too much distraction; (hide toys);
- Not too many people;
- Small reward also works for most of the children

Appendix A4

Questionnaire

Questionnaire

Design gait test station for children

To parents,

First, I will introduce myself. I am Chenye Xu, a Design for Interaction student in PlayWell lab, one of Delft Design Studios at TU Delft. I am doing my graduation project on designing a gait test station at Sophia Children's hospital of Erasmus MC. At the gait test station, children's manner of walking is tested for research and then for the child's better walking development.

With the aim of improving the quality of care for children at the station, I would like to ask you and your children some questions. The questionnaire has two sections, one is for you and the other is for your child to answer. The questionnaire will only take 2 minutes in total with 12 questions for parents and 6 questions for children. Thanks in advance.

***Required**

A short introduction about the gait test and my project :)



1. How do you think your child will react to this gait test? *

Mark only one oval.

- ☐ I think he/she will be curious on the gait test.
- ☐ I think he/she will be scared of the gait test.
- ☐ I think he/she will be excited about the gait test.
- ☐ I don't think he/she will have lots of reactions.
- ☐ Other: _____

Section 1: asking parents

Wondering parents' concerns and children's interests

It is a gait test station for children. Before asking the related questions, I would like to know more about parents' concerns and children's interests. Can you help :)?

2. 1. what do you consider when buying a toy for your child? *

Tick all that apply.

- ☐ its quality
- ☐ its security
- ☐ its popularity
- ☐ current interests of the children;
- ☐ its meanings to children
- ☐ its functions
- ☐ its effects to children

Other: ☐ _____

3. 2. what do you consider when buying an electronic device (eg. tablet, electronic watch, or game console) for your child? *

Tick all that apply.

- ☐ its quality
- ☐ its security
- ☐ its popularity
- ☐ current interests of the children;
- ☐ its meanings to children
- ☐ its functions
- ☐ its effects to children

Other: ☐ _____

4. 3. Do you mind your child using some electronic devices during a gait test? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ Other: _____

5. 4. Could you list some games/cartoons that your child likes recently?

6. 5. Can you tell me your child's favorite roles in that game/cartoon?

11. 10. How old is your child? *

Mark only one oval.

- ☐ <4
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
☐ >10

12. 11. What's the gender of your child? *

Mark only one oval.

- ☐ Female
☐ Male

13. 12. What's the nationality of your child *

For next section, please give the questionnaire to your child :)

Hoi!

Hoi. Ik ben Chenye. Ik ontwerp voor u een gangteststation. / Hi, I am Chenye. I am designing a gait test station.



Wat is je favoriete wandelruimte?

Ik wil je vragen over je favoriete loopruimte. Kunt u mij vertellen?
/What is your favourite walking space? Can you tell me?

7. 6. Can you tell me some places your child likes to go to? *

You can choose at most 3 places.

Tick all that apply.

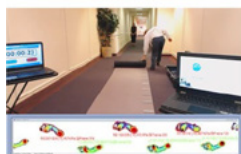
- ☐ Zoo
☐ Science museum
☐ Art museum
☐ Playground near the house
☐ Forest
☐ Sandbeach

Other: ☐ _____

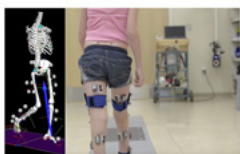
Asking parents' advice about different devices

Devices for the test: There are lots of devices to test walking manners. Different devices are used for different research topics by doctors or physical therapists. The devices and purposes of their usage are shown in the image

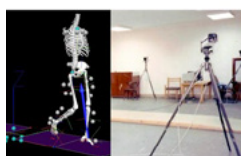
Gait test devices



The gait mat:
measuring foot pattern and the pressure



Sensors on body:
measuring the muscle and motion



3D camera:
measuring the motion



2D camera:
for observation

8. 7. If your children use these devices in the test, do you have any worries? Which device are you worry about? *

Mark only one oval.

- ☐ The gait mat
☐ Sensors on body
☐ 3D camera
☐ 2D camera
☐ I have no worries

9. 8. Could you explain why or why not you worry about the selected device *

Mark only one oval.

- ☐ I choose the device, because I worry about the security;
☐ I choose the device, because I worry about my children would feel scared of the device;
☐ I don't choose any, because I think the environment would be safe for the test;
☐ I don't choose any, because I think my children would feel excited about the test;
☐ Other: _____

10. 9. To what extent do you care for your child's walking manner? *

Mark only one oval.

1 2 3 4 5 6 7
I haven't care a lot before. ☐ ☐ ☐ ☐ ☐ ☐ ☐ I keep caring for my child's walking manner.

Thank you for finishing the questions above

Thanks for answering. Next, I would like to invite your child to some questions. The questions are about their favorite walking environment. And for research, can I ask for your child's general information? The information will only be used for the research.

14. 1. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen. *

Choose what your favourite walking space is. You can choose two options.



Walking space 1 / Loopruimte 1



Walking space 3 / Loopruimte 3



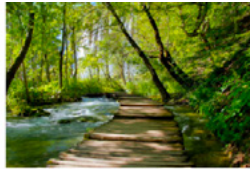
Walking space 5 / Loopruimte 5



Walking space 7 / Loopruimte 7



Walking space 9 / Loopruimte 9



Walking space 2 / Loopruimte 2



Walking space 4 / Loopruimte 4



Walking space 6 / Loopruimte 6



Walking space 8 / Loopruimte 8



Walking space 10 / Loopruimte 10

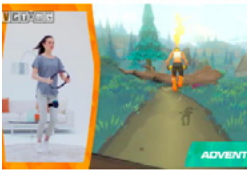
Tick all that apply.

16. 3. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen. *

Choose what your favourite walking space is. You can choose 2 options.



Walking space 1 / Loopruimte 1



Walking space 3 / Loopruimte 3



Walking space 5 / Loopruimte 5



Walking space 7 / Loopruimte 7



Walking space 9 / Loopruimte 9



Walking space 2 / Loopruimte 2



Walking space 4 / Loopruimte 4



Walking space 6 / Loopruimte 6



Walking space 8 / Loopruimte 8



Walking space 10 / Loopruimte 10

Tick all that apply.

- ☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10

15. 2. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?
Why do you like that walking space? Can you give me 3 clues?

Tick all that apply.

- ☐ Peers / peers
☐ Dieren / animals
☐ stripfiguren / cartoon roles
☐ Bomen / flowers
☐ Gras / grass
☐ Speelplaats / playground
☐ Spel / games
☐ Straat / street
☐ Stadium / platform
☐ Zand / sand
☐ Steen / stone
☐ Gebouw / buildings
☐ Zonneschijn / sunshine

- ☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10

17. 4. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?
Why do you like that walking space? Can you give me 3 clues?

Tick all that apply.

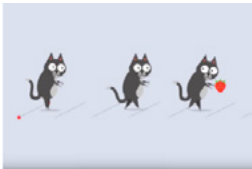
- ☐ Oceaan / ocean
☐ Natuur / nature
☐ Leefomgeving / living environment
☐ Universum / Outer space
☐ Dier / animal
☐ Held / Hero
☐ Vriend / friend
☐ Virtuele peer / virtual peer
☐ Stripfiguur / cartoon roles
☐ Virtuele omgeving / virtual environment

18. 5. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen. *

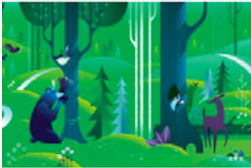
Choose what your favourite walking space is. You can choose 2 options.



Walking space 1 / Loopruimte 1



Walking space 2 / Loopruimte 2



Walking space 3 / Loopruimte 3



Walking space 4 / Loopruimte 4



Walking space 5 / Loopruimte 5



Walking space 6 / Loopruimte 6



Walking space 7 / Loopruimte 7



Walking space 8 / Loopruimte 8



Walking space 9 / Loopruimte 9



Walking space 10 / Loopruimte 10

Tick all that apply.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

19. 6. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?
Why do you like that walking space? Can you give me 3 clues?

Tick all that apply.

- ☐ Kleur / color
- ☐ Licht / light
- ☐ Expeditie / expedition
- ☐ Nieuwheid / newness
- ☐ Verbazing / amazing
- ☐ Vrede / peace
- ☐ Lieflijkheid / cuteness
- ☐ Fantasie / fantasy
- ☐ Droom / dream
- ☐ Verrassing / surprise
- ☐ Nieuwsgierigheid / curiosity

Skip to question ?0

Are you
interested
in this
project?

Chenye needs more thought from children about how they think of the gait test station. If you and your child are interested in this project or you want to know how Chenye will design the gait test station for children. Please leave your email here. Chenye will contact you :). and all the contacts will be online!

20. If you are interested in the project. Please leave your email address:

This content is neither created nor endorsed by Google.

Google Forms

Timestamp	How do you think your child will react to this gait test?	1. what do you consider when buying a toy for your child?	2. what do you consider when buying an electronic device (eg. tablet, electronic watch, or game console) for your child?	3. Do you mind your child using some electronic devices during a gait test?	4. Could you list some games/ cartoons that your child likes recently?	5. Can you tell me your child's favorite roles in that game/ cartoon?	6. Can you tell me some places your child likes to go to?	7. If your children use these devices in the test, do you have any worries? Which device are you worry about?	8. Could you explain why about the selected device?
4/5/2020 20:1	I think he/she will be curious on the gait test.	quality, interests, function	quality, function	No	Tiktok	Dancer	Playground near the house, Forest, Sandbeach	I have no worries	I don't choose any, because environment would be safe
4/5/2020 20:2	I think he/she will be scared of the gait test.	function	function	No	Buurman buurman, brandweerman Sam, anything with DUPLO	Firefighter, train driver	Zoo, Playground near the house	I have no worries	They are commonly used best outcome.
4/6/2020 20:0	I think he/she will be curious on the gait test.	quality, security, interests	No electronics for my child	Yes	None - we don't use screens	Not applicable	Playground near the house, Forest, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/6/2020 20:2	I think he/she will be curious on the gait test.	quality, impact, learning and development	security, parental control functions	No	tchoupi, frozen, shrek,	no preferred role identified...	Science museum, Playground near the house, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/12/2020 13:	I think he/she will be curious on the gait test.	quality, security, impact	We don't buy electronic toys	No	Paw patrol	Zulma	Zoo	Sensors on body	I choose the device, because children would feel scared
4/12/2020 13:	They will end up doing what ever they want. Maybe even walking across.	interests, impact, No plastic and dumb toys in our house. Every toy must have several functions.	quality, security	It depends what are you going to play. We find lots cartoons for children are either too fast or to aggressive. We prefer slower stories with cute characters and colors. I would prefer option to bring video of my preference	Little Mole	Helping others, playing doctor, running	Playground near the house, Forest, Sandbeach	I have no worries	I don't choose any, because environment would be safe
4/12/2020 13:	I think he/she will be curious on the gait test.	function, impact, its contribution on physio- and neurological development of the child	so far - I did not buy	No	brandweerman Sam, Sesam straat, Thomas de trein	brandweerman	Playground near the house, Forest, In general outside to discover the nature and playing with children	I have no worries	I don't choose any, because environment would be safe
4/12/2020 13:	I think he/she will be scared of the gait test.	meaning	function	No			Zoo, Science museum, Sandbeach	Sensors on body	I don't choose any, because would feel excited about the
4/12/2020 13:	I don't think he/she will have lots of reactions.	interests	quality	No	Paw patrol, peppa pig	All of them	Zoo, Playground near the house	I have no worries	I don't choose any, because environment would be safe
4/12/2020 14:	I think he/she will be curious on the gait test.	quality, interests, meaning	quality, interests, impact	No	Roadblox, Fifa	Soccer player	Playground near the house, Sandbeach	I have no worries	I don't choose any, because would feel excited about the
4/12/2020 15:	I think he/she will be curious on the gait test.	interests, impact	interests, function	No	Paw Patrol	Rider, Sky	Playground near the house, Forest, Sandbeach	I have no worries	I don't choose any, because environment would be safe
4/12/2020 19:	I think he/she will be curious on the gait test.	security, interests, impact	security, interests, meaning	No	sims, pinguins, mindcraft		Zoo, Science museum, Playground near the house	I have no worries	I don't choose any, because would feel excited about the
4/12/2020 19:	I think he/she will be curious on the gait test.	meaning, function, impact	quality, security, interests	No	Angry birds		Playground near the house, Forest, Sandbeach	I have no worries	I don't choose any, because environment would be safe
4/12/2020 22:	I think he/she will be curious on the gait test.	quality, interests, function	quality, security, function	No	Monument Valley, Dr. Panda, Toy Story, Chip and Dale, Geronimo Stilton, Ice Age	The hero	Science museum, Forest, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/13/2020 2:5	I don't think he/she will have lots of reactions.	interests	function	No	Teen Titans Go, Roblox	Wolf or unicorn	Science museum, Forest, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/13/2020 14:	I think he/she will be curious on the gait test.	interests, function, impact	security, function, impact	No	Paw patrol, pokemon, true and the rainbow world (netflix)	Vera, chase, skye, pikachu	Playground near the house, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/13/2020 15:	I think he/she will be curious on the gait test.	interests	quality	No			Science museum, Forest, Sandbeach	I have no worries	I choose the device, because children would feel scared
4/13/2020 20:	I have no idea, my LO doesn't walk yet	quality, function, materials (preferably wood, otherwise recyclable), how long they can play with it (open end toys)	I would not buy this for my child	Unless there is a valid point of using them, it's okay. If it's just plain entertainment. I don't want my LO to use it. But it also depends on how intense the graphics/sounds/ lights on the electronics are.	My child does not watch TV	My child does not watch TV	Playground near the house, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/14/2020 10:	I think he/she will be curious on the gait test.	interests, impact	quality, interests, impact	Yes	Paw patrol, peppa pig, elsa and anna	Superhero, princess	Zoo, Playground near the house, Sandbeach	I have no worries	I don't choose any, because would feel excited about the
4/14/2020 17:	I think he/she will be curious on the gait test.	security, interests, impact	interests, function, impact	No	Rescue riders, memory, double, word zoeker, Tetris	Active, winner	Zoo, Forest, Sandbeach	Sensors on body	I choose the device, because children would feel scared
4/15/2020 20:	I think he/she will be curious on the gait test.	impact	i do not buy them	No	the pink panther		Science museum, Playground near the house, Forest	Sensors on body	I choose the device, because children would feel scared
4/15/2020 22:	I think he/she will be curious on the gait test.	interests	interests	No	Peppa Pig, Shaun the sheep, Frozen. Simple memory board games.	Elsa	Playground near the house, Sandbeach	I have no worries	I don't choose any, because environment would be safe
4/16/2020 11:	I think he/she will be excited about the gait test.	quality, security, interests	security, function, impact	No	PJ masks	the three maskers	Playground near the house, Forest, Sandbeach	I have no worries	I don't choose any, because environment would be safe

	9. To what extent do you care for your child's walking manner?	10. How old is your child?	11. What's the gender of your child?	12. What's the nationality of your child?	1. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen.	2. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?	3. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen.	4. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?	5. Kies wat je favoriete loopruimte is. Je kunt twee opties kiezen.	6. Waarom hou je van die loopruimte? Kunt u mij 3 aanwijzingen geven?	If you are interested in the project. Please leave your email address:
use I think the e for the test;	3	>10			4	Bomen, Zand, Zonneschijn	9	Natuur, Leefomgeving, Dier	1	Lieflijkheid, Fantasie, Droom	
devices to get the	7	<4			10	Speelplaats, Spel	8	Oceaan, Leefomgeving	9	Nieuwheid, Lieflijkheid, Verrassing	
use I worry about my of the device;	6	<4			5	Dieren	1	Vriend, Virtuele peer, Virtuele omgeving	3, 9	Expeditie, Lieflijkheid, Nieuwsgierigheid	
use I worry about my of the device;	6	<4			4, 5	Dieren, Speelplaats, Zand	1, 8	Oceaan, Natuur, Dier	1, 9	Kleur, Licht, Vrede	
use I worry about my of the device;	5				5, 6	Dieren	1	Natuur, Virtuele omgeving	1, 7	Fantasie, Verrassing	
use I think the e for the test;	6	<4			4, 10	Gras, Zand	4, 9	Natuur, Universum	2, 9	Kleur, Licht	K @ m
use I think the e for the test;	7				2, 6		9, 10		8, 9	Kleur, Fantasie, Nieuwsgierigheid	d @ m
use I think my children ne test;	1	>10			6	Straat / street	9	Universum / Outer space, Stripfiguur / cartoon roles	10	Kleur / color, Licht / light	
use I think the e for the test;	2	<4			1		8		6		
use I think my children ne test;	6				4, 8	Steen / stone, Zonneschijn / sunshine	8, 9	Natuur / nature, Virtuele peer / virtual peer	3, 5	Licht / light, Expeditie / expedition	
use I think the e for the test;	7				3, 9	Speelplaats / playground, Spel / games	6, 8	Natuur / nature, Stripfiguur / cartoon roles	1, 7	Kleur / color, Lieflijkheid / cuteness	
use I think my children ne test;	6				5, 10	Dieren / animals, stripfiguren / cartoon roles, Speelplaats / playground	2, 10	Dier / animal, Stripfiguur / cartoon roles	3, 7	Lieflijkheid / cuteness, Fantasie / fantasy, Droom / dream	ch w cc
use I think the e for the test;	2				2, 10	Dieren / animals, Bomen / flowers, Gras / grass	1, 8	Natuur / nature, Leefomgeving / living environment, Stripfiguur / cartoon roles	1, 8	Kleur / color, Expeditie / expedition, Verbazing / amazing	i @ m
use I worry about my of the device;	6				9	Spel / games	8, 10	Held / Hero, Vriend / friend, Stripfiguur / cartoon roles	6, 8	Nieuwheid / newness	
use I worry about my of the device;	1				2, 4	Dieren / animals, Zand / sand, Zonneschijn / sunshine	4, 9	Oceaan / ocean, Natuur / nature, Vriend / friend	8, 9	Kleur / color, Licht / light, Fantasie / fantasy	
use I worry about my of the device;	2	<4			5, 10	Dieren / animals, Speelplaats / playground	1, 4	Universum / Outer space, Stripfiguur / cartoon roles	1, 8	Verbazing / amazing, Fantasie / fantasy	
use I worry about my of the device;	7				3, 4	Spel / games, Zand / sand, Zonneschijn / sunshine	4, 5	Oceaan / ocean, Universum / Outer space, Virtuele peer / virtual peer	8, 10	Licht / light, Fantasie / fantasy, Verrassing / surprise	
use I worry about my of the device;	7	<4			2	Dieren / animals, Bomen / flowers	9	Natuur / nature, Leefomgeving / living environment	3, 9	Lieflijkheid / cuteness, Nieuwsgierigheid / curiosity	
use I think my children ne test;	3				3, 4	Zand / sand	1, 4	Universum / Outer space	1, 2	Kleur / color, Licht / light, Lieflijkheid / cuteness	
use I worry about my of the device;	6			ts	3, 4	Spel / games, Zand / sand, Zonneschijn / sunshine	6, 9	Natuur / nature, Dier / animal, Vriend / friend	3, 7	Kleur / color, Lieflijkheid / cuteness, Fantasie / fantasy	ch @ m
use I worry about my of the device;	5				2, 4	Zand / sand, Zonneschijn / sunshine	4, 9	Universum / Outer space	10	Verbazing / amazing	
use I think the e for the test;	6				3, 9	Speelplaats / playground, Spel / games, Straat / street	8, 10	Dier / animal, Vriend / friend, Stripfiguur / cartoon roles	1, 7	Kleur / color, Licht / light, Lieflijkheid / cuteness	
use I think the e for the test;	7		5 Male	Dutch	6, 7, 8	Gras / grass, Speelplaats / playground, Straat / street	3, 5, 7		4, 6, 8	Verbazing / amazing, Vrede / peace, Lieflijkheid / cuteness	x @ m

Appendix A5

Fast simulation gait test

Fast simulation gait test

Kid at age of 10



Description from parents:

Extrovert **Easy-going**
Independent
Inner-directed



Kid at age of 3



Description from parents:

Timid **Intelligent**
Compliant
Sensitive

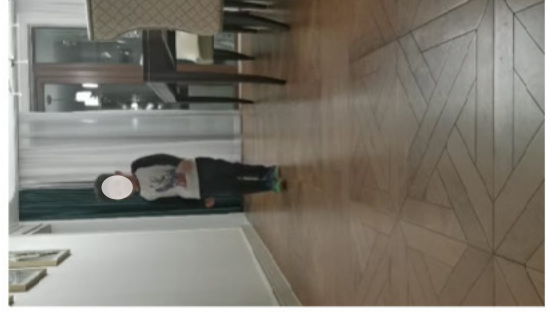


Kid at age of 4

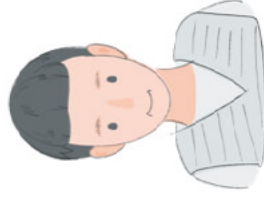


Description from parents:

Naughty **Cautious**
Clinging **Sensitive**
Bossy



Kid at age of 8



Description from parents:

Compliant **Shy**



Kid at age of 5



Description from parents:

Bright **Lively**
Easily satisfied **Active**



Results for analysis

Kid at age of 8	Screenshot-1	Screenshot-2	Kid at age of 10	Screenshot-1	Screenshot-2
 <p>After a few times of training, he can even finish the complex protocol; Mentioned by his Mama, because it is a rare time that she PLAYS with her son, He is quite happy and relax</p>					
	Between the Tandem walking and dual task walking, he scampers back	He detects the same start point for all the small tasks. Therefore, his last Dual task walking doesn't follow the tandem walking in video; instead, there is a break.	The walking at the front/end point is a turning around.	He walks in big steps. In interview, he mentions that he is a little bit nervous because he is not sure if he follows the instructions right.	After the 6 times of walking, he stands straightly for the next instruction.
Kid at age of 4	Screenshot-1	Screenshot-1	Kid at age of 3	Screenshot-1	Kid at age of 5
					
Without a boundary, he detects the walking back and forth as a walking around a circle. Le: walk round and round? Mama: en (yes)	When counting difficulty, he is not serious and runs to his mom.	When walking back for the first, he smiles to the camera. He doesn't receive any reactions on the camera side, then he receives an instruction from others and walks again.	When walking back again, there is no smiling on his face. He looks at the camera and other people around until the coming instruction.	Before walking, she stands straightly with her feet together.	For the turning task, she is not satisfied with the previous obstacle in the middle. She picks a pumpkin in the middle by herself.

Appendix A6

Contextmapping research

Child profile and process

Kid at age of 5



Description from parents:

Inarticulate **Naughty**

Polite **Helpful**

Persistent

Kid at age of 4



Description from parents:

Lively **Outgoing**

Compliant **Smart**

Kid at age of 7



Description from parents:

Contemplative **Introvert**

Self-aware **Intelligent**

Kid at age of 8



Description from parents:

Alive **Extrovert**

Vibrant **Chaotic**

Kid at age of 5



Description from observation:

Compliant **Independent**

Compliant

Agenda with family:

- ↓ Send the 2nd sensitizing material
- ↓ Parent replies no time and welcomes to do research at home
- ↓ Send SAY HELLO video to family before the visit
- ↓ Visit, and firstly, ask children to draw self-portrait
- ↓ Invite children to do a walking task (the gait test)
- ↓ Do some walking tasks with number stickers for initial ideas and with emoji stickers for experience mapping
- ↓ Do image inspiration with one child

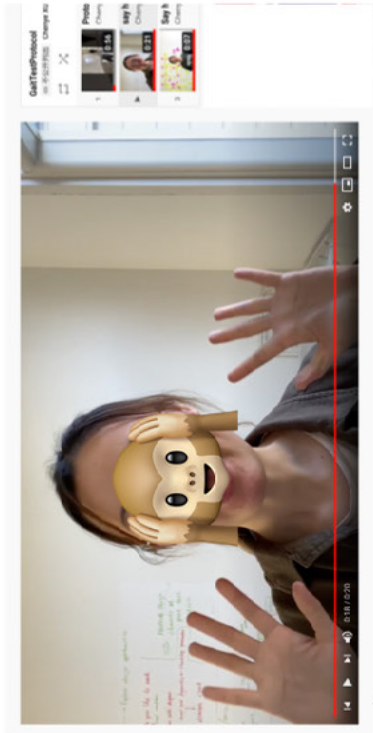
Agenda with family:

- ↓ Send online Contextmpping materials
- ↓ Parent conducts the gait with children twice, the gait test and a walking with mirror
- ↓ Parent asks children the prepared questions
- ↓ Parent finishes and sends back all the materials before interview
- ↓ Make a interview appointment and send SAY HELLO video to the family
- ↓ Interview with the family online

Agenda with family:

- ↓ Send the 2nd sensitizing material
- ↓ Parent checks the material and welcomes to do research at home
- ↓ Send the SAY HELLO video to family
- ↓ Parent helps child with sensitizing material before session
- ↓ Ask child the finished sensitizing material
- ↓ Invite children to do a walking task with different design interventions during the walking;
- ↓ Do image inspiration with one child

Kid-1&2 research materials



Say hi video before the interview
<https://www.youtube.com/watch?v=qONZrREgu4&list=PL84wBo4AF7nEVJ70cxg8QIQkySZPkegm&index=3>



Kid-1 test results

 <p>Kid-1 at age of 5</p> <p>He is very lively and expressive; he speaks in a hurry, so his expression is not clear. He is imaginative, and he can express his drawing dynamically through onomatopoeia. He was very attentive when he is drawing and he can draw for a long time; His sister mentions he is good at drawing cars. He is independent enough to be his mother's little helper in cleaning up the house.</p>		<p>Gait test scenario (researcher as conductor)</p> <p>Test conductor gives instruction each time of walking. The test conductor spends most of the time with his sister, and can not watch his walking during the simulated test.</p>									
1st testing-before walking		1st walking		2nd-4th walking		5th-6th walking		7th-8th walking		Finish	
<p>The researcher plays with her sister most of the moments and cannot keep an eye on Kid-2. There are lots of moments of his trying, to catch the researcher's attention.</p>											
<p>Kid-2 is asked if he can walk between the two points. Kid-2 says, "run over there!"</p>		<p>He runs for the 2nd and 3rd walking. For the 4th walking, the researcher asks if he can walk back slowly. He follows the instruction. He jumps and hits the ground hard at the end point.</p>		<p>He is asked to "WALK" over there; he runs again. The researcher asks him to walk back slowly once more.</p>		<p>He strides back and forth.</p>		<p>He walks spontaneously and is stopped by the researcher for the turning.</p>			
2nd testing-before walking		1st & 2nd walking		3rd-4th walking		5th-6th walking		Finish			
											
<p>Kid-2 watches his sister walking and pasting number stickers; he says he wants to play as well. The researcher pastes 6 numbers on his elbow.</p>		<p>He walks to the sheet first so as to paste the stickers directly. Then, the researcher asks him to walk first and emphasises to walk slowly. He follows instructions and to the start point</p>		<p>He knows the rule and can walk without instruction. (the researcher's attention is on his sister.) He walks back and forth as his rule and pastes his 1st and 2nd stickers on sheet.</p>		<p>He begins to strides. He doesn't reach the two sides. (3rd sticker) He turns a big circle near the sheet and pastes his 4th sticker.</p>		<p>He shakes his body, jumps around a few times, and pastes his last two stickers. When jumping, he looks to the researcher and finds out the researcher doesn't have an eye on him.</p>		<p>He finishes and ask for the next sticker.</p>	

Kid-1 test results

3rd-before walking	During walking			Finish
				
He chooses a sticker and is asked the reason. He mentions he likes the smiling face. He is asked to walk 6 times back and forth and then he can paste the sticker.	He understands the instructions. He walks but doesn't reach the two sides. He turns big cycles.			He pastes the sticker on sheet.

Kid-2 test results

<div><div></div><div><h3>Kid-2 at age of 4</h3><p>She is lively, cheerful, and expressive; she has his own ideas and like sharing what she has learned with others. She is compliant; she is able to complete the task well according to the adult's request. She has persistency of waiting 15 minutes for an ice-cream. She likes light pink and castles.</p></div></div>						<h3>Gait test scenario (researcher as conductor)</h3> <p>She is 3 times guided to do a gait test. Because it is a great opportunity of closing to children, lots of materials are prepared both to find the current problem and design opportunity.</p> <p>When her brother walks, She says "I know! walk alone this blue line!"</p>					
1st testing-before walking		1st walking		2nd walking		3rd walking		Following 3 times walking		Finish	
<div><p>After researcher plays with child for long time, She is asked to play a game with the researcher. She agrees and the researcher takes her to start point.</p></div>		<div><p>(researcher). "walk over there, ok?"</p><p>She is reluctant to do the walking because of a disruption of her previous play.</p></div>		<div><p>Her brother disrupts her when walking back. She follows the instruction; she tries to stop her brother and walks back.</p></div>		<div><p>The researcher gives a clap for her walking back; she is cheered in this easy task and walks faster.</p></div>		<div><p>She speeds up and runs back; she runs to the other side before she waits to the next instruction.</p></div>		<div><p>After 6 times walking (back and forth in total), she runs away.</p></div>	
2nd testing-before walking		1st walking		Pasting sticker				Before 2nd walking			
<div><p>She picks a number sticker (number 1) and is asked to go to the start point and walks to the researcher.</p></div>		<div><p>She plans to put the number sticker on the ground. The researcher says to her to walk to her at this moment.</p><p>She follows the line on the ground; she stops and looking her drawing in the middle.</p><p>The researcher claps once and asks her to move on.</p></div>		<div><p>She is asked to put the number on the sheet. When she plans to paste the sticker in 2nd block, The researcher asks her where the No.1 on sheet is. Then, she gets the researcher and paste No.1 sticker in 1st blocker.</p></div>				<div><p>She cannot read the 4 on sheet, written by the researcher. She comes to pick the No.2. the researcher suggests her picking up all the numbers as well. No.2-6 are pasted on her elbow.</p></div>			

Kid-1 test results

2nd walking		3rd & 4th walking	5th & 6th walking	Finish
 <p>The researcher asks her to walk back to the start point, as the 2nd walking. She looks at the stickers on elbow and begins to walk. Then, she realises that she doesn't walk from the start point. She turns back to the start point and redo the 2nd walking.</p>	 <p>She walks back a few steps. The researcher asks her to paste the No.2 on sheet. She turns around at that moment (a bit bewildered). Then, she follows the instructions and walks to the sheet. When walking, she says "Why I need to walk twice?"</p>	 <p>For the 3rd walking, she firstly goes to the side near the red box. Halfway through the walk, she comes to a screeching halt and walks to the other side near the blue bin. She detects the start point the same. The point near the blue bin. She knows the rule clearly at the 4th time and scampers a little bit at the end.</p>		 <p>She scampers for the 5th time and walks in a normal status for the 6th time. When she walks to the sheet, she says "the 6th time!". After finishing, she cheers. "yeah~ yeah~"</p>
3rd testing-before walking	1st & 2nd walking	3rd & 4th walking	Following walking	
 <p>Emoji is used for the 3rd testing. Kid-1 is asked to walk 6 times without stopping and to count times by herself.</p>	 <p>She counts the number for each step. With the thinking, she walks slowly in small steps. Later, numbers slip out of her tongue without thinking. And the counting and step can not be matched one by one sometimes. When finishing, she says to researcher: "I count to 20!"</p>	 <p>She starts with small steps as well. When she counts 5-6, she walks unsteadily. Then, she takes her steps bigger and strides. After she walks back to side, she turns to the researcher and says: (M)"I count to 18!" (R)"Do you know why this time counting is different?... what if we count the 3rd time. What will be?" (M)"...19!" (R)"let's have a try."</p>	 <p>She walks heel to toe for the first few steps and counts at the same time. When she walks to the other side, she counts to 16 and says it to the researcher. With the number 16, she thinks it is finished and goes to sheet "16!"</p>	

Kid-1&2 test results

Camera: Kid-1 & Kid-2's first reaction

When Kid-1 is drawing, she sees himself on the phone's screen (video is recorded via front-camera). She is curious about the new thing in the house.

The researcher worries that the recording has a negative impact on children; and she directs them to observe themselves on camera and say hello. *"Haha, what's this?"*

Kid-1 says hello with his hands shaking, but he leaves due to the lack of response from camera. Kid-1 is also curious about the camera.

The researcher takes the opportunity to turn the camera to Kid-2; Kid-2 is asked to observe herself on the screen and draw a self-portrait. Kid-2 takes a look at herself and starts; later, she is concentrates on drawing without looking at the screen anymore.

"I see myself! What does it happen?!"



Emoji stickers: Reason of selecting emoji and rewards

The sticker is chose as a preference for child. She choose the sticker with her favourite elements on it, smiles, loving heart, kissing, etc.

The emoji rises her interests. She keeps asking for the emojis and indicates herself performing well (counting more numbers). And receiving emoji becomes the main reason for her walking.

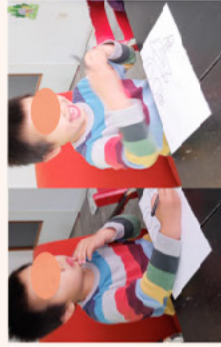
After finishing 8 emojis on sheets, she draws cups as a reward for her achievements.

"choose one more."
(M)"I count to 24!"
(R)"should we paste sticker? How many numbers did you count last time?"
(M)"..."
(R)"do you want to paste?"
(M)nodding
"I like smiles all."
"Oho, I can't wait (to paste the emoji)!"



Imaginative:

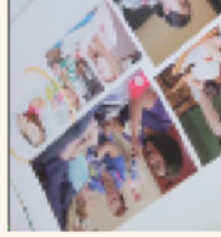
When Kid-2 is drawing, he imagines a lot in his head. He creates some scenes in his head and becomes excited. He uses the pens to depict the scene dynamically.



Images inspiration:

When seeing the images of child with bored or angry emotions, Kid-1 says she doesn't like those images because they are unhappy.

When asked, what she will do when getting bored. She cannot tell at the beginning. Then she sees a image with pencils and says, *"drawing!"*



Camera: Sister's a mirror interaction

When eating ice-cream. Both of them notice the camera. When the sister notices it, the researcher gives a hints to her, if she would like to walk close to have a look.

She walks close to camera and is asked how to see herself. She moves her head a little bit down first, then walks forward and back. She answers the researcher:

(Kid-2), "While I am thus (walking forward), I become larger, and then I cannot see myself; if I gets smaller (walking back), you'll see it. Look! It turns black!"

After she detects the light changes, she walks forward again.

Ice-cream: How Kid-1 describes the world.

Kid-1 says the ice-cream can only be eaten when it is hot. When asked why, she answers:

"Ice-cream will fall off and blow the wind away"



Line instruction: How child walks on line

Both Kid-1 and Kid-2 can easily follow the line, in terms of turning and tandem walking. However, multi-lines on the ground distracts child's walking.

Line for normal walking: Kid-1 walks in small steps with her both two feet on the line, with a difficulty for child to walk on one line, they are easily to give up and walk back to a normal status.

Line for turning: Kid-1 is firstly asked to do a turning with a demonstration by the researcher. She turns around in the middle first, then she watches the line and chooses to follow one she prefers.

Circles for tandem walking: After several times explanation, child cannot understand the tandem walking; therefore, the circles idea pops out and it works well.



Teaching: Kid 1 likes sharing

Kid-1 is teaching the researcher a jumping posture she learns from school. She corrects the researcher several times. The first few times, she watches the researcher's jumping and says it is wrong; later, she explains to the researcher where is wrong:

(M)"it is wrong! ... it is wrong. Don't move your hands...hands, ...don't move. Only move feet."
(R)"is it?" (M) yes!...Yes! Follow me!"



Kid-3 test results

		Kid-3 at age of 7 Kid-3 is very different (from Kid-4), contemplative, very self-aware and intelligent. She is curious and would like to know how stuff works. She is introvert and you have to win her heart first. She has a very athletic build and very supple motion. She goes to gymnastics classes and enjoys challenges. She does not need encouragement to partake in challenges.		Gait test scenario (father as conductor) Father gives her a "little test" / exercise; the 1st walking is without mirror and 2nd walking with;					
1st testing-before walking		1st&2nd walking		Following walking		Finish		Entire experience	
									
When her father introduces me, she walks on the line. She knows somebody is recording it so she is a bit shy.		(Even though)With a clear instruction at the beginning, Kid-3's 2nd walking stops and turns around for 3rd walking at the starting point		She keeps walking cautiously with her head tilted and body stiff		She puts her feet together and looks at her father.		This is a gesture of "interesting" in family.	
2nd testing-before walking-mirror		1st&2nd walking		Following walking		Finish		Entire experience	
									
Her father asks her to be a little bit relaxed; she still walks in the same figure, with the head tilted and body stiff.		There are moments that she chuckles. Reasons mentioned by father is that it is interesting to use logicals(gloves and shoes) as a marker.		She starts running and that is the moment she is relaxed. This is a moment she forget the test she is in.		At the end point, She jumps and looks at her father. She is disgruntled because she doesn't achieve something out of her expectation.		Despite lack of expectant achievement, she still feels the test interesting, because this is something new.	
Mirror: She sees herself and lots of objects in the mirror (Lego, daddy, wooden box, phone) she feels herself nothing special in the mirror;		Information in the test: She is asked what kind of information she would like to know during the test (no info/a story without full truth/the full truth of the test/a story in game); She thinks for a while and then she rises her hands to make a phone call to herself. “(father)she is going to make a phone call” she gives a call for the answer. She replies that she doesn't matter. She feels happy to learn all the info because it is intriguingly interesting, which is the reason to join;		From father's perspectives: - Gait test is something new to her and she stays her curiosity in the complete 2 times of walking; - As a test without challenge, child expectation rises. Here the expectation is a surprise; - Being monitored is a reason for her to stay cautious(objects/people interaction);					

Kid-4 test results

	<h3>Kid-4 at age of 8</h3> <p>Kid-4 is very vibrant, alive, and chaotic. She is extravert, any person is a great friend. She does not want to miss anything, and also, she will interpret whatever easily and read something into anything, even if that is completely off. She is a quick thinker and quickly draws conclusions. She could avoid challenges, if there is a lazy solution - unless you make the challenge a challenge "You can do this! Can you compete with ...?"</p>	<h3>Gait test scenario (father as conductor)</h3> <p>Father gives her a "little test" / exercise; the 1st walking is without mirror and 2nd walking with,</p> <p>"Really nice to be able to help"</p>
<h4>1st testing-before walking</h4>	<h4>1st walking</h4>  <p>The walking space changes from lobby to the sitting room, therefore, she knows the test protocol without instruction.</p>	<h4>Following walking</h4>  <p>(father) "Nog een keer"</p>
<h4>2nd testing-before walking-mirror</h4>	<h4>2nd walking</h4>  <p>"It is confusing!"</p> <p>When walking back, she points to the boxing gloves and says it is confusing. She assumes that the boxing is the stop and the walking path is shorter.</p>	<h4>Finish</h4>  <p>"(Kid-4) one more time?" "(Father) No, That's it."</p> <p>Kid-4 checks the times again.</p>
<h4>Entire experience</h4>  <p>Her father explains this is a positive emotion with curiosity. And she stays relaxed because she knows there is no harm coming.</p>	<h4>Entire experience</h4>  <p>Doubting, she is happy but wondering what she is doing "why am I supposed to do this? I really don't get the point"</p>	
<h4>From father's perspectives:</h4> <ul style="list-style-type: none">- In a easy task, she is tend to be laid back;- Mentioned by her father, she has a lot of spirit once she is thrown off; "They could be challenged"- Child has the curiosity to know about "the walking test";- Since the test is already meaningful, father mentions he doesn't expect anything else during the test.	<h4>From father's perspectives:</h4> <ul style="list-style-type: none">- In a easy task, she is tend to be laid back;- Mentioned by her father, she has a lot of spirit once she is thrown off; "They could be challenged"- Child has the curiosity to know about "the walking test";- Since the test is already meaningful, father mentions he doesn't expect anything else during the test.	

Kid-5 research materials



Kid-5 test results

		Kid-5 at age of 5 Kid-5 is shy. She loves drawing and has strong association. She can fully focus on drawing even though she is tired. In terms of instruction, she can follow it and finish it.		Gait test scenario (researcher as conductor) The researcher gives her 2 rounds of walking test. Different tasks are set in-between.							
1st test -before walking		1st&2nd walking		A clip		Following walking	-	Finish			
Two sheets are at front and end of the path; 3 blocks are drawn on each sheet to paste number stickers. Before walking, she is asked to paste a No.1 and walk to the other side to paste No.2.		She pastes No.2 on the paper and walks back; she take back the sheet on the other side as well.		She is asked to put the sheet back to the end of the path. She walks there and jumps back. She stays jumping at the front side and waits for next instruction.		When asked how many times she walks, she stops jumping doesn't reply. Then, she is asked which number you are pasting, she replies No. 3. And she is asked where to paste 3. She has no idea. And she is told to paste 1-3-5 at the front side. She pastes 3 first and then she is going to paste 5 directly, which is stopped by researcher. She is asked to walk there to paste No.4 first.		When she walks back, she is asked times of walking. She says "I don't know." She is asked which number should be pasted here. She says No.5 and pastes			
2nd testing -before walking		1st walking		2nd walking		3rd&4th walking		5th walking		The researcher tells her there is no green post-its and asks her for another color. She select pink. And walks to the end point	
Colourful rectangular is used to paste on sheet. She is asked to choose the color first. She select green post-it and start. The post-it is a start for each time of walking.		She puts the first post-it on the sheet; she looks at the researcher; she stays cautious to the research.		She holds the post-its and walks back.		She tears off one post-it, pastes it, and continues.		It is hard to separate the post-its; the last 2 post-its are used out together. After pasting it, she strides and scampers.		The researcher tells her there is no green post-its and asks her for another color. She select pink. And walks to the end point	

Kid-5 test results

6th walking & finish		Finish		Experience	
					
6 emojis/stickers are selected once. Kid 5 is asked to help put two new sheets at front and end. She is asked if she wants to run or walk. As she chooses to run, the researcher let her run and finish task.		With 6 emojis in hands, it takes a while for her to select one and leave it on the sheet. She runs in small steps during the task.		After finishing all stickers, she strides back instead of running.	
3rd testing-Before walking		Walking		Finish	
	<p>(R)*do you want to run when you walk? (L)*Yes, I want.* (R)*Why? (L)*because I like running.* (R)*which one do you like better, walking or running? (L)*Running better.*</p>				
Colourful rectangular is used to paste on sheet. She is asked to choose the color first. She select green post-it and start. The post-it is a start for each time of walking.		She holds the post-its and walks back.		It is hard to separate the post-its; the last 2 post-its are used out together. After pasting it, she strides and scampers.	
The quick-asking video: difficulty of the material Before the visiting, parents show the quick answer questions to Kid-5; at the very beginning, she is happy to answer the questions. Later, the questions become difficult and she becomes impatient to answer. She watches herself via phone front-camera; she makes a mouth. ... (Mama)*do you have any difficulty at that time? (Kid-5)*I forget.* (Papa)*Have you ever hurt, or fallen down? (Kid-5)*No* (Video)*what have you learned in gym lesson? (Kid-5)*I don't know.*					
Entertain child Kid-5 shares her favourite cartoons: L: This is my favourite. (q=8+1) R: why? L: because q is always ah-shoo, ah-shoo... R: why it ah-shoo? L: because ah-shoo is sneezing. ... L: wait, it will say ah-shoo ... L: ah-shoo, ah-shoo, haha...					
Q to Mama Worries: Mama mentions that there is no worries if the gait test is just about walking without intrusive sensors. She also mentions that using sensor is also ok if there is no harm. Papa adds: I think it must not be strange. Because child is normally scared with touching...it must be familiar Expectation: Mama mentions that she is expected to see the results of the test. Mama is a researcher and she is also curious about what and why of the test and even some conclusions from the lab. If want to know child's performance in the test: it doesn't matter because she believes this is harmless and runs a tight ethic process					

Instruc-

Current problem

Analysis 1

5

Finish

unwilling because of playing her playing

Competitive with her sister & want to do the task

Shy/Cautious because of being monitored

Relaxed & willing to help with the task

The Cautious is raised by the test conductor

Cautious stand straightly and want to start

Relaxed & smiling because he is happy to play a game together

Video instruction - Children can understand easily - but the concrete person in video notes the cues of walking - child is motivated to stand easily

Verbal instruction - it is hard to explain walk back from 6 times for some children - Child is easy to be distracted

start & end point - because the setup at home is not strict and with specific notes for children they are not confused with the two points

start point - for most of the children they think of 1 start point

a break during walking Cautious → relaxed

Turning at the start and end point

Expectancy becomes higher in the easy task & they also expect something out of their expectancy

unwilling because of following instructed because with friend promise

relaxed and start running as he wishes they cannot understand the instruction of walking

Cautious cautious walking and cannot be relaxed cause of being monitored but no idea of why walking

Confused with the start point and end point mindless

Relaxed and jumps back because the instruction is only referred to go over there

Relaxed when Nervous a little bit because he is not sure if he walks right

Expectant because they want a feedback / encouragement from people around

Follow the instruction with the unwillingness & walk slowly Complaint

unwilling with striding and hitting ground at the end

She is entertained by the objects round

Relaxed and jumps back because the instruction is only referred to go over there

Relaxed when Nervous a little bit because he is not sure if he walks right

Expectant because they want a feedback / encouragement from people around

with the encouragement, confirmed of her walking & starts running speeding up

Not serious Mischievous

stay cautious with stiff body and head tilted

Complaining because of the unclear test

mindless following what you asked

She is willing to help

start point

Not serious Mischievous

She is relaxed and starts running A trigger by her father

mindless and in a lurch because it's a easy task

relaxed moment during break

uncertain about the reason & speak aloud for confirmation

relaxed during break

start point

Not serious Mischievous

She is relaxed and starts running A trigger by her father

mindless and in a lurch because it's a easy task

relaxed moment during break

uncertain about the reason & speak aloud for confirmation

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She is relaxed and starts running A trigger by her father

mindless and in a lurch because it's a easy task

relaxed moment during break

uncertain about the reason & speak aloud for confirmation

relaxed during break

Video instruction - Children can understand easily - but the concrete person in video notes the cues of walking - child is motivated to stand easily

Verbal instruction - it is hard to explain walk back from 6 times for some children - Child is easy to be distracted

start & end point - because the setup at home is not strict and with specific notes for children they are not confused with the two points

start point - for most of the children they think of 1 start point

a break during walking Cautious → relaxed

Turning at the start and end point

Expectancy becomes higher in the easy task & they also expect something out of their expectancy

She can understand the walking and running Walking for different children - walking slowly - walking within behavior

thoughtful mindless because of the impulsive character

Compliant with following the instruction

Extrovert child - something happens out of expectancy

Cautious stand straightly with feet together

The easy task with higher expectancy

Enjoy his mischievous moment

In a hurry to finish her TASK then, she can finish her own thing

Current problem analysis 2

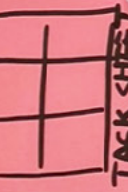
Difficult TASK

Numbers:

- matching numbers to carrier for children instead of riding them to fill in
- They can count numbers but they sometimes get into

When counting & stopping at the same time, they need training

When counting difficulty, they are becoming impatient. they can answer "I don't know" or be disinterested



TASK SHEET

Number Post-it Emoji

Outer reward is a distraction to children

Parents

Result is more important and meaningful to parents

They don't care too much on children during the test because they trust the lab

Mirror

Mirror can also be a distraction because they can see a lot via mirror

Children can be curious at the beginning but without further interaction, they lose their interests

keep talking rewards and encouragements give it open a small hole

Info WHY TEST

The whole story of the lab is informed and it's overwhelming to children
→ brain-gut knowledge

Self-Centered ASSOCIATION

When seeing the elements on image, they can associate the elements to themselves strongly

because they young children are self-centered

- It takes time on the start & end point
- they forget the walking tank
- they fill in the space select the emoji & put it only at the start & end



Parking

Appendix A7

Ideation session



Ideation session 1

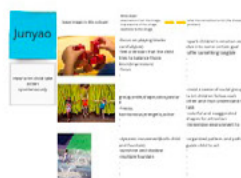
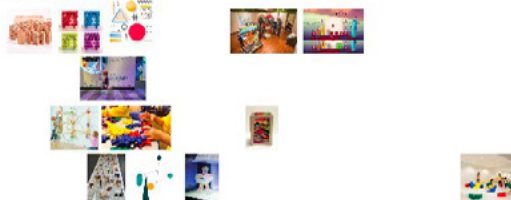




To achieve a rational ordering of a group of men or to be on the part that is a characteristic only without extra dependencies out of a group and any dependencies from the test conditions, we use to gain the knowledge about the best gate relation, and achieve a treatment of people during the gate test.



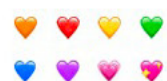
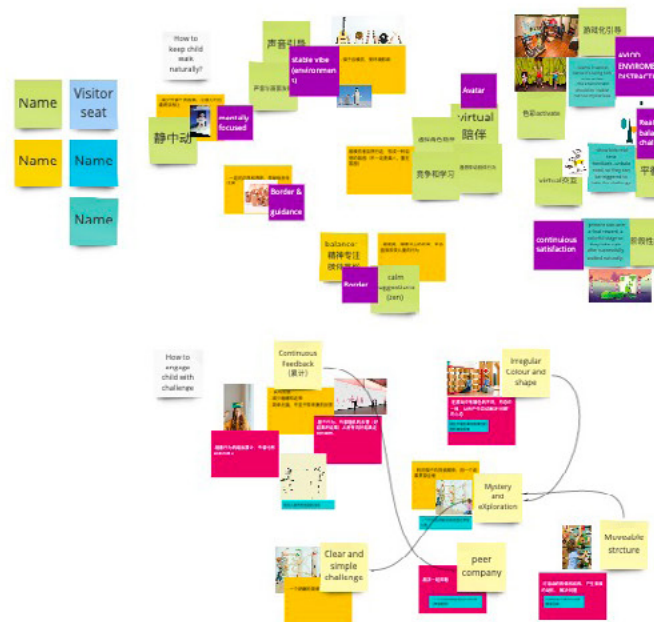
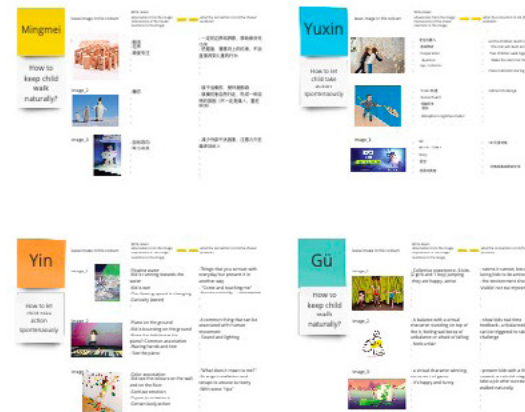
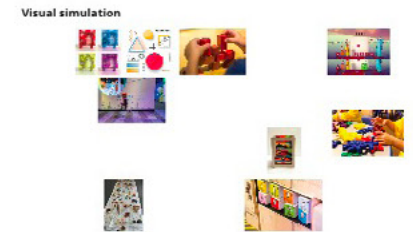
Visual simulation

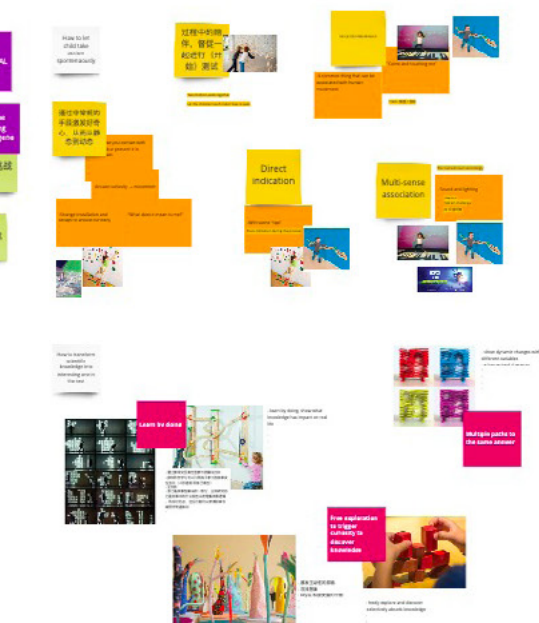
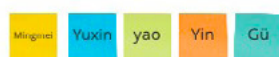


Idea sharing -> hits -> discussing and inspiring

ring
miro

Ideation session 2








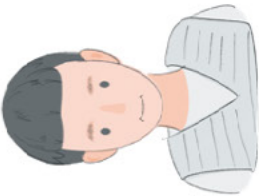


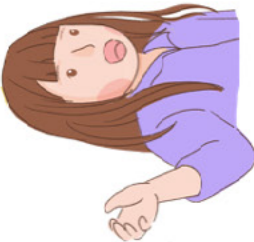

Appendix A8

Intervention iteration

Idea overview



Kids profile

Kid at age of 7	Kid at age of 3	Kid at age of 4	Kid at age of 8	Kid at age of 5
				
Description from parents: Introvert Inarticulate Logic-thinking Sporty Brainy	Description from parents: Timid Intelligent Compliant Sensitive	Description from parents: Naughty Cautious Clinging Sensitive Bossy	Description from parents: Compliant Shy	Description from parents: Bright Lively Easily satisfied Active
Kid at age of 5	Kid at age of 4	Kid at age of 8		
				
Description from parents: Inarticulate Naughty Polite Helpful Persistent	Description from parents: Lively Outgoing Compliant Smart	Description from observation: Compliant Shy		

Iteration-1

Kids profile

Kid at age of 7



Description from parents:

Introvert **Inarticulate**

Logic-thinking **Sporty**

Brainy

Kid at age of 3



Description from parents:

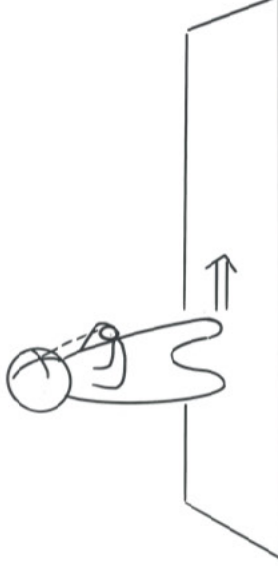
Timid **Intelligent**

Compliant

Sensitive

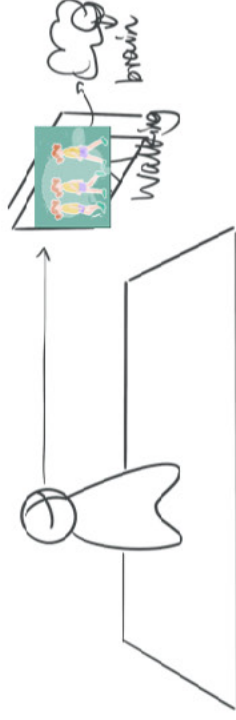
Test ideas

Divert attention from walking



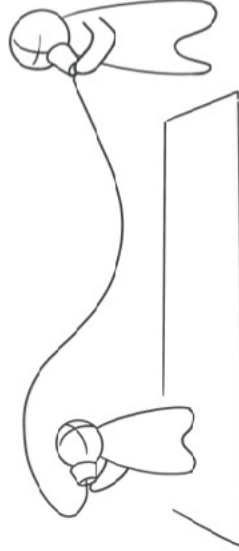
Playing something in hand when walking and divert children's attention during walking

Tell the knowledge via hybrid image



When standing far away, children see there is a peer walking as well; when closing, the brain image pops out. And children can know there is a connection between the brain and the walking.

Peer / test conductor's company



Inspired by children secretly calling themselves, use a megaphone to give the instruction secretly, so as to rise their interests and add fun.

Test instruction for family

Preparation:

- Set up a walking space of 5m*1m and mark at the two sides;
- A rubix cube (or anything else that can play in hand) ;
- A megaphone made by two cups;
- A tablet to show one image;
- A camera/phone to record the entire process;



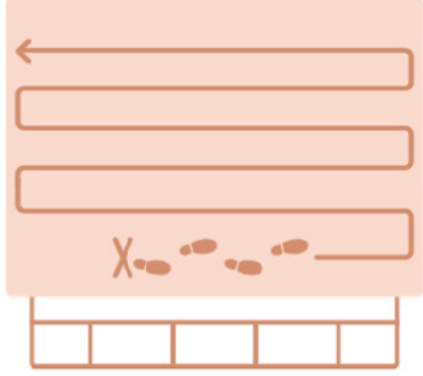
Example of megaphone



Image used in tablet

Test introduction:

- Tell child to stand at X point (not on the two sides) and walks 6 times;
- For each test, different materials would be used. And questions for child are listed on the right.



Note: the start point is different from the end points; and times of walking is for single direction.

Sequence of the materials:

- 1st test: ask child play rubix cube and walk;
- 2nd test: instruct child with the megaphone;
- 3rd test: place the image on the side and show to the child when walking;

Questions after 1st test:

- What were you thinking when walking?
- The rubix cube or walking?
- If you give you something to play in hand and walk, what will you choose??

Questions after 2nd test:

- What were you hearing when walking?
- What do you think to have an instruction like this?
- Do you like this instruction when walking?

Questions after 3rd test:

- Did you see the image when walking? what do you see?
- What did you see when close to the image?
- What did you see far away?
- Is it interested for you?
- Note: if they can not see the brain image behind; the image below can be shown, and tell him the cerebellum controls walking balance



测试说明

家长准备：

- 一个5m*1m的走路空间，并在前后做一个标记；
- 一个魔方（或者其它小孩子可以在手里摆弄的东西）；
- 两个一次性杯子组合而成的传声筒；
- 一个平板（用于播放一张图片）；
- 一个可用于全程录音的手机或者相机；



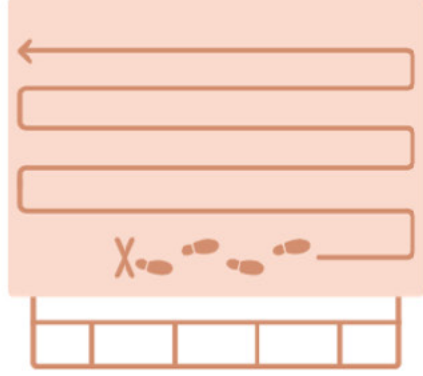
Example of megaphone



Image used in tablet

测试说明：

- 让小朋友站在5m边缘靠前的位置，告诉小朋友往返一共走6次；
- 每次测试会用到不同的准备材料，每次测试结束，问问小朋友刚刚走路是什么感觉，以及如下列表问题



注意走路起始位置，单向数走六次

使用道具的顺序：

- 第一次测试：使用魔方让小朋友边玩边走完6次；
- 第二次测试：使用传声筒指导小朋友走路；
- 第三次测试：打开平板将右侧"平板使用图片"放在一端

第一次测试结束提问：

- 你刚刚走路的时候想着什么？
- 是魔方还是走路？
- 如果你让你边走边在手边玩一个东西，你想要玩什么？

第二次测试结束提问：

- 你刚刚走路听到了什么？
- 你觉得有个声音指导你走路会怎么样？
- 你喜不喜欢有这样的声音走路？

第三次测试结束提问：

- 你刚刚走路有注意图片吗？看到了什么？
- 你走进看看到了什么？
- 你在远处看到了什么？
- 你觉得好玩吗？
- 注意：如果孩子不能看到背景后面的脑图，可以展示下图给孩子，告诉他人的走路平衡是小



Kid-1 test results

Intervention - a story	Screenshot-1	Screenshot-2	Screenshot-3	-	-
			<i>"I am playing game in mind."</i>		
He is listening his favourite story in an App He is asked to walk along the line and count times by himself	At the beginning, he walks in small steps. And his mother asks him to walk normally.	The story doesn't take a lot of effect and he jumps at the end for the finish	He mentions that he is thinking about playing game during walking, and he doesn't listen to the story. He mentions that he wants to play game when walking.	-	-
Intervention - megaphone	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
					
A megaphone, and mama speaks.	Before the formal walking, he is scampering forward. His mom asks him not to run. He turns back and speaks via megaphone.	He sees his mother speaking, therefore, he puts the megaphone aside the ear. He walks in small steps. His mother asks him not to. Then, he walks with big steps	He keeps speaking and laughing with his mom. His body is a little bit tilted when speaking.	He keeps using the megaphone in the question time. And asks his mother to use megaphone as well. When asked if he likes the way of walking. He says yes and he likes real people speaking.	-
Intervention - Hybrid Image	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
		Mama: what so you see in the image? Kid: a tree and girls. Mama: what did you see when walking? Kid: an unclear tree and small girls.	 Kid: What if I take off (the brain)? Mama: then, you will waddle and are easy to fall down.		
The image is set on the side instead of the end point.	He is asked to count the times and he counts.	He feels the image is not interesting enough to him. Later, when he sees the black brain image, he feels the images is ugly.	He still plays with the megaphone. And his mom is telling him about the brain-gait knowledge. His mom is telling him which part of the brain controls the gait.	When asks later if he remembers the brain-gait knowledge, he answers no. Her mother thinks that he is too small to understand it.	

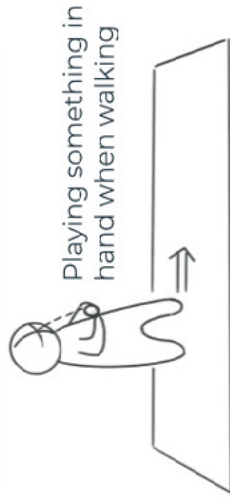
Kid-2 test results

Intervention - a story	Screenshot-1	Screenshot-2	-	-
 <p>For the first times of walking, he walks with the toy in hand.</p>	 <p>His attention is on walking instead of the toy, because he is asked to do the walking. He begins run after walking 6 times back and forth.</p>	 <p>For the 9th time of walking, he doesn't want to walk and he act up at the test conductor.</p>	-	-
Intervention-megaphone	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4
 <p>This is the first time, he uses the megaphone. When he hears the student's voice from the megaphone, he throws the cup and runs away.</p>	 <p>When he is back, he makes a little noise with his tongue. Then, he puts the megaphone on the eye.</p>	 <p>He is instructed to put the cup to the ear, on the other side, the conductor puts the phone into cup so that student talks to him.</p>	 <p>He is asked to walk from the X Shape to the circle. He tries to understand for a while. And then, he begins to walk.</p>	 <p>The student can not see him and check if he finishes each instruction. He stands here and keep listening.</p>
Intervention-hybrid image	Screenshot-1	Screenshot-2	Screenshot-3	-
 <p>He stands far and is asked what he sees. He answers little people.</p>	 <p>He is asked close to the phone and asked what he sees. He answers yellow people (people with yellow shirts)</p>	 <p>He can not understand what is on the image. Then, the conductor tells him the knowledge. He listens to the brain-galt knowledge with a confused face.</p>	 <p>Kid: This is disgusting (the brain image)</p>	-

Test Conclusion

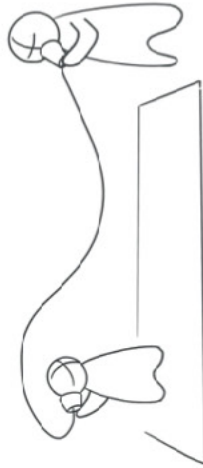
Interventions

Divert attention from walking



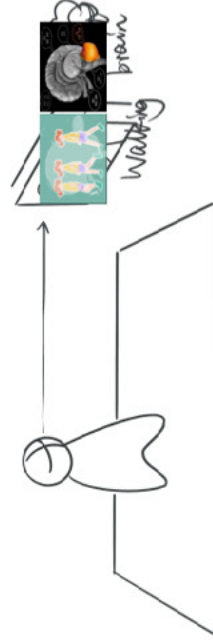
Children know they are instructed to walk; therefore, their attentions cannot be transferred by doing a totally unrelated thing at the same time. And the unrelated thing take no effects on children's walking.

Peer / test conductor's company



One child uses it for the first time; one child likes to use this way to listen and speak. Children should see who is speaking at the moment for the security.

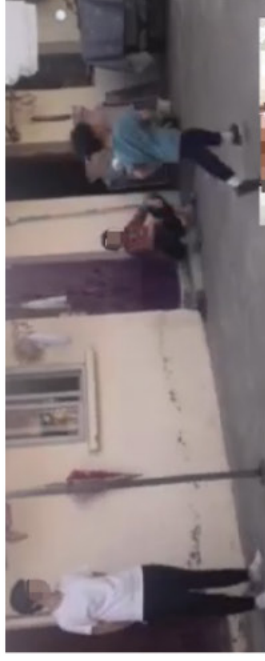
Tell the knowledge via hybrid image



Children don't like the black brain image and think it is ugly. Children cannot see the brain in the green image. The hybrid image can not transmit the knowledge.

Results

Screenshot



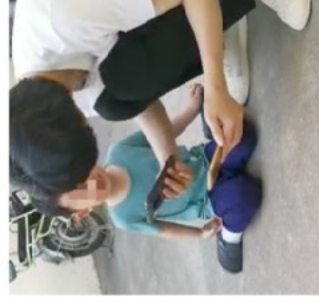
The kid walks with a toy in hand. He knows he is asked to walk. After several times of walking, he runs.



I le throws away the cup and runs away once he hears a voice from the cup.



The kid keeps using the megaphone and asks his mom to talk to him via megaphone after the test.

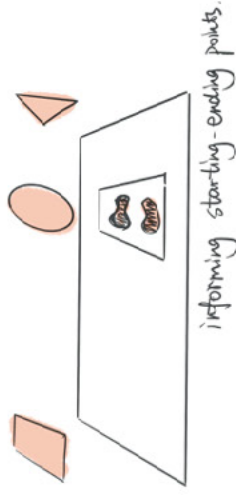


"This is disgusting"(the brain image)

Test Conclusion

Interventions

Other insights



Results

The shape indication on the ground can easily instruct children's walking verbally.

Reflection

- Without a starting scenario, it is hard to know child's reaction at the beginning and the emotion change later.
- Informing parents to record the entire process.

Next step

- Write a shot starting scenario to parents
- More ideas on motivating children and seduce their natural walking;
- Diverting attention with unrelated things doesn't work and will not be tested;
- Use direct brain image to tell children the knowledge first.

Screenshot



He is instructed to put the cup to the ear; on the other side, the conductor puts the phone into cup so that student talks to him.

He is asked to walk from the X Shape to the circle. He tries to understand for a while. And then, he begins to walk.

Iteration-2

Kids profile

Kid at age of 4



Description from parents:

Naughty **Cautious**
Clinging **Sensitive**
Bossy

Kid at age of 3



Description from parents:

Timid **Intelligent**
Compliant
Sensitive

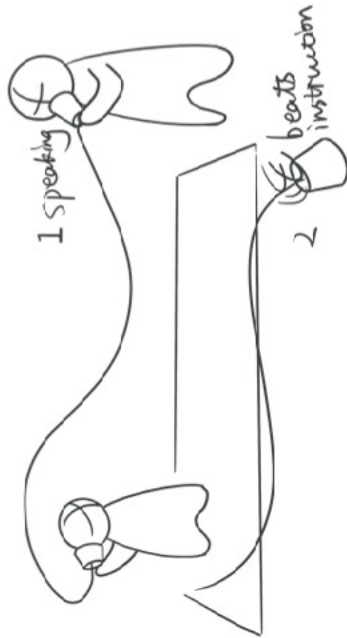
Test ideas

Peer / test conductor's company



Parent or peers walk together with the kid.

Fun instruction from conductor



Megaphone speaking can add fun, but cannot have too much impact on the walking. Try beats via megaphone this time.

Tell the knowledge via foot pattern



Children create the visible foot pattern. And the foot pattern changes to the brain at the end.

Test instruction for family

Space preparation:

- a 5m*1m space for walking with clear boundary;
- 0.6m extra space for both starting and end points;



Material preparation:

- Megaphone; GIF image; A4 sheet;



Test introduction:

Please introduce the background to children before the test:

- imagine that you are doing a one-day examination at a children's hospital. You have finished half of the exams. You have played for a while in the garden to have a rest. And you are going to do the next gait test...*(Please ask how the kid feels at that moment? Is he curious or nervous?)*

Then begin the test; ask the kid to initiate at the orange point (image on the left), and to walk 6 times in total.

Different materials will be used during the each test, after the test, please ask the kid if the kid likes the material or not, and the reason.

X times of walking test

- (this is the instruction for each idea)



Questions to children after walking:

(In general, the questions are if you like it or not; if you are interested in it; which one do you prefer, compared with the previous idea....)

Test process records-1

1st walking record

1-1. What is the kid's initial response to the test?
☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

1-2. What do you think of the kid's first few steps?
☐ Walk in cautious ☐ Walk in relax

1-3. Do you think the megaphone motivate the kid's willingness of walking?
☐ Yes ☐ No

1-4. What do you think of the kid's walking status near the end?
☐ In cautious ☐ In relax ☐ In impatience

2nd walking record

2-1. What is the kid's response to the 2nd test?
☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

2-2. What do you think of the kid's first few steps?
☐ Walk in cautious ☐ Walk in relax

2-3. Do you think the megaphone beats motivate the kid's willingness of walking?
☐ Yes ☐ No

2-4. What do you think of the kid's walking status near the end?
☐ In cautious ☐ In relax ☐ In impatience

2-5. Talking or beating with megaphone, which one does the kid prefer?
☐ Talking ☐ Beating

3rd walking record

3-1. What is the kid's response to the 2nd test?
☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

3-2. What do you think of the kid's first few steps?
☐ Walk in cautious ☐ Walk in relax

3-3. Do you think the walking company motivate the kid's willingness of walking?
☐ Yes ☐ No

3-4. What do you think of the kid's walking status near the end?
☐ In cautious ☐ In relax ☐ In impatience

3-5. Talking with megaphone or walking company, which one does the kid prefer?
☐ Talking ☐ Company

Test process records-2

4th walking record

4-1. What is the kid's initial response to the test?

☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

4-2. What do you think of the kid's first few steps?

☐ Walk in cautious ☐ Walk in relax

4-3. Do you think the walking people motivates the kid's willingness of walking?

☐ Yes ☐ No

4-4. What do you think of the kid's walking status near the end?

☐ In cautious ☐ In relax ☐ In impatience

4-5. A real company or a walking gif, which one does the kid prefer?

☐ Real company ☐ Little people in GIF

5th walking record

5-1. What is the kid's response to the 2nd test?

☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

5-2. What do you think of the kid's first few steps?

☐ Walk in cautious ☐ Walk in relax

5-3. Do you think the foot pattern motivate the kid's willingness of walking?

☐ Yes ☐ No

5-3. Do you think the foot pattern motivate the kid's willingness of walking?

☐ Yes ☐ No

5-5. What do you think of the kid's walking status near the end?

☐ In cautious ☐ In relax ☐ In impatience

5-6. After explanation, does the kid understand the link between the brain and the gait?

☐ Yes ☐ No

Last questions

6-1. Which test do you think is the kid's favourite?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6-2. Which test do you think does the kid walk in a most natural and relaxed status?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6-3. Which test do you think is the easiest to conduct?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6-4. Which test do you like the most?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

测试说明

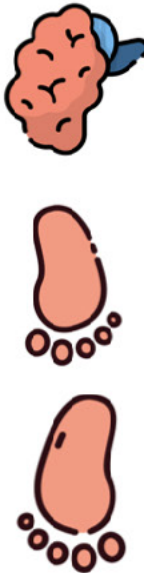
场地准备:

- 圈定一个5m*7m的区域用来走路，设定好界线；
- 两端再各留0.6m的距离做额外测试空间准备



材料准备:

- 传声筒；GIF图片；A4打印足印；



测试介绍:

测试前给小朋友讲述一下测试背景:

- 想象一下你今天在儿童医院做一个一日体检，你已经完成一半的体检任务了，你刚刚在医
- 院小花园里玩了一会，现在休息结束，即将要进
- 行接下来的测试，接下来是一个走路的测试.....
- (此时问小朋友你现在的想法是? 心情怎么样，你是好奇这个测试，还是紧张?)

接下来开始做走路测试，测试内容为让小朋友从左图橘色原点出发，来回共计走六次。

每次走路测试会用到不同的材料，测试完毕可以问问小朋友喜不喜欢那些材料以及为什么。

第一轮走路

- 使用传声筒，让孩子将纸杯靠近耳朵，家长在旁边通过纸杯说话，引导孩子走路

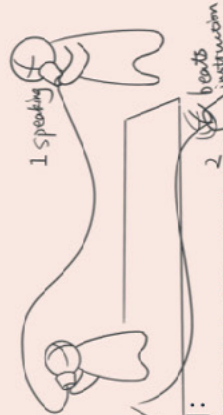


走完之后提问:

- 刚刚那样听声音你喜不喜欢? 为什么喜欢?
- 你觉得这样子走路好玩吗? 哪里好玩了呢?

第二轮走路

- 依旧使用传声筒，这次家长用手拍打纸杯传递节拍，让孩子跟着节拍走路；同时家长默数走路次数，直到孩子走完6次

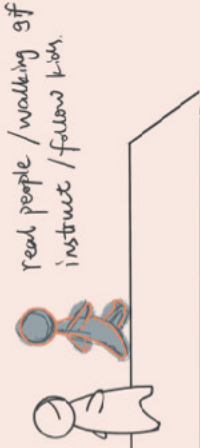


走完之后提问:

- 你喜不喜欢听节拍走路? 为什么?
- 你觉得这样子走路好玩吗? 哪里好玩?
- 和刚刚的说话相比，你更喜欢哪一个?

第三轮走路

- 家长在旁边和孩子一起走



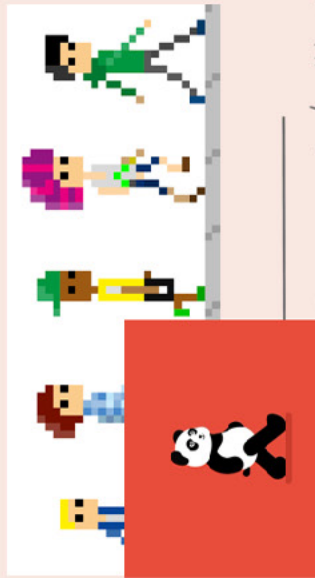
走完之后提问:

- 有人陪着你走喜不喜欢? 为什么喜欢?
- 这样跟着人走路好不好玩? 哪里好玩?
- 你还记得传声筒吗? 和传声筒比哪个更好玩?

测试说明

第四轮走路

- 准备好两张动画图，询问孩子在图片里看到了什么？
- 问孩子是否想要让图片里的人/动物陪他走路？为什么？
- 让孩子选择一张图片，家长依旧站在一侧，拿着平板/手机让孩子看着图片里的小人走路。



走完之后提问：

- 喜不喜欢这样的小人陪着你走？为什么喜欢？
- 这样跟着人走路好不好玩？哪里好玩？
- 妈妈陪着走路和图片里的小人陪着你走路你更喜欢哪一个？为什么？

第五轮走路

- 准备好A4纸打印的脚印，在孩子走路的时候，走一步放一个脚印；
- 走到最后的时候，将大脑的图片放在地上



走完之后提问：

- 刚刚走路的时候有没有在意到脚印？
- 你觉得这样走路好玩吗？边走边有脚印出现？
- 你看到脚印的时候是什么反应？你以前走路的时候有在意到脚印吗？
- 最后看到大脑的图片的时候你是怎么想的？
- 你想知道大脑和走路的关系吗？（告诉孩子走路是人的脑子控制的）

测试过程记录-1

第一轮走路记录

- 1-1. 孩子最开始听到是测试的反应是怎么样的？
☐ 紧张的 ☐ 轻松的 ☐ 不耐烦的 ☐ 好奇的
- 1-2. 你觉得孩子刚开始的走路的状态怎么样？
☐ 走路很小心谨慎 ☐ 走路很自然轻松
- 1-3. 你觉得用传声筒有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 1-4. 你觉得孩子走路快结束的时候状态怎么样？
☐ 小心谨慎的 ☐ 轻松的 ☐ 不耐烦的

第二轮走路记录

- 2-1. 孩子最开始听到是测试的反应是怎么样的？
☐ 紧张的 ☐ 轻松的 ☐ 不耐烦的 ☐ 好奇的
- 2-2. 你觉得孩子刚开始的走路的状态怎么样？
☐ 走路很小心谨慎 ☐ 走路很自然轻松
- 2-3. 你觉得用传声筒打拍子有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 2-4. 你觉得孩子走路快结束的时候状态怎么样？
☐ 小心谨慎的 ☐ 轻松的 ☐ 不耐烦的
- 2-5. 用传声筒说话和打拍子，孩子觉得哪个更好玩？
☐ 家长说话 ☐ 打拍子

第三轮走路记录

- 3-1. 孩子最开始听到是测试的反应是怎么样的？
☐ 紧张的 ☐ 轻松的 ☐ 不耐烦的 ☐ 好奇的
- 3-2. 你觉得孩子刚开始的走路的状态怎么样？
☐ 走路很小心谨慎 ☐ 走路很自然轻松
- 3-3. 你觉得你陪伴孩子走路有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 3-4. 你觉得孩子走路快结束的时候状态怎么样？
☐ 小心谨慎的 ☐ 轻松的 ☐ 不耐烦的
- 3-5. 用传声筒说话和陪他走路，孩子更喜欢哪一个？
☐ 传声筒说话 ☐ 陪他

测试过程记录-2

第四轮走路记录

- 4-1. 孩子最开始听到是测试的反应是怎么样的？
☐ 紧张的 ☐ 轻松的 ☐ 不耐烦的 ☐ 好奇的
- 4-2. 你觉得孩子刚开始的走路的状态怎么样？
☐ 走路很小心翼翼 ☐ 走路很自然轻松
- 4-3. 你觉得走路的小人有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 4-4. 你觉得孩子走路快结束的时候状态怎么样？
☐ 小心翼翼的 ☐ 轻松的 ☐ 不耐烦的
- 4-5. 用传声筒说话和打拍子，孩子觉得哪个更好玩？
☐ 家长说话 ☐ 打拍子

第五轮走路记录

- 5-1. 孩子最开始听到是测试的反应是怎么样的？
☐ 紧张的 ☐ 轻松的 ☐ 不耐烦的 ☐ 好奇的
- 5-2. 你觉得孩子刚开始的走路的状态怎么样？
☐ 走路很小心翼翼 ☐ 走路很自然轻松
- 5-3. 你觉得脚印有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 5-4. 你觉得脚印有调动起孩子更愿意走路吗？
☐ 有 ☐ 没有
- 5-5. 你觉得孩子走路快结束的时候状态怎么样？
☐ 小心翼翼的 ☐ 轻松的 ☐ 不耐烦的
- 5-6. 最后解释之后，孩子理解走路和脑子的关联吗？
☐ 理解 ☐ 不理解

最后的问题

- 6-1. 你觉得孩子最喜欢第几轮的测试？
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- 6-2. 你觉得孩子哪一轮的走路最自然最放松？
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- 6-3. 你觉得哪一个测试你执行起来最流畅？
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- 6-4. 你最喜欢哪一个测试？
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Kid-1 test results

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Intervention-megaphone instruction	Screenshot-1	Screenshot-2	Intervention-megaphone beats	Screenshot-1	-
					
The kid is asked to do the test when watching cartoons. He does not cooperate well during the test.	The kid says to the conductor that he speaks and his mom listens. Kid: This is the receiver for you and the microphone for me Kid: Do you buy toys today? Haha... Conductor: I don't buy toys today.	The conductor asks him to put the megaphone to the ear, the kid follows. But after a while, he puts the megaphone to the mouth again.	The conductor beats and asks the kid to follow the beats to walk. The kid still puts the megaphone on the mouth and beats the megaphone by himself.	The kid begins to turn around. * a short insight: some young kids like turning around. (Image on the right is a kid at the age of 7). He listens to the music and turns around.	The kid throws away the megaphone and runs.
Intervention-Walking gif	Screenshot-1	Intervention-conductor	-	-	-
			-	-	-
He chooses the walking peers.	The kid is watching the walking gif while walking. He giggles with the entire company. Conductor: Do you like the small characters? Kid: (Giggling)yes, I do.	When walking with conductor, he doesn't follow the conductor. Instead, he walks faster and then runs.	-	-	-
Intervention-foot pattern	Screenshot-1	Screenshot-2	Screenshot-3	-	-
	 Kid: I like foot pattern following me And I don't like brain. The brain image is a little bit scary for me.			-	-
Putting foot pattern on the ground can not catch the kid's walking. The kid is asked to wait a little. He follows and waits for each step until the pattern shown.	The kid sees the brain image. Conductor: do you know what controls the walking? Kid: (looks at the image) the brain.	He is asked to walk on the foot pattern and he follows.	He do the walk again. He walks with random little step to wait for his mom putting the foot pattern on the ground.	-	-

Test results_1

测试过程记录-第一页

第一轮记录记录

1-1 孩子刚开始走路时表现出的反应怎么样?
☒ 兴奋的 ☐ 平静的 ☐ 好奇的

1-2 你觉得孩子刚开始走路时的状态怎么样?
☒ 走路很小心谨慎 ☐ 走路很自然轻松

1-3 你觉得孩子刚开始走路时走路的状态怎么样?
☒ 有 ☐ 没有

1-4 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☒ 好奇的 ☐ 不自信的

第二轮记录记录

2-1 孩子刚开始走路时表现出的反应怎么样?
☒ 兴奋的 ☐ 平静的 ☐ 好奇的

2-2 你觉得孩子刚开始走路时的状态怎么样?
☐ 走路很小心谨慎 ☒ 走路很自然轻松

2-3 你觉得孩子刚开始走路时走路的状态怎么样?
☒ 有 ☐ 没有

2-4 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☒ 好奇的 ☐ 不自信的

2-5 用你喜欢的词来形容孩子，孩子觉得哪个最好玩?
☐ 害怕 ☒ 好奇

第三轮记录记录

3-1 孩子刚开始走路时表现出的反应怎么样?
☒ 兴奋的 ☐ 平静的 ☐ 好奇的

3-2 你觉得孩子刚开始走路时的状态怎么样?
☒ 走路很小心谨慎 ☐ 走路很自然轻松

3-3 你觉得孩子刚开始走路时走路的状态怎么样?
☒ 有 ☐ 没有

3-4 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☒ 好奇的 ☐ 不自信的

3-5 用你喜欢的词来形容孩子，孩子觉得哪个最好玩?
☐ 害怕 ☒ 好奇

测试过程记录-第二页

第四轮记录记录

4-1 孩子刚开始走路时表现出的反应怎么样?
☒ 兴奋的 ☐ 平静的 ☐ 好奇的

4-2 你觉得孩子刚开始走路时的状态怎么样?
☐ 走路很小心谨慎 ☒ 走路很自然轻松

4-3 你觉得孩子刚开始走路时走路的状态怎么样?
☒ 有 ☐ 没有

4-4 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☒ 好奇的 ☐ 不自信的

4-5 孩子刚开始走路时表现出的反应怎么样?
☐ 害怕 ☒ 好奇 ☐ 不自信

第五轮记录记录

5-1 孩子刚开始走路时表现出的反应怎么样?
☒ 兴奋的 ☐ 平静的 ☐ 好奇的

5-2 你觉得孩子刚开始走路时的状态怎么样?
☐ 走路很小心谨慎 ☒ 走路很自然轻松

5-3 你觉得孩子刚开始走路时走路的状态怎么样?
☒ 有 ☐ 没有

5-4 你觉得孩子走路时走路的状态怎么样?
☒ 有 ☐ 没有

5-5 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☒ 好奇的 ☐ 不自信的

5-6 孩子刚开始走路时表现出的反应怎么样?
☒ 害怕 ☐ 好奇 ☐ 不自信

第六轮记录记录

6-1 你觉得孩子刚开始走路时表现出的反应怎么样?
☐ 兴奋的 ☐ 平静的 ☐ 好奇的

6-2 你觉得孩子刚开始走路时的状态怎么样?
☐ 走路很小心谨慎 ☒ 走路很自然轻松

6-3 你觉得孩子刚开始走路时走路的状态怎么样?
☐ 有 ☐ 没有

6-4 你觉得孩子走路时走路的状态怎么样?
☐ 小心谨慎的 ☐ 好奇的 ☒ 不自信的

The conductor mentions the kids is curious about the foot pattern and the walking GIF, which bring the fun to the kid.

The conductor mentions the most natural and relaxed status is with mom (the conductor) because the kid feels secure.

The conductor asks the kid his favourite test, and the kid answers:

The kid: my favourite test is mom with me. I also like the brain test. I want foot! foot, foot...

Kid-2 test results

Beats	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
					
Beats to seduce a walking. Conductor tells the kid "I beat once, and then you walk once."	Conductor beats once, the kid takes such a small step and then wait for the next beat.	The kid is asked to walk with a bigger step. And the kid begins to take big steps	The kid begins to take 3 steps with one beat.	With a steady beat, the kid begins to walk continuously, but his pace is unnatural. The step is small the he walks with his shoes scratches the ground.	-
Intervention-megaphone beats	Screenshot-1	Screenshot-2	Screenshot-3	-	-
					
The kid has stepped out, but the conductor asks him back and to follow the tempo. The kid answers ok.	He hits the ground for the first step after hearing the first beat. But later, the kid is a little bit lost in the beats.	he doesn't follow the tempo, but with the beats, the kid walks naturally with a big step.	The kid giggles and walks a few step more at the end point.		
Intervention-megaphone instruction	Screenshot-1	Screenshot-2	-	-	-
					
The test conductor uses megaphone to instruct	The line distracts the kid and he leaves the megaphone. It happens 2 times during walking.	The kid runs for the last time's walking , so as to finish the walking ASAP.			

Kid-2 test results

Conductor	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
	 <p>Kid: hahahaha</p>				-
<p>The test conductor doesn't understand the walking company at the beginning. Hence, she takes the kid's hand and instructs the kid;</p>	<p>The kid is walking with conductor's hand; After 2 times of walking, the kid becomes mischievous and strides.</p>	<p>The test conductor informs to walk aside without hand in hand; And they do another walking.</p>	<p>He keeps saying you are not teacher to the test conductor. Kid: You are not teacher</p>	<p>He gets tired after the naughty moments of striding. Kid: Why hasn't it finished yet?</p>	
Walking gif	Screenshot-1	Screenshot-2	Screenshot-3	-	-
			 <p>Kid: oh! It's gone!</p>		
<p>The kid selects the peers to walk with.</p>	<p>The kid looks at the walking peers. But he looks the ground when walking to the end point.</p>	<p>With a difficulty of watching image, the kid doesn't want to watch the walking peers anymore</p>	<p>The kid glances the walking peers sometimes. He notices that the phone turns idle mode.</p>		
Foot pattern	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
<p>A foot pattern is first put on the ground.</p>	<p>When the kid sees the foot pattern on the ground, he begins to walk.</p>	<p>He knows the walking and directly starts, without noticing the foot pattern.</p>	<p>The kids see the paper as barriers and avoids to walk on the A4 paper.</p>	<p>He points to the brain image and asks what it is</p>	<p>Conductor: do you know why we can walk? Kid: because... (trun bak and look at the foot patterns) Because we have feet. (touch his right foot) Conductor: do you know what controls the feet? Kid: it's mo. Conductor: our brain controls the feet.</p>

Kid-2 test results

Screenshot-6	Screenshot-7	Screenshot-8	Screenshot-9
			

I he kid keeps asking the elements on image and the conductor answers

I he kid is asked to step on the foot pattern, but the distance is too wide for him. He still walks in curve and avoids the A4 sheets.

I he kid walks back and forth again. And the test conductor asks the question what controls your walking.
The kid answers, "the brain!"

All the tests finish. I he kid puts all the sheets together by himself, so that he can step on the sheets.

Interviews results after the test

The kid walks cautious with beats at the beginning, because he is trying to follow and match the beats.

Conductor: when he hears the beats, he is a little bit lost. He doesn't know how to walk with the beats. That might be the reason that he understands that's the way of walking with beats. He is trying to match the beats.

Why peers instead of panda

The student: why don't you like panda?

Kid: I like it. I like both.

The student: why you choose 5 peers?

Kid: yeahyeahyeah, ah (mischievous)

The student: Do you like 5 peers or 1 peer?

Kid: I like one. One peer with me

The student: why?

Kid: too many peers. I cannot know which one is my aunt (the test conductor)

The test conductor: you like me walking with you--

The student: but you are not listen to the aunt when walking.

Kid:

.....

The test conductor: I think he likes walking with me due to the security. But the beats and the foot patterns, he likes them due to the curiosity.

Kid: I like walking with

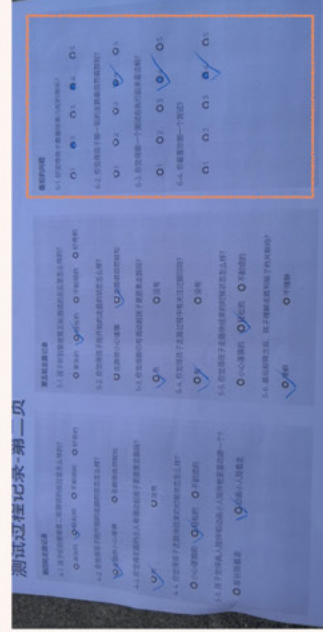
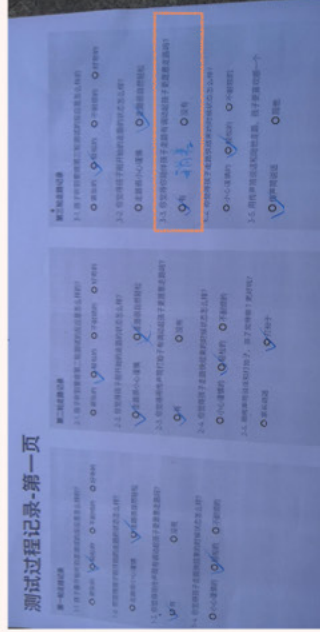
Megaphone speaking or listening

Kid: I like speaking.

The student: why?

Kid: Because I am the teacher!

Process records



Most of the answers in recording sheets have been observed in video. Answers from THE LAST QUESTIONS are more important to gain insights:

The test conductor mentions that the kid likes the megaphone beats and the walking GIF. And the kid cooperates well that day, which makes the test smooth.

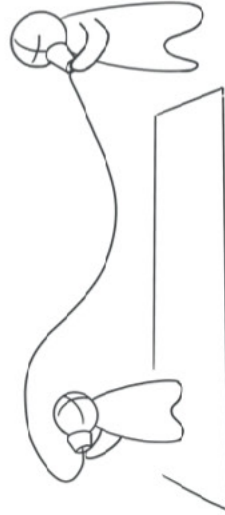
The conductor mentions the reason of cooperation is the walking gif rises the kid's curiosity. And the kid mentions that there is one person in the walking GIF is the conductor, which gives a security to the kid and the kid's emotions are stable. In this situation, the conductor feels relaxed to finish the test.

In record sheet, the conductor also mentions that when walking with a real aunt (the conductor), the kid is not well motivated.

Test Conclusion

Interventions

Megaphone speaking



Compared with listening via megaphone, children like to use megaphone to speak.

Megaphone beats



The beats can motivate child's walking, but cannot seduce a natural walking because children are informed to step once with one beat, and children have to understand the matching in a cautious walking.

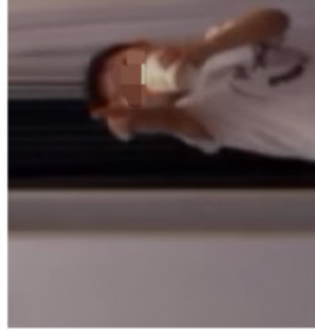
Test conductor's company



Walking with real people gives children the security, despite an increased risk of being mischievous.

Results

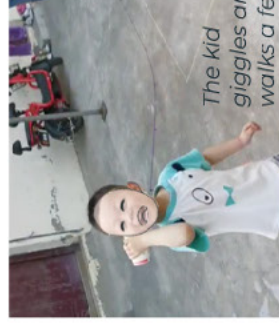
Screenshot



When he is back, he makes a little noise with his tongue.



Conductor beats once, the kid takes such a small step and then wait for the next beat.



The kid giggles and walks a few step more at the end point.

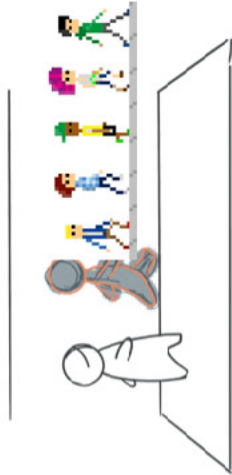


The kid is walking with conductor's hand; After 2 times of walking, the kid becomes mischievous and strides.

Test Conclusion

Interventions

Peer's company



Results

The walking gif can rise child's curiosity, therefore motivate them to walk. Both of the children like little people instead of animal. The reason can be children can associate the little people with a real familiar person.

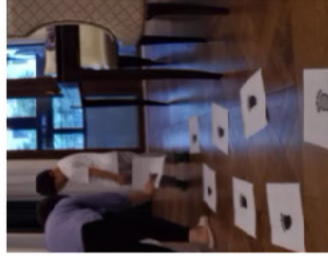
The student: Do you like 5 peers or 1 peer?
Kid: I like one. One peer with me
The student: why?
Kid: too many peers, I cannot know which one is my aunt (the test conductor)

Screenshot

Knowledge with foot pattern



The kid is not so patient during the test because his mom stops him watching cartoons. When walking with foot pattern, he waits the conductor (his mom) to put the foot pattern for each step.



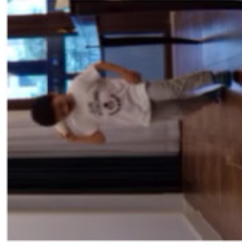
The foot pattern can also rise child's curiosity and motivate them to walk. Further insights need more tests due to the test setup (the conductor cannot catch up with kids when putting A4 on the ground).

Other insights



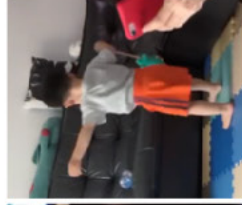
The A4 sheet can be a barrier for them to walk on a curve.

The kids see the paper as barriers and avoids to walk on the A4 paper.



An idea emerges, which is a turning curve, used to instruct children back and forth.

The kid begins to turn around. Image on the right is a kid at the age of 2). He listens to the music and turns around.



Test Conclusion

Reflection

- It is not so necessary to ask child's walking status in process records. The walking status can be observed.
- Conductors forget to ask questions after each test and some older children can be asked about the emotions after each test.
- It is important and necessary to ask conductor's test feeling.

Next step

- Prepare emotion images to ask children and let the image as a reminder to conductors of asking after each test;
- Ideation on turning at the points because some children like the turning moments
- Iterate ideas and test them with older children.

Iteration-3

Kids profile

Kid at age of 3



Description from parents:

Timid **Intelligent**
Compliant
Sensitive

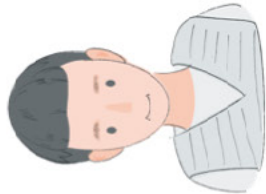
Kid at age of 5



Description from parents:

Bright **Lively**
Easily satisfied **Active**

Kid at age of 8

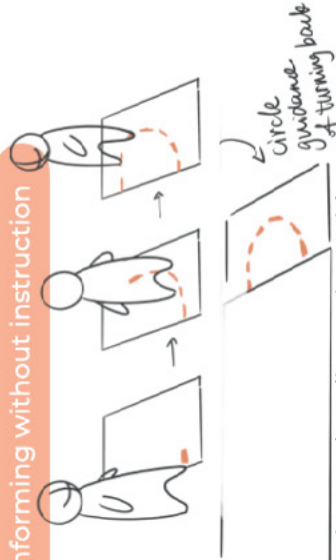


Description from parents:

Compliant **Shy**

Test ideas

Informing without instruction



Starting and ending points with curve to seduce the next walking and add fun.

Fun instruction from conductor



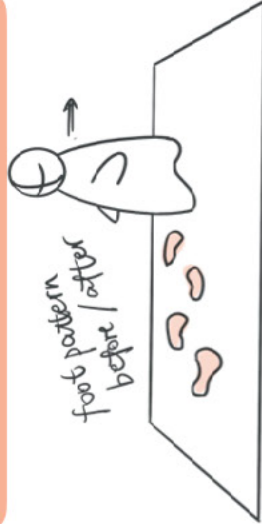
Iterated test, remove the megaphone, directly give children steady and clear beats.

Child as "teacher"



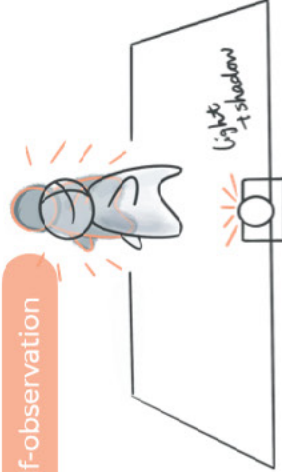
Children like to share, ask children to teach other people the walking and walk at the same time.

Tell the knowledge via foot pattern



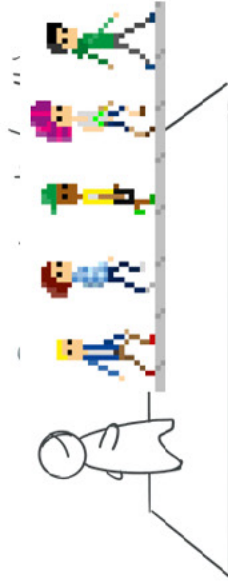
Printing sheets of foot pattern interfere the test with a delay. Retest with sands/water

Self-observation



Use side shadow to rise children's observation on their walking.

Peer company



Retest - peer's walking gif

测试说明-第一页

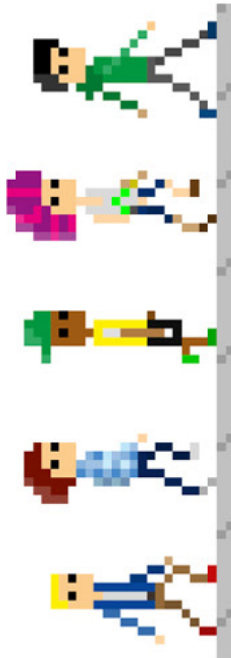
场地准备:

- 圈定一个5m*1m的区域用来走路, 设定好界线;
- 两端再各留0.6m的距离做额外测试空间准备



材料准备:

- 传声筒; 可以击打的物件; 手电筒&一面墙 (也可一面镜子代替); GIF图片; A4打印足印;



测试介绍:

测试前给小朋友讲述一下测试背景:

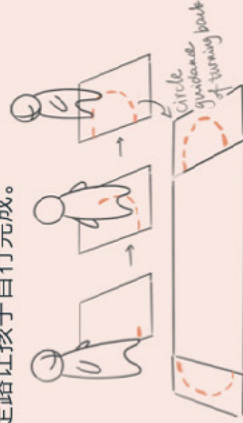
- 想象一下你今天在一个儿童医院做一个一日体检, 你已经完成一半的体检任务了, 你刚刚在医院小花园里玩了一会, 现在休息结束, 即将要进行接下来的测试, 接下来是一个走路的测试..... (此时问小朋友你现在是怎么想的? 心情怎么样, 你是好奇这个测试, 还是紧张?)

接下来开始做走路测试, 测试内容为让小朋友从左侧图颜色原点出发, 来回共计走6次。

每次走路测试会用到不同的材料, 测试完毕让小朋友选择情绪图片, 并问问小朋友喜不喜欢那些材料以及为什么。

第一轮走路

- 正常来回走路;
- 事先不要告诉小朋友, 当小朋友走到场地0.6米额外边缘处, 第一次用粉笔边画线边引导孩子走路;
- 同理走到另一边也是, 边画线边引导孩子走路;
- 剩下的几次走路让孩子自行完成。

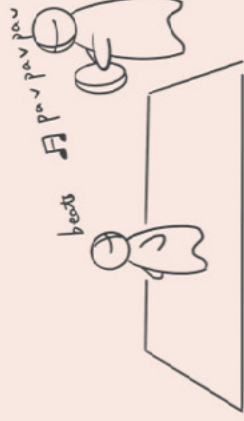


走完之后提问:

- 走完感觉怎么样, 选一张图片, 为什么是这个?
- 你觉得沿着线走路喜不喜欢? 哪里喜欢?
- 你觉得这样子走路好玩吗? 哪里好玩了呢?

第二轮走路

- 告诉孩子跟着拍子走路 (不必告知一个拍子走一步)
- 在开始的时候立刻匀速敲击, 让孩子走路

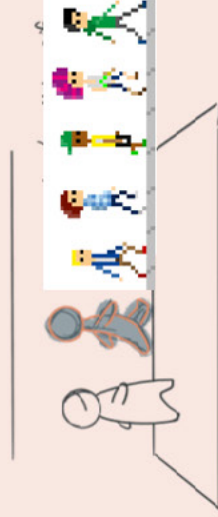


走完之后提问:

- 走完之后感觉怎么样, 选张情绪图片, 为什么?
- 你喜不喜欢听节拍走路? 为什么?
- 觉得这样子好不好玩, 哪里好玩?

第三轮走路

- 准备好这个动画走路图片, 图片尽量大一点; 让孩子跟着小人走路



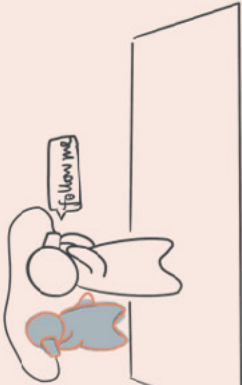
走完之后提问:

- 走完之后感觉怎么样, 选张情绪图片, 为什么?
- 有人陪你走路你喜不喜欢? 为什么?
- 这样跟着人走路好不好玩? 哪里好玩?

测试说明-第二页

第四轮走路

- 准备传声筒，询问小孩子，现在清不清楚走路规则了？
- 请指导员站在旁边，让小孩子用传声筒指导自己完成测试；
- 走2-3次即可

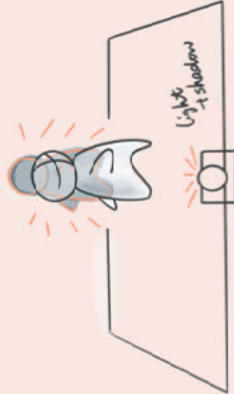


走完之后提问：

- 走完之后感觉怎么样，选张情绪图片，为什么？
- 喜不喜欢教别人走路？为什么？
- 这样子教别人走路好不好玩？哪里好玩？
- 如果教的人不是指导员，是其小朋友，你不想？

第五轮走路

- 找一面镜子/能反射的玻璃/手电筒打一个影子
- 让孩子看着自己的影子/反射 走路
- 走2-3次即可



走完之后提问：

- 走完之后感觉怎么样，选张情绪图片，为什么？
- 看着自己走路好不好玩？哪里好玩？
- 和刚才的指导别人走路比，你更喜欢哪个？为什么？

第六轮走路

- 准备好A4纸打印的脚印，在孩子走路的时候，走一步放一个脚印；
- 走到最后的时候，将大脑的图片放在地上



走完之后提问：

- 刚刚走路的时候有没有在意到脚印？
- 你觉得这样走路好玩吗？边走边有脚印出现？
- 你看到脚印的时候是什么反应？你以前走路的时候有在意到脚印吗？
- 最后看到大脑的图片的时候你是怎么想的？
- 你想知道知道大脑和走路的关系吗？（告诉孩子走路是人的脑子控制的）

全部走完之后提问

- 刚刚那几个走路，你最喜欢哪一个？为什么？

最后家长回答的问题

1. 你觉得孩子最喜欢第几轮的测试？

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

2. 你觉得孩子哪一轮的走路最自然最放松？

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

3. 你觉得哪一个测试你执行起来最流畅？

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

4. 你最喜欢哪一个测试？

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

情绪图片



- 害羞的
- 紧张的
- 开心的
- 无聊的
- 不耐烦的
- 好奇的

Emotion images

82



Shy

Nervous

Happy

Bored

Impatient

Curious

Kid-1 test results

Intervention-megaphone instruction	Screenshot-1	Screenshot-2	Screenshot-3	-
 <p>The kid remembers that he has been tested yesterday. He performs a little impatience today. The conductor misunderstands the half circle at the points. She draws a big curve on mat.</p>	 <p>The kid walk naturally at the beginning, but he is asked to follow the drawing line; he walks back a little and follows line in small steps.</p>	 <p>The drawing is slower than his normal walking speed. He remains small steps until the end</p>	 <p>The kid walks few steps more on the direction of the curve. Conductor: how will you take your further steps? Kid: walk in this way (he walks on the curve's further direction)</p>	-
Intervention-Beats	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4
 <p>The drum is put aside.</p>	 <p>The line on the ground can still give the instruction to him. I le follows the curve and turns back</p>	 <p>He runs after a few time of walking. Reasons can be the kid's impatience and the accelerating speed of beats.</p>	 <p>He is attracted by the drum aside. I le plays the drum while asking questions.</p>	 <p>He is not so interested in the walking gif today. I le runs back and forth all the time.</p>
Intervention- child as teacher	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4
 <p>The conductor understands the child's teaching as conductor walking on mat. The kid is asked to teach the conduct to walk, he puts his finger on the curve. He teaches to walk online.</p>	 <p>The kid is easily distracted when the conductor is walking. When the paper blows away, he speak it out.</p>	 <p>He begins to play the drum when the conductor is walking.</p>	 <p>The conductor asks him if she walks correctly or not, what the next step is. The kid leaves the drum and teaches again. He walks with the conductor a few steps till the end point.</p>	 <p>Then, he leaves the conductor, still watches the conductor's walking and jumps a little bit by himself, with his one finger points out.</p>

Intervention-flashlight	Screenshot-1	Screenshot-2	Intervention-foot pattern	Screenshot-1	Screenshot-2
					
The conduct uses flashlight for instruction. The kid take small steps at the beginning and observes the light spot.	At the end point, he notices a moment of light spot on his feet.	Then, he tries to catch the spot light with his feet. The kid begins to scampor, because, in this status, his right feet is always on the front to catch the spot light.	The kid is informed that the conductor will draw his foot pattern when he is walking. He walks a few steps and then looks back to check the drawing.	He keeps walking for 2 times, then stands at the end point, and sees the drawing.	At the end, the conductor puts the brain image. The kid can still remember that brain controls the walking, which is taught yesterday.



Each time, he selects a different image. Till now, the emotion images cannot tell is he depicts the kid's emotions.

Kid-2 test results

Intervention-curve at the points	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>This is a setup at the hospital. The test conductor is a nurse. The test conductor informs the scenario to the kid. And the kid select the happy image</p>	 <p>The kid is asked to follow the conductor for one circle.</p>	 <p>There is a curve already on the ground; the conductor draws again to ask the kid to walk by himself.</p>	 <p>The kid is about to walk, but he is not sure; the conductor asks him to walk by himself again. And he initiates.</p>	 <p>His mom (recording the video) says "Ok". He looks at his mom, turns around, and stands straightly.</p>	 <p>Conductor: do you think it is fun? Kid: (nodding) Conductor: where do you think it is fun? Can you tell? Kid: back and forth... turning around is fun!</p> <p>The kid chooses the image above. And answers the questions. He thinks turning around is the interested part for him.</p>
Intervention-Beats	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The conductor tells the kid that she will beat and asks him to walk casually.</p>	 <p>With the beats, the kid walks with his leg rising high. (Plaffe)</p>	 <p>After few steps, he walks in a normal walking status, and strides.</p>	 <p>At the end point of turning, the kid has a little bit scamper as a preparation of turning.</p>	 <p>-</p>	 <p>He mentions the "NERVOUS" for this walking. The kid mentions that the beats and the walking pace together sounds good.</p>
Intervention-walking GIF	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
 <p>The conductor asks the kid to hold the phone, see the walking gif and walk at the same time.</p>	 <p>The conductor: do you think it is fun? ... Kid: The walking gif walks fast and it is fun.</p>	 <p>The kid is teaching The kid: you first... walk 2-3 times The conductor: am I walk in this way? The kid: emm. (a sign of yes) 2-3 times.</p>	 <p>The conductor walks back and stops. The conductor: just like this? The kid: emm, walking 2-3 times is enough.</p>	 <p>-</p>	-

Kid-2 test results

Intervention-instruct himself	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
 <p>The kid is asked to instruct himself to walk. The kid puts the megaphone to the mouth and say: The kid: I will walk fast and, and... walk 6 times.</p>	 		<p>The conductor: do you like teach others to walk? The kid: yes The conductor: why? The kid: walking back and forth, and then turning around. I think it is fun to see other people turning around.</p>	<p>The conductor: What if you teach other kid? The kid: (no) shake his head. The conductor: why? The kid: other kid... too young kid cannot walk.</p>	-
<p>The kid is asked to instruct himself to walk. The kid puts the megaphone to the mouth and say: The kid: I will walk fast and, and... walk 6 times.</p>	<p>He uses megaphone to the conductor and says he finishes. He walks 12 times in one direction.</p>	<p>He chooses happy image.</p>	<p>The kid mentions the turning around for several times.</p>	-	-
Intervention-Shadow	Screenshot-1	Screenshot-2	Screenshot-3	-	-
 <p>The kid is tired with his head tilted.</p>		 <p>He is tired and chooses the NERVOUS The kid: because I cannot see myself at the point and I need to turning around in a hurry.</p>	<p>The conductor: do you like the shadow? ... The kid: I like the reflection watches me as well when I am walking. The conductor: do you like walk by yourself or walk with instruction? The kid: walk by myself. Because I can count the times of walking by myself. The conductor: Do you like shadow or mirror? The kid: I like mirror, because there are 2 of me.</p>	-	-
Intervention-Foot pattern	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
		<p>The kid: Because you put the foot pattern. And the pattern is good and then I am happy.</p>	 <p>The conductor: what do you think when you see the brain image? The kid: it is turning! The conductor: turning? oh~ The conductor: do you know the connection between gait and brain? The kid: emm. If there is no brain, people cannot walk. The conductor: yes, the brain controls your walk!</p>	<p>The conductor: what if you see the brain image? The kid: it is turning! The conductor: turning? oh~ The conductor: do you know the connection between gait and brain? The kid: emm. If there is no brain, people cannot walk. The conductor: yes, the brain controls your walk!</p>	-
<p>The conductor asks the child to walk forward and walk slowly.</p>	<p>The kid is asked how he feels. He answers "very happy". The kid: Because you put the foot pattern. And the pattern is good and then I am happy.</p>				

Kid-2 test results

Interviews results after the test

Beginning status: nervous

The student: are you nervous in that test?
The kid: yes! Because I am going to do a test.

The kid mentions the megaphone first when asked which test he remembers.

The kid: the megaphone is fun.
The student: why?
The kid: walking, then speaking with others, that is fun.

The kid likes turning at the points

The student: if you just walk, which part do you think is fun?
The kid: walking in circles is fun! (the turning at points)

The kid feels nervous about walking with beats.

The kid: The beats is fast and make me nervous.
The student: If the beats is slow, would you be nervous?
The kid: No
The student: Why?
Mama hints: I can catch up with the beats.
The kid: If it is slow, I will walk stably a little bit.
Mama: In his mind, he thinks how he can catch up with the beats.

The kid reminds a scene about the foot pattern

The student: Do you remember the walking gif?
The kid: Yes...The little people walks fast.
The student: Will you be nervous with the walking gif?
The kid: yes, because they walk fast.
The kid: There are lots of people. And they walk fast.
The student: When did you see the foot pattern?
The kid: I noticed!
Mama: before the test?
The kid: when I walk on the stairs on rainy days. I see my foot pattern. I discovered that!
The student: How do you feel?
The kid: I feel a little bit interested.
...

Teaching younger kid to walk

The kid: She doesn't want me to teach her. And when I teach her, she will hit me.

Teaching younger kid to walk

The student: Other people telling you how many times you walk or you telling yourself. Which one do you prefer?
The kid: Myself.
The student: Why?
The kid: I cannot tell?
The student: If ask yourself to choose the times of walking, how many times will you choose?
The kid: 50
The student: Can you finish 50 times of walking?
The kid: I can! I can finish.

A reason for relaxation

The kid: Because there is nothing in hand, and I use feet to walk and I feel relaxed.

Reason for preferring turning

The student: Why do you like turning at the points?
The kid: Because I can avoid obstacle
The student: where is the obstacle ?
The kid: the canned! (used for the test in research)
The student: You think avoiding obstacle is interesting?
The kid: Yes

The kid knows the brain controls walking

The student: Do you want to teach me or learn it again in the test?
The kid: teach you.
The student: How?
The kid: I will give you the megaphone and tell you.
...
The student: Do you want to ask me anything?
The kid: Just.. whatever will do. (Mama mentions the kid is quite curious about everything.)

Kid-3 test results

Intervention-curve at the points	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
 <p>When the kid sees the line, she wants to follow the line to walk, the test conductor asks her to walk forward;</p>	 <p>With the instruction of walking forward, the kid walks forward, in small steps cautiously.</p>	  <p>She is instructed to turn around; she turns around on the line. She chooses the image because the conductor promises her some candies after the test.</p>	 <p>During walking, someone passes through, the kid notices that. When she walks toward the instructor, she says: *Someone walked into the line just now.*</p>	 <p>She turns around naturally with the distraction just now, but then she notices that she doesn't on the line when turning; hence she turns back and walks on the curve once more.</p>	
Intervention-Beats	Screenshot-1	Screenshot-2	Screenshot-3	-	-
 <p>When the kid hears the beats and asked to walk, she initiates with her two elbows out at the same time. This bewildered status lasts for a while (the following steps).</p>	 <p>She pauses because there is no drum beats at that moments. When the drum beats rise again, she starts to walk. There is no verbal instruction from the conductor.</p>	 <p>The test conductor speeds up beating when the kid walks back. The kid accelerates as well, with small steps in a hurry but ease status.</p>	 <p>The kid has no idea of the reason for selecting this image. The kid thinks that beating drum is fun with the sound. *DongDongDongDong*</p>		
Intervention-Walking GIF	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>She watches the walking gif and starts walking. The walking is in small steps because she cannot watches her feet when walking.</p>	 <p>Then, she turns her head back and focuses on the walking, with big and relaxed walk.</p>	 <p>During walking, the test conductor asks her if the little people walks as she walks; she glances at the walking gif with a remaining big step.</p>	 <p>The kid cannot tell the reason of the image. This is the favourite interventions. The kid likes walking gif because she thinks that the walking gif is fun; something is animated and she can talk to someone when walking.</p>	 <p>She keeps walking without noticing her shadow.</p>	 <p>She chooses the image because she mentions that she is not afraid. The kid: I am not afraid (in the dark room!)</p>

Kid-3 test results

Intervention-megaphone instruction	Screenshot-1	Screenshot-2	Screenshot-3	-	-
 <p>The conductor designs some stops via megaphone.</p>	 <p>The conductor asks to stop and the kid stops.</p>	 <p>Jump</p>	 <p>Jump twice</p>	-	-
 <p>The conductor uses the foot patterns as a guidance and puts it on the before walking. She asks the kid to walk.</p>	 <p>The kid steps onto the foot pattern. She doesn't step onto the pattern for each time because sometimes the pattern is out of her reach. The kid: <i>Do I step onto the little foot (pattern?)</i> The conductor: Yes. step onto it.</p>	 <p>The kid asks if she can step on to the brain image, the conductor answers no. The kid thinks the brain image is a cabbage. The conductor: <i>Look! What's this?</i> The kid: cabbage.</p>	 <p>She is asked to walk forward and she walks. She doesn't notice the conductor leaving foot patterns.</p>	-	-

Kid-3 test results

Interviews results after the test



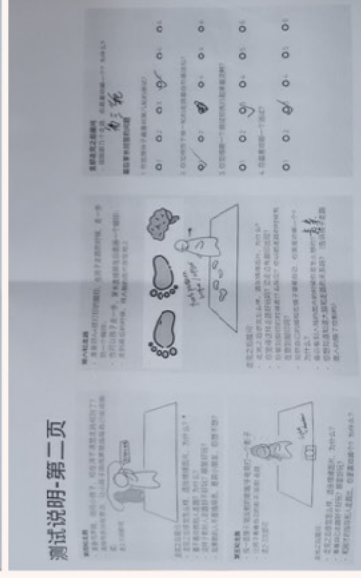
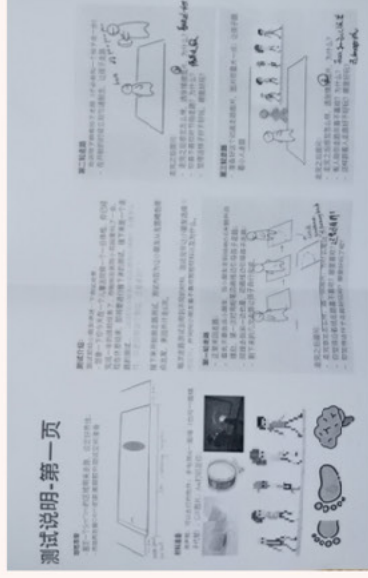
During the interview, mama is explaining the nervous image; the kid points to the smiling image and says "and this."



Mama mentions that the kid likes the megaphone as well because the air in the cup vibrates and she can feel the vibration.

Mama mentions the blanket is hairy. The kid likes the blanket and that's the reason she mentions Monkey is hairy.

The student: Do you like jumping or walking?
The kid: I like jumping. ...because it is like a rabbit.
The student: Which animal are you like when walking?
The kid: Monkey.
The student: Monkey and rabbit, which one do you like?
The kid: Monkey.
The student: Why?
The kid: Monkey looks high and Monkey is hairy.



Mama explains the brain-gait knowledge to the kid in the interview. And mama asks the kid to tell other kids in kindergarten next time.

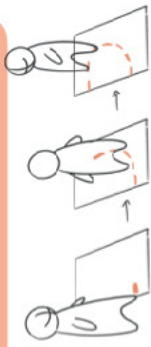
Mama likes the walking gif as well, because mama also likes a walking company, with someone talking with.

The easiest test: the 3rd walking gif because she watches the walking gif and then walks.

Test Conclusion

Interventions

Turning curve



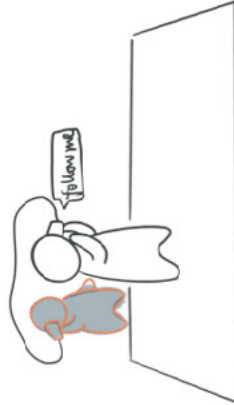
Starting and ending point of turning back informing without instruction

Fun instruction from conductor



Iterated test with steady and clear beats

Child as teacher



User their sharing nature

Results

The line instruction gives a direction when the children is asked to walk. And there is a distance, children can walk with a dynamic line/point instruction.

The clear beats are not fun, and add children's stress at the beginning. Because they try to match when they hear the beats.

The precondition of children's sharing is that they are familiar with the content. They listen to this walking knowledge for the first time and they can not remember the instruction clearly, and then speak it out.

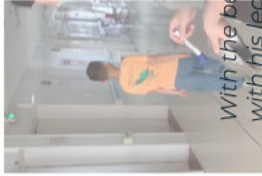
Screenshot



The conductor asks the child which part he feels fun, the kid mentions "back and forth... turning around is fun!"



With the beats, the initiates with her two elbows out at the same time. This bewildered status lasts for a while (the following steps).



With the beats, the kid walks with his leg rising high. (Piaffe). He mentions nervous at the end of this walking.



The kid is asked to instruct himself to walk. The kid puts the megaphone to the mouth and speak with pause: "I will walk fast, and... walk 6 times."

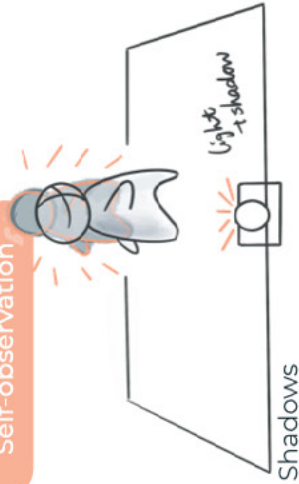
Interventions

Tell the knowledge via foot pattern



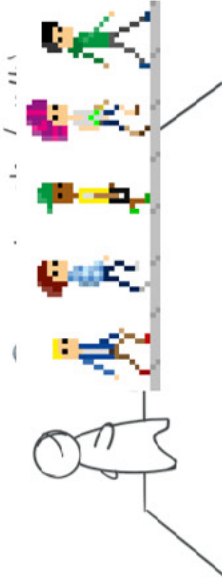
Retest with sands/water

Self-observation



Shadows

Peer company



Results

When children hear the walking instruction, they walk without looking back at the foot pattern. They are processing the WALKING in mind. Sometimes they look back and wait for the conductor, which affect their natural walking.

Shadow has different meaning to children. And without clear instruction of observing the shadow, the interaction is quite difficult to create.

Walking GIF can be a good start to rise children's attention. All the children like the walking GIF and can walk without thinking too much and having too much task pressure at the beginning.

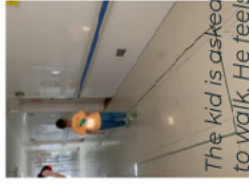
Screenshot



They walk, seeing the conductor's action, instead of noticing the foot pattern.



She keeps walking without noticing her shadow. "I am not afraid (in the dark room)"



The kid is asked to follow the shadow to walk. He feels nervous at the point, because he cannot see the shadow at the point and has to walk in a hurry.



The kid feels the walking GIF fun because they walk fast.



During walking, the test conductor asks her if the little people walks as she walks: she glances at the walking gif with a remaining big step.

The kid likes walking gif because she thinks that the walking gif is fun; something is animated and she can talk to someone when walking.

Mama likes the walking GIF as well, because mama also likes a walking company, with someone talking with.

Test Conclusion

Other insights



The flashlight on the ground is a good guidance for children.



The light spot keeps a distance with children without interference.

But the spot light should always keeps a distance with children, because children can detect more ways of interaction with the spot light, such as stepping the light.

Reflection

- Kids participated in this time are compliant and easy to finish the task.
- Interventions can easily motivate children at the beginning of the walking, but without further interaction, children's interests decrease.
- The static interventions are the reason for the declined interests, some dynamics and changes should be designed during the walking test.
- In the previous tests, both children and test conductor can be tested and interviewed. It is time for the student to conduct a walking test by herself.

Next step

- Test some interventions that work well personally;
- Test more ideas from the ideation session;
- Prepare some random materials for the walking test to detect an impact.

Iteration-4

Kids profile

Kid at age of 4



Description from parents:

Lively **Outgoing**
Compliant **Smart**

Description from parents:

Inarticulate **Naughty**
Polite **Helpful**
Persistent

Kid at age of 5



Test ideas

Informing without instruction

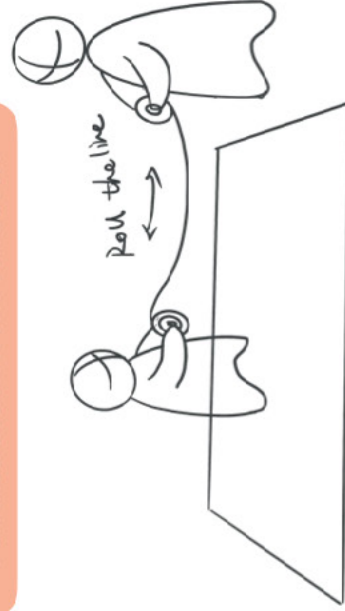


Starting and ending points with curve to seduce the next walking and add fun. Also try some different shapes or dynamic shapes.

Fun instruction from conductor

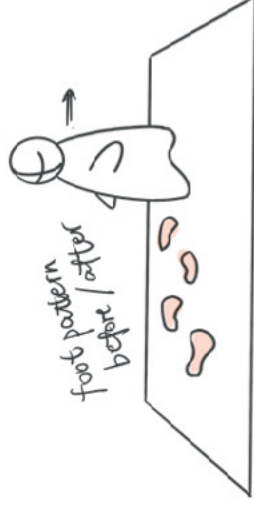


Fun instruction from conductor



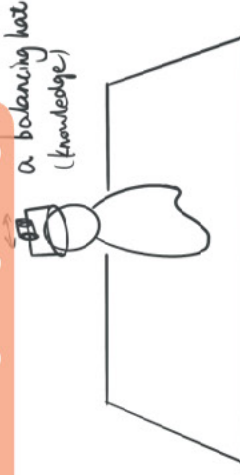
Rounding up the rope with test conductor on the path.

Tell the knowledge via foot pattern



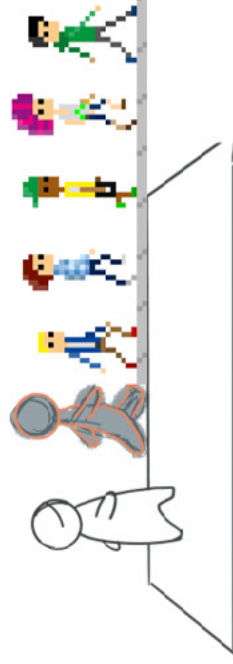
Retest on sands/ test

Knowing during walking



Wear a balancing hat for fun and as a cue for the walking knowledge

Peer/self company








Retest - peer's walking gif

Kid-1 test results

Before the test	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
<p>The conductor: when you hear the test how do you feel? The kid: I don't know. The conductor: do you feel relaxed or nervous? You can tell me in a whisper. (the conductor speaks to him in a small tone.) The kid: nervous (kid closes to the conductor's ear.)</p> <p>-</p>					-
-	<p>He sees the the tape measure and begins to play. The conductor plays with him for a while.</p>	<p>The kid is asked to walk to the other point and use the tape measure the mat. The kid walks there.</p>	<p>The Lape measure uses out. The kid walks back to roll back the tape measure.</p>	<p>He knows the Lape measure can be rolled back. He leaves it and the tape measure rolls back automatically. He laughs at the automatic rolling and scampers back.</p>	-
Intervention-Turning curve	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The curve is asked to stand at one point and walk	<p>The kid walks and counts numbers at the same time. 1, 2, 3, 4, 5...</p>	<p>The kid finishes one-time walking and stands there; he is asked to walk back</p>	<p>He runs back with a Hits the ground</p>	<p>He walks back and forth, twice in total and nothing happens</p>	<p>The kid notices the phone and walks towards</p>
Intervention-megaphone	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The kid asks the conductor to run after him.	<p>The conductor uses the megaphone to attract his attention</p>	<p>He uses the megaphone to asks run and catch again.</p>	<p>The kid drags the conductor by the rope. And run.</p>	<p>The megaphone cannot transmit the sound due to the line is not straight. The kid keep asking what the conductor says. The kid: Can you hear me? (Speaking loudly) The kid: What? (speaking loudly)</p>	<p>The conductor whispers to the kids and asks him to walk one point. The kid is naughty He runs to another points. The kid: here? You mean here? Jump to a point! that the conductor doesn't mention</p>

Kid-1 test results

Screenshot-6	Screenshot-7	Screenshot-8	Intervention-Beats	Screenshot-1	Intervention-balloon
					
The kid finally jumps to the mat area and walks over the mat like a crab.	When asked to walk back, he turns around at the point and doesn't walk back.	And he goes away, he would like to play hide and seek with the conductor.	The kid is asked if he can walk with beats, he drag the rope and would like to ask the conductor to play what he likes again.	The kid puts the rope around the conductor's neck. The kid: I am around you with the rope!	He runs with a balloon
Intervention-Walking GIF	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
				 The conductor: the little people cannot catch up with you.	
He is attracted by the walking gif and is asked to follow the walking gif. He puts the megaphone down and agrees to walk.	The kid watches the little people and walks naturally.	When he walks back, he steps with a big hit on the ground.	He speeds up and runs.	The conductor tells the kid that the little people cannot catch up; the kid slows down a bit, with big hits on ground.	The kid is still attracted by the megaphone. He puts two cups on his ears and walk without saying.
Intervention-Sticks	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The kid is told that, the conductor puts one stick behind once he step once. But the kid waits with his leg high and step onto the stick.	The stick instructs him.	He turns around, steps on the sticks spontaneously and walks back.	When he walks half, the conductor throws new sticks, he turns back to the point and restarts.	After walking back, the kid picks up all the sticks by himself without asking. The kid: Let me pick them up.	After picking up all the sticks, the kid bring the megaphone again and ask the conductor to guess the sticks in cup.

Kid-1 test results

Intervention-foot pattern	Screenshot-1	Screenshot-2	-	-	-
					
The kid is told that there are foot patterns following him.	The kid keeps walking without seeing the foot pattern behind. The conductor: where is the foot pattern? It is gone.	He turns around and walks without instruction. He doesn't see the foot pattern.	-	-	-

Kid-2 test results


Intervention-Balloon	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The kid walks with a balloon and nothing happens.</p>	 <p>The conductor puts sticks on the ground and asks the child to follow the sticks.</p>	 <p>The conductor put the sticks on the ground randomly. The kid follows the sticks with an unnatural walking. Her two legs separate widely.</p>	 <p>She keeps walking with her feet separate. She tries to step on the sticks that the conductor throws on the ground.</p>	 <p>The conductor asks her to walk forward with big steps. With this instruction, she cautiously moves her one foot forward.</p>	 <p>She waits for the next stick, with her one leg high in air.</p>
Intervention-Colorful shape	Screenshot-1	Screenshot-2	Screenshot-3	-	-
 <p>The kid picks up all the stars.</p> <p>I want stars.</p>	 <p>The conductor puts the stars far and asks the kid to walk towards.</p>	 <p>The kid walks forward and step onto the star.</p>	 <p>When she leaves, she wonders how about the star under her feet. She is asked to take it back, she runs back to pick up the star and runs toward to the conductor.</p>	-	-
Intervention-Foot pattern	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The conductor shows the foot pattern to the kid and asks the kid to walk forward.</p>	 <p>The kid keeps walking and doesn't notice the foot pattern. She is asked if she sees the pattern. She turns back a little so that the pattern is just behind her.</p>	 <p>She looks back for a few steps, and she turns her head forward.</p>	 <p>The conductor puts the foot pattern on the ground and the kid steps on the pattern.</p>	 <p>The conductor draws the curve around the kid's feet.</p>	 <p>After drawing, the returns the pattern to the conductor spontaneously.</p>

Kid-2 test results

Screenshot-6	Screenshot-7	Screenshot-8	Screenshot-9	-	-
			<p>The conductor: you don't look the foot pattern, I won't put it on the ground.</p> <p>The kid: ...</p> <p>The conductor: do you like the foot pattern before you or after you?</p> <p>The kid: at the front.</p> <p>The conductor: why?</p> <p>The kid: because I can see it.</p>	-	-
The kid is asked to walk back. She walks and looks at the pattern at the beginning.					
					
Intervention-foot pattern before					
Screenshot-1					
Screenshot-2					
Screenshot-3					
Screenshot-4					
Screenshot-5					
The kid helps the conductor stick the foot pattern on the ground.					
The conductor: Stepping on the foot pattern, following the foot pattern or the foot pattern behind you, which one do you like					
The kid: following the foot pattern!					
The conductor: Why?					
The kid: I can see the foot pattern.					
She helps paste the left patterns.					
Screenshot-6					
Screenshot-7					
Screenshot-8					
Screenshot-9					
Screenshot-10					
Screenshot-11					
All the foot patterns are pasted. The kid stands up, steps onto the foot pattern, and walks forward spontaneously.					
The steps are not her natural walking. When she walks to the end point and turns around, the foot pattern is not on the same direction.					
The conductor asks her to leave the foot pattern and walk to the conductor. The kid listens and walks back. She steps on the foot pattern from time to time.					
The conductor asks her if she likes walking with reversed pattern or forward pattern. She answers forward pattern and turns around, meanwhile.					
The kid mentions jumping by herself. And she jumps. When jumping, she pauses sometimes for preparation.					

Kid-2 test results

Intervention-Walking GIF	Screenshot-1	Intervention-megaphone	Screenshot-1	-	-
				-	
<p>The kid is depicting the gif. She mentions lots of walking people in Gif.</p> <p>She is asked if she likes the foot pattern more or little people. She mentions that she likes foot pattern more.</p>	<p>When walking, she still steps on the foot pattern and walks.</p>	<p>The kid feels curious about the megaphone.</p> <p>The conductor: I use megaphone to teach you walk, sound good?</p> <p>The kid: good.</p>	<p>The kid communicates actively, though the megaphone is near her ear.</p> <p>The kid: I have walked here.</p>		



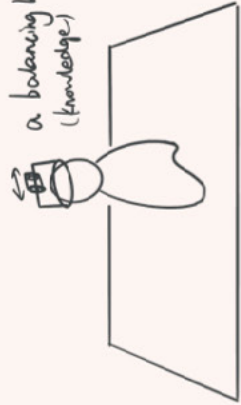
The conductor: do you want to wear this hat and walk?

The kid: no

The conductor: why?

The kid: because it is ugly

The conductor: fine...

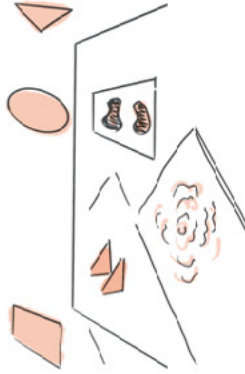


a balancing hat
(knowledge)

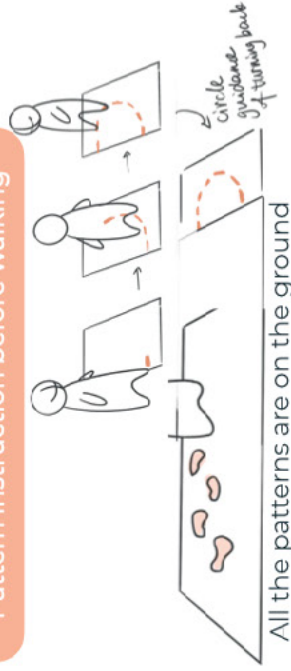
Test Conclusion

Interventions

Patterns on the ground



Pattern instruction before walking



All the patterns are on the ground

Rounding up rope



Play with an oriented line

Results

All the patterns on the ground can achieve the goal of attracting. There is no difference on whichever the patterns, depending on child's preference.

Leave patterns before the kid's walking is an easy way to conduct children to finish the test because the patterns gives a direction to children. However, with pattern, children can jump or step onto the pattern.

Rolling can seduce a natural walking, with children's attention transferred on the rolling action. It can also seduce a reversed walking when children are away from the conductor. But rolling is not fun to children and cannot motivate them.

Screenshot



When asking the kid to choose a pattern, she chooses the star. In research phases, the emoji sticker research also indicates, that the kid chooses whatever they like.



The kid is jumping on the patterns



He turns around, steps on the sticks spontaneously and walks back.

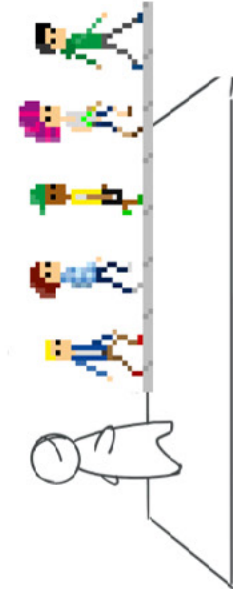


The tape measure is used as a rolling rope. The kid pulls the rope out to the other point, where he throw the rope away. This moment is more fun than rolling itself.

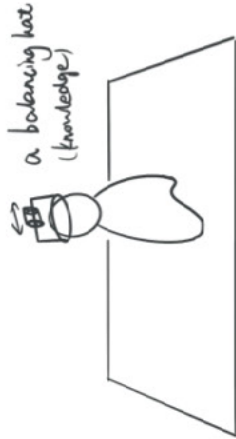
Test Conclusion

Interventions

Tell the knowledge via foot pattern



Balancing hat



Beats instruction



Results

The peers on the phone is not attractive enough than the physical patterns on the ground. The reason can be children look at the patterns more easily in the eyesight.



During walking, the kid looks at the patterns on the ground, instead of watching the walking gif.



The hat is only asked. And since the ugly hat is not a good start for children. The idea doesn't have further iteration.

The kid mentions the hat is ugly and she doesn't want to wear it.



With the prototyping problem, the megaphone doesn't work. And line on the megaphone affect kids a lot. It disturbs the walking in the previous test. Or children can use the line for other usage.



The sound transmission doesn't work and the kid changes the usage of the megaphone and plays a chasing game.

Test Conclusion

Other insights



Objects without explanation make children at a loss of what to do. Even with some familiar objects, they need some instructions of how to interact with the objects.

The kid is asked to walk with balloon, the kid has no interaction with the balloon.

Reflection

- When the student conducts the test, she finds that instruction of the design is necessary as well. In this case, the design should be simple enough for children to understand and for conductor to introduce.

Next step

- The tape measure is not a good prototype for the impact and needs testing again;
- Insights of the behind foot pattern are not enough. Use other ways of prototyping and test it.
- Beats has good effects, though it make children nervous. Play some music to release the nervous feeling is possible.

Iteration-5

Kids profile

Kid at age of 4



Description from parents:

Naughty **Cautious**
Clinging **Sensitive**
Bossy

Kid at age of 3

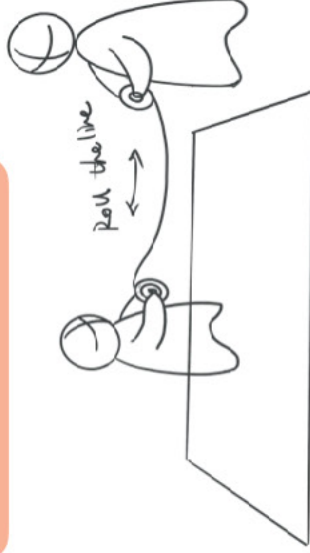


Description from parents:

Timid **Intelligent**
Compliant
Sensitive

Test ideas

Divert attention with fun



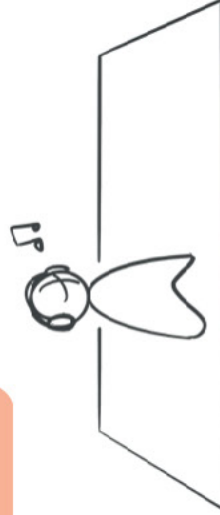
Roll the line, a failed test from iteration-4

Monkey imitation



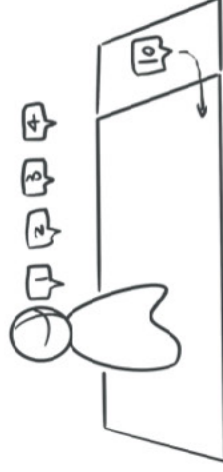
Animal imitation to motivate children

Music



Test the effects of light music and upbeat music. Upbeats music comes from the beats idea.

Counting as an instruction



walk and count at the same time, count to 10/20/30 and turns back

Foot pattern



Test the initiation point and foot pattern together.

Parent company with a naughty prevention



Walk with parents and add a cover to reduce the naughty moment

测试说明

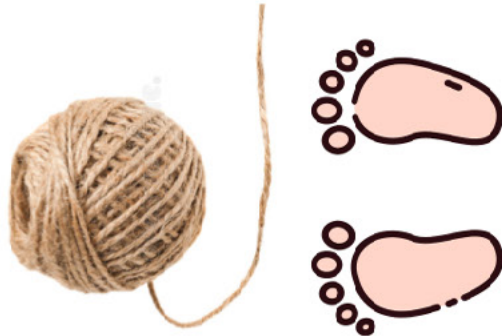
场地准备:

- 圈定一个5m*1m的区域用来走路, 设定好界线;
- 两端再各留0.6m的距离做额外测试空间准备



材料准备:

- 水; 绳子; GIF图片; 两个音乐链接;



测试介绍:

测试前给小朋友讲述一下测试背景:

- 想象一下你今天在儿童医院做一个一日体检, 你已经完成一半的体检任务了, 你刚刚在医院小花园里玩了一会, 现在休息结束, 即将要进行接下来的测试, 接下来是一个走路的测试..... (此时间小朋友你现在的想法, 心情怎么样, 你是好奇这个测试, 还是紧张?)

接下来开始做走路测试, 测试内容为让小朋友从左图颜色原点出发, 来回共计走六次。

每次走路测试会用到不同的材料, 测试完毕可以问问小朋友喜不喜欢那些材料以及为什么。

第一轮走路

- 边听音乐边走边路;

https://www.bilibili.com/video/BV11E41U7Kc7spm_id_from=333.788.videocard.2
https://www.bilibili.com/video/BV1a4117CS7spm_id_from=333.788.videocard.2

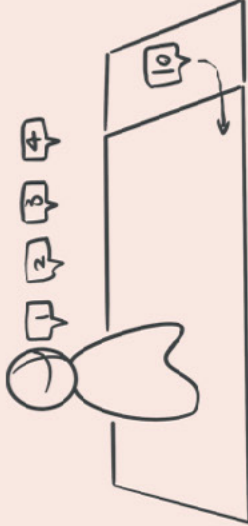


走完之后提问:

- 边听音乐边走边好不好玩?
- 你现在想选什么图片?

第二轮走路

- 让孩子走一步数一步, 数到10就回头
- 每次数到10就回头

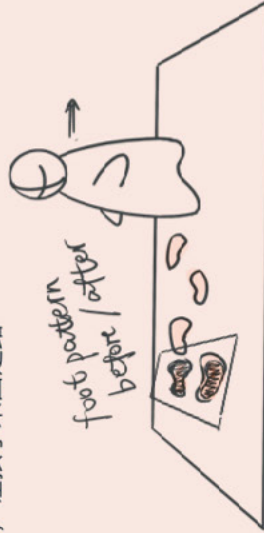


走完之后提问:

- 走完之后感觉怎么样, 选张情绪图片, 为什么?
- 觉得边走边数数字好不好玩?

第三轮走路

- 在起始点上脚印的A4纸, 并在孩子的鞋底沾上水, 让孩子来回走路



走完之后提问:

- 走完之后感觉怎么样, 选张情绪图片, 为什么?
- 走路的时候产生脚印了, 你觉得好不好玩?

测试说明

第四轮走路

- 让孩子学大猩猩/猴子走路，如果孩子不知道怎么走，可以展示如下的图片

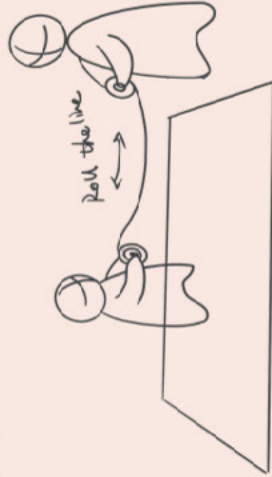


走完之后提问：

- 走完之后感觉怎么样，选张情绪图片，为什么？
- 模仿大猩猩/猴子走路好不好玩？为什么？

第五轮走路

- 让孩子把绳子卷回去

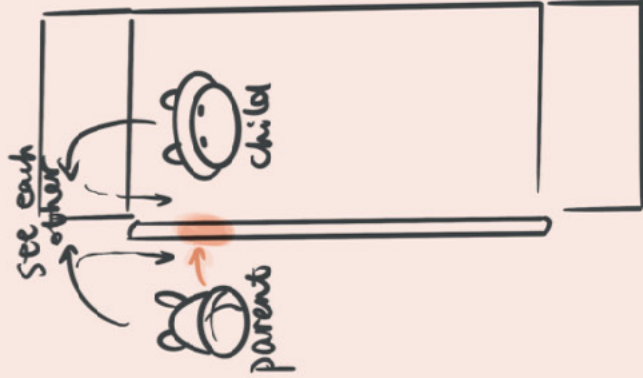


走完之后提问：

- 走完之后感觉怎么样，选张情绪图片，为什么？
- 卷绳子好不好玩？为什么？
- 卷绳子和走路，哪个更好玩？

第六轮走路

- 找一面墙，或者半透明的布，家长和孩子一起走路，走到两端的时候碰一个头，共完成6次走路
- 没有墙，那就用个靠垫把自己的头遮住



走完之后提问：

- 走完之后感觉怎么样，选张情绪图片，为什么？
- 和家长一起走路好不好玩？为什么？

全部走完之后提问

- 刚刚那几个走路，你最喜欢哪一个？为什么？

最后家长回答的问题

1. 你觉得孩子最喜欢第几轮的测试？

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

2. 你觉得孩子哪一轮的走路最自然最放松？

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

3. 你觉得哪一个测试你执行起来最流畅？

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

4. 你最喜欢哪一个测试？

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

情绪图片



害羞的

紧张的

开心的

无聊的

不耐烦的

好奇的



Kid-1 test results

Intervention-light music	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
<p>The kid is playing the ON/OFF button. His mom asks him not to touch and the a video is recording to send to teacher.</p>					
<p>The kid is playing the ON/OFF button. His mom asks him not to touch and the a video is recording to send to teacher.</p>	<p>When the kid starts walking, a neighbour comes. The girl tells the kid: The girl: I run, and you follow me. Sound good?</p>	<p>The girl runs fast and the kid follows, but the kid can not run fast with a heavy bluetooth audio.</p>	<p>He tries to run in a fast speed. But actually, his pace is on small steps with his leg rising high.</p>	<p>The kid follows the girl.</p>	<p>The girl stops but she is instructing the kid. The girl: Keep walking, walk back.</p>
Intervention-Beats	Screenshot-1	Screenshot-2	Intervention-Upbeats	Screenshot-1	-
					-
<p>At the point, the kid looks at the girl, the girl doesn't speak anything. The kid turns around without any instruction and walks for extra times.</p>	<p>It seems that the kid is enjoying the music, because he nods a little.</p>	<p>Another time of walking, he is tired and stops running status. He strides.</p>	<p>The girl walks into the room, the kid is looking for the girl when starting walking.</p>	<p>There is nothing happen during walking. The girl comes out and he looks at the girl again.</p>	-
Intervention-Counting	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
<p>The kid runs away during instruction. He is attracted by the recording people.</p>	<p>The kid can count but cannot speak clearly yet. The kids counts and walks with his arm swinging hard.</p>	<p>The kid notices the girl, walking and counting in the other direction.</p>	<p>When they meet, the kid immediately turns and follows the girl.</p>	<p>He keeps following and speaking out numbers.</p>	<p>The kid then doesn't look at the girl and turns around by himself. When he counts to 20, he begins to run. He runs tiredly and squats down at the end.</p>

Kid-1 test results

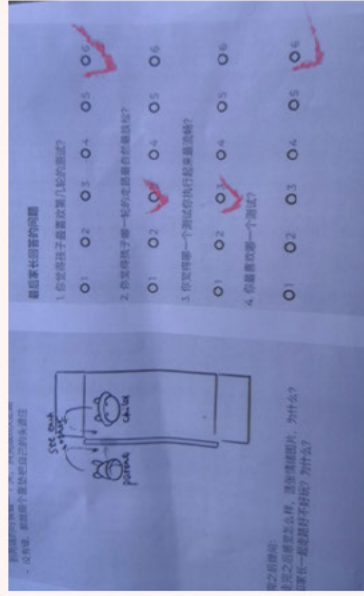
Intervention-water foot pattern	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The test conductor wets his shoe soles.</p>	 <p>The kid is carried to the starting point and asks to walk.</p>	 <p>During walking, the kid can still remembers the counting. He speaks out the number when walking.</p>	 <p>When turning around, the kid stands on the image and keeps watching the images.</p>	 <p>The kid walks and counts. He is asked to stop, then he stops and turns back immediately.</p>	 <p>The conductor: Do you see your little feet on the ground? The kid: I see.</p>
Screenshot-6	Screenshot-7	Screenshot-8	-	-	-
 <p>The kid stands on the image and hits on the ground.</p>	 <p>The image flies with his hits, he catches up with the image and keep hitting.</p>	 <p>He is asked to choose one emotion image. After choosing, he runs back again to hit the foot pattern image.</p>	-	-	-
Intervention-Monkey imitation	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The kid is watching the video of a monkey walking. The conductor: do you know how the monkey walk? The kid: get down (he is imitating at the same time)</p>	 <p>The conductor is doing an imitation to the kid. The conductor: can you imitate it to me?</p>	 <p>The kid is asked to imitate monkey and walk. He squats down.</p>	 <p>The kid runs away in a sudden.</p>	 <p>He is asked to imitate again. He kid walks, with his head shaking and groaning. He is reluctant to imitate.</p>	 <p>He uses the phone to watch the monkey walking and learns.</p>

Kid-1 test results

Screenshot-6	Screenshot-7	Screenshot-8	Screenshot-9	Intervention-Rope	Screenshot-5	
						
He is asked to imitate once more. He shakes his arms with a reluctant face.	He imitates the monkey walking for a few steps, then he stops and looks to the conductor.		Then, he directly runs to the house. His head is tilted and his body moves little.		The kid focuses on rounding up the rope and he doesn't walk.	
Intervention-Covering face	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5	
						
The conductor asks the kids to walk together with a starting indication.	During walking, the kid tries to see the face of the test conductor. He is trying to pick away the pillow.		The kid finds the way to see the conductor's face, which is embracing the conductor.		The kid embraces the conductor and they walk back together in this status.	
	When he sees the conductor's face, he giggles. The conductor: No, I don't have to see you.		The conductor shows her face at the point. The kid laughs hardly. The conductor: No, I don't have to see you.			

Kid-1 test results

Interviews results after the test



The test conductor mentions that the kid has a strong memory and remembers the walking a few days ago. The kid is interested in the new games that he doesn't do before.

The test conductor mentions that the kid likes the pillow walking and she also feel easy with the test. The monkey walking is also interesting for him, but the imitation is difficult to him. The kid feels he cannot imitate well.

The conductor: He's a little resistant (monkey imitation).

The conductor mentions that the counting and monkey imitation are hard to facilitate.

The conductor: how about counting?

The kid: it is not fun.

The conductor: how about water foot pattern?

The kid: it is fun.

The conductor: how about monkey imitation?

The kid: it is fun.

The conductor: how about walking with me at last?

The kid: it is fun.

The conductor: rounding up the rope?

The kid: it is fun.

The conductor: listening to music

The kid: it is fun.

The conductor: why isn't counting fun?

The kid: counting is fun as well.

The conductor: yes, you can count. And if you cannot count, then it is not fun, is it?

The conductor: then, do you think counting is fun?

The kid: fun, fun, fun, fun, fun.

The conductor: can you count to the sister (the student)

The kid: 1,2,3,4...

The kid mentions that someone's company is more fun.

The conductor: do you remember sister Qi walks with you when you listen to music? Which one is fun?

The kid: the girl's company is fun.

The student: why?

The kid: Because I don't know.

The conductor: I think because there is someone accompany. Children are easy to feel lonely.

Kid-2 test results

Intervention-round up rope	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The test conductor asks the kid to round up the rope and walk at the same time.</p>	 <p>The rope trips him up.</p>	 <p>He turns a circle half way and walks forward. When rolling, he has no idea where he walks.</p>	 <p>The test conductor asks questions when he walks. The conductor: Rolling or walking, which one do you like? The kid: rolling..walking, of course. Do we have walking test everyday?</p>	 <p>He cannot round up the rope and he throws away the cup</p>	
Intervention-Counting	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The kid counts to 3 with jumping step, runs and then falls down because the sock is slippery.</p>	 <p>The test conductor pushes him to count and walk. He walks two times.</p>	 <p>He is tired and lies before the camera. The conductor asks him to walk again. He runs back without counting.</p>	-	-	
Intervention-Covering face	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>When the kid sees the test conductor hides the face with a pillow. He feels fun and scampors.</p>	 <p>The kid goes to take a pillow as well. The kid: I take one as well</p>	 <p>The kid walks well and giggles.</p>	 <p>The kid is aware that he is recorded. The conductor asks him to head-to head, but his attention is on the camera.</p>	 <p>The kid understands head-to-head is pillow-to-pillow, instead of face to face.</p>	 <p>He walks 3 times and is asked to stop.</p>

Kid-2 test results

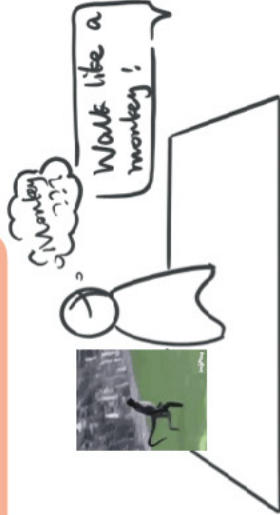
Intervention-Light music	Screenshot-1	Screenshot-2	Intervention-Update music	Screenshot-4	Screenshot-5
<div>  </div> <div> <p>The kid runs with the music.</p> <p>The conductor: walking, not running</p> <p>The kid: this is simply running (it is easy for me to run with the music)</p> </div>	<div>  </div> <div> <p>The kid runs faster as the sound of the music turns aloud.</p> </div>	<div>  </div> <div> <p>He runs several times. And he slips at the points.</p> </div>	<div>  </div> <div> <p>The kid can feel the temper and he walks with his leg high.</p> </div>	<div>  </div> <div> <p>He runs sometimes. But with the temper, he walks in a status of leg high.</p> </div>	<div>  </div> <div> <p>He is excited and hits the ground hard to catch the temper.</p> </div>
<div> <p>The student asks why the kid looks so excited. Mother mentions that he thinks everything is playing; therefore he doesn't follow the instruction and gives play to himself.</p> </div>					

Interventions

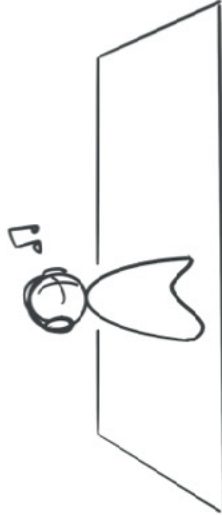
Divert attention with fun



Monkey imitation



Music with beats for ease steps



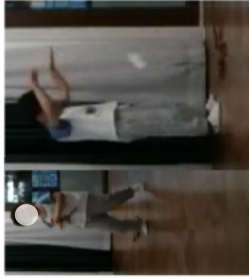
Music

Results

Rolling in the test becomes a challenge for young children, they pay efforts on rolling and the walking slows down. However, they are easy to lose their path when rolling.



The kid stops here and tries to round up the rope.



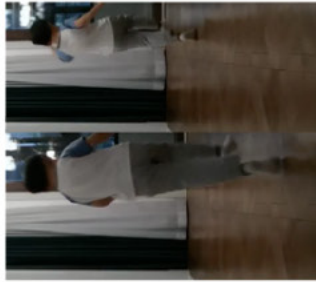
The kid turns half way when rolling. He throws the ropes at the end.

Imitating an animal with showing an image cannot make children relaxed. The image show a real status of animal's walking and it is hard for children to imitate.



After seeing the monkey walking, he feels stressful to imitate. He has no idea on how to walk like a monkey.

Upbeats music can motivate children and the clear beats in the music can rise their piaffe, with their leg rising high.

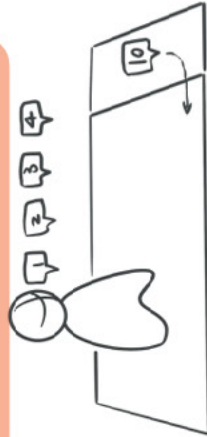


He runs sometimes. But with the temper, he walks in a status of leg high.

Test Conclusion

Interventions

Counting as an instruction



walk and count at the same time, count to 10/20/30 and turns back

Foot pattern



A foot pattern on starting point and have water on the shoes sole and walk

Parent company with a naughty prevention



Results

Counting can remain their walking, but it is not fun, compared with peer. Counting is an easy task for children and they are easily distracted.

Children are easily guided. With a clear guidance, the walking test can be conducted fluently and easily.

Walking with parents give children a strong feeling with security. With this feeling, children become easily naughty. The covering face add more fun during walking and children are willing to follow parents.

Screenshot



This is a walking test with counting. The kid notices the peer aside and follows the peer.



When the kid counts, he finds the slippery floor is more interesting than counting. He plays the falling-down game, then.



Compared with the foot pattern created by the wet soles, the foot shape attracts the kid's attention more and the kid keeps stepping on the foot pattern.



The kid walks well and giggles. He walks 3 times, and then is asked to stop.



The kid embraces the conductor and they walk back together in this status.

Test Conclusion

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Other insights



Heavy stuff in hand slows down child's walking and therefore, stops them from running

The kid holds a bluetooth box. He would like to run with the peer. However, with the heavy box, he cannot run.

Reflection

- Instead of asking parents to instruct children or give help during the walking test, invite parents to do the test is a good chance to interact. But how to prevent children's naughtiness should be considered.
- Live objects or peers can create more impact, compared with static objects or sound; the dynamic objects should be designed to attract children's attention.

Next step

- Enough insights on the walking process;
- Ideas that work well can be tested by the student herself to evaluate the conductor's efforts.
- More tests on how to transmit the walking knowledge

Iteration-5

Kids profile

Kid at age of 8

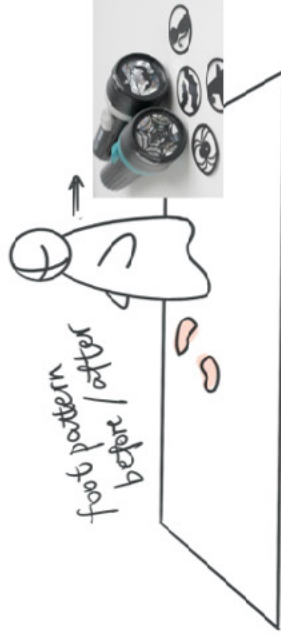


Description from observation:

Compliant **Shy**

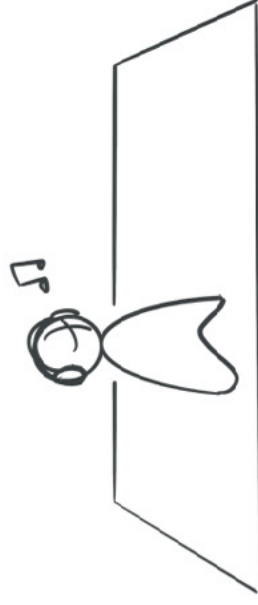
Test ideas

Foot pattern



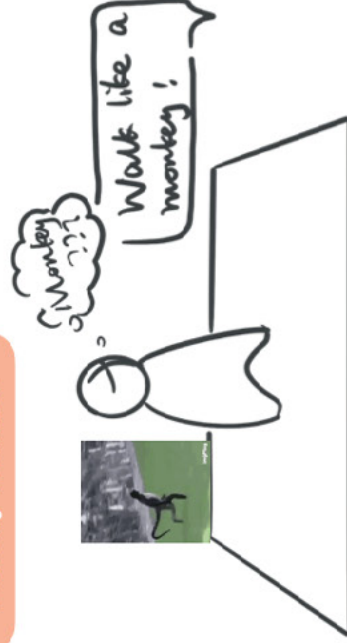
The light guidance before and foot pattern after.

Music with beats for ease steps



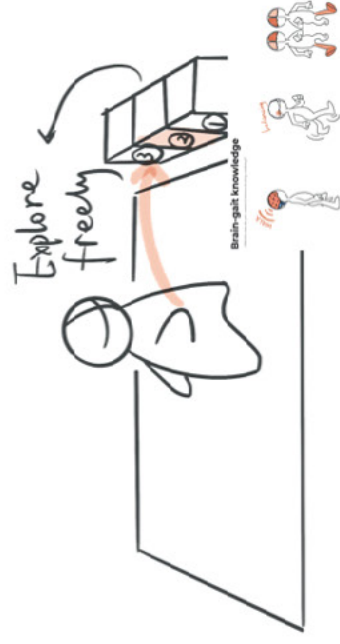
Upbeats music has more impact on motivating children. More test on it.

Monkey imitation



Ask how monkey walks to motivate children

Explore knowledge freely



Pick up a box and see what knowledge is there.

Kid-1 test results

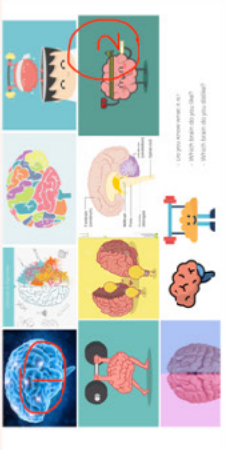
Intervention-Foot pattern flashlight	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The conductor is explaining the test to mama, and mama translates to the kid.</p>	 <p>At the very beginning, the prototyping is not prepared well, the kid is asked to imagine walking on the beach; and there are foot pattern generated after her.</p>	 <p>The kid is asked to choose one image to depict her feeling. She chooses one and explains her nervous.</p>	 <p>The kid is nervous and walks cautiously, with her hand into a fist.</p>		
 <p>The conductor tells her that there is a foot pattern after her when she walks.</p>	 <p>She moves on and looks back once. She looks quite happy when walking.</p>	 <p>She walks relaxed with her hand is not in fist. And her steps become bigger.</p>	 <p>She is asked how she feels about a foot pattern after her. She mentions: I feel my mother is after me and accompanying me.</p>	 <p>The conductor: which one do you prefer, the foot pattern behind or the foot pattern after. The kid: in front of me The conductor: why? The kid: I don't know.</p>	
 <p>Three types of knowledge is left at the end for the kid to select freely.</p>	 <p>The kid is totally relaxed and she walks with big steps to the knowledge options.</p>	 <p>The kid chooses one and opens...</p>	 <p>The conductor explains the walk balancing to the kid. When the kid hears the balancing, she cannot understand</p>	 <p>Mama explains the balancing to the kid. The kid understands and smiles again.</p>	 <p>The kid follows mama and the conductor to touch the cerebellum where controls the balance.</p>

Kid-1 test results

Screenshot-6	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The kid is asked if she want to know more. She nods.	The kid is asked to walk back. The kid walks back in a reversed status.	The kid pauses at the other point and the conductor uses gesture to ask her back.	The kid listens carefully about the knowledge. She understands the knowledge and feels happy.	The kid is asked if she would like to know more, she nods and is asked to directly open the 3rd option. After the explanation, she says: The kid: opposite side (translated by mama)	- The conductor: Do you like this knowledge? The kid: (nodding) The kid: because I didn't know it. The conductor: Is that interesting? The kid: yeh~-(nodding)
Intervention-Monkey imitation	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The kid is asked if she knows how the monkey walks. The kid imitates	The kid is asked to Imitate the monkey and walks back and forth. The kids walks (a little bit running)	She walks in a quite relaxed status	When the conductor prepares the next interventions, the kid feels nothing to do and walks back spontaneously, with a monkey imitation.	She runs happily	The conductor: is that fun? The kid: (nodding) The conductor: why? The kid: because it's fun.
Intervention-Upbeat music	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The kid is asked to hold the phone and walk with the music, back and forth 4 times.	The kid counts by herself and walks in a relaxed status.	The conductor: do you like the music? The kid: (nodding) The conductor: do you think it makes you relaxed? The kid: (nodding)	The kid speaks to her mom about the music. And mama explains to the conductor that she heard that music and sang often at home. The conductor: have you heard that? The kid: (nodding)	-	-

Kid-1 test results

Interviews results after the test



The kid knows it is the brain image because she learned it from the school.

The kid chooses the image first because it is blue. And the second image is selected because it is cute.

When the kid is asked if she can see the knowledge that she has just learned in the 2nd image. She mentions no.

The conductor: do you think more relaxed for now (at the end of the test)

The kid: (nodding).

The conductor: why?

The kid: because... (noisy surroundings) ...

The conductor: which test do you like the most?

The kid: the music.

The conductor: why?

The kid: I am familiar with the music.

Test Conclusion

Interventions

Results

Screenshot

Foot pattern after

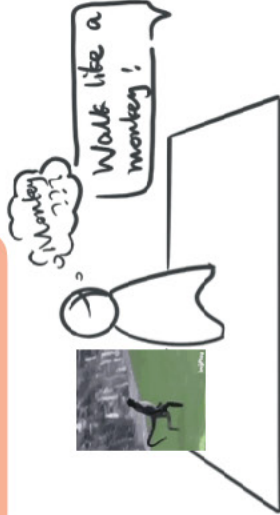


For older children, they still need company during the walking. This company for them can be the feeling of security.



The kid mentions that with the foot pattern, she feels her mother is after her and accompanying her.

Monkey imitation



Some children can imagine the animal walking, and then see the animal imitation as a fun game. And then it motivate the children and make children relaxed.



After the monkey imitation, the kid is delighted instantly. She walks quite happily and can even walk spontaneously.

Music with beats for ease steps



The familiar music can relax children. And the familiarity may decrease temper effects, because children transfer the attention from perceiving the music itself to I have heard it and I like it.

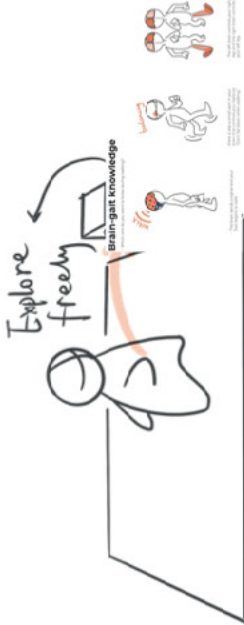


The kid walks naturally with the music. The kid is asked if she feels relaxed with the music. The kid nods. Mama mentions the kid listens to the music often at home.

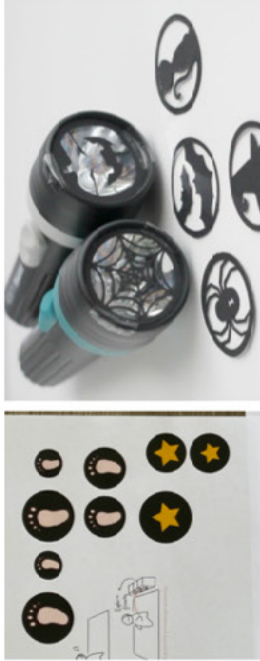
Test Conclusion

Interventions

Explore knowledge freely



Other insights



Next step

- More ideas on the walking knowledge: can the walking knowledge be designed in a way of learning-by-doing? Can the walking knowledge be self explanatory during walking?
- Enough insights on the kid's walking process. Time to consider the BEFORE WALKING and AFTER WALKING.

Results

Children is willing to learning some knowledge. And with the given knowledge, they think as well and can tell their findings.



When children is explained the left brain controls the right leg. The kid speaks to her mom, "opposite side."

Screenshot

Interim meeting

Feedback of the previous ideas

From the hospital

Child cognitive processing during walking

- Since it is a test in the Child brain lab, related factors such as children's cognition should be taken into consideration carefully. There is a necessity that only the walking is proceeded in mind during the test.

Natural walking

- Some of the ideas has already influenced children's natural walking, such as piaffe risen by upbeats. This should be avoided.
- It is the same with the objects in hands. It is preferred there is no objects in hands. Only walking, as a task is done by children.

From the hospital

The ideas

- The ideas seems not wild enough; there are more opportunity.
- "All my ideas are unhealthy." (ideas of VR)

Recap from meeting

Compromise between design and walking task

- Some physical therapists mention that they use toys to motivate children and seduce their walking. At this moment, there are already extra information in children's mind, then, adding the cognition load. A compromise should be made, such as the design is simple and would not add cognition load a lot.
- Since only heavy objects affects children's walking status, there can be a compromise that the light objects in hands are available.

Ideas

- The ideas generates from different design directions; and the current ideas are more on the walking process itself. There can be more ideas on the before or after walking.
- With the design goal of learning some walking knowledge, the idea is mostly given with a walking task. Some ideas that unrelated to the walking task can also have a try.

Technology

- In this stage, robust prototypes are mainly used, without consider too much on the different technology. Actually, the technology can also be part of the interventions and create impact on children, such as VR to create an immersive environment and to gain better test results.
- The benefits of different technology has been considered and will be combined in the concept later.

Iteration-6

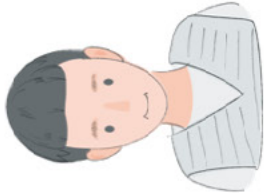
Kids profile

Kid-1 at age of 7



Description from parents:
Introvert **Inarticulate**
Logic-thinking **Sporty**
Brainy

Kid-2 at age of 8



Description from parents:
Compliant **Shy**

Kid-3 at age of 3



Description from parents:
Timid **Intelligent**
Compliant
Sensitive

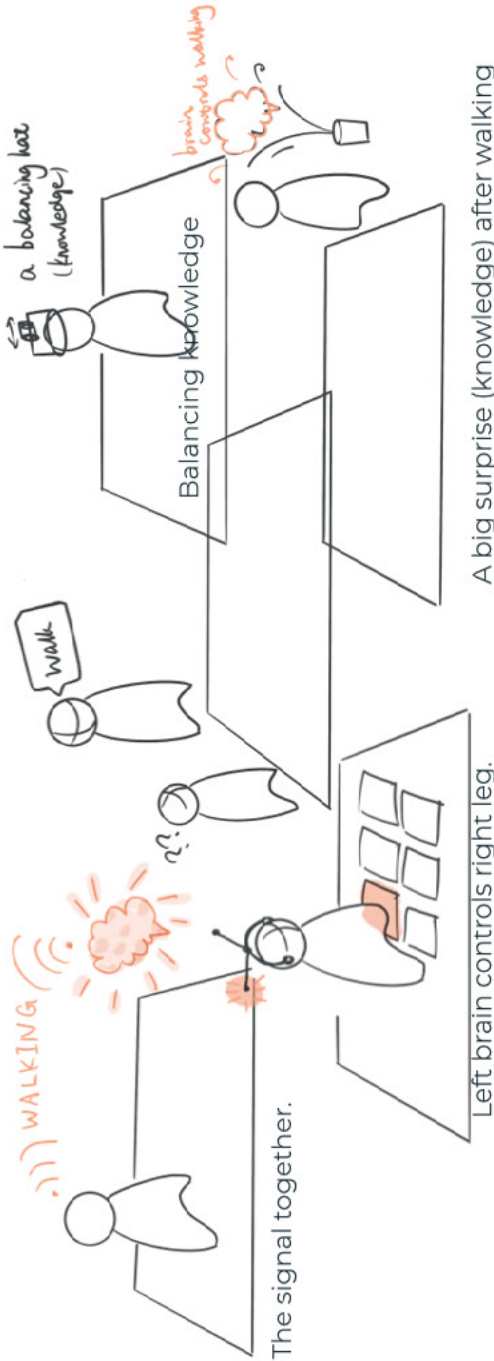
Kid-4 at age of 4



Description from parents:
Naughty **Cautious**
Clinging **Sensitive**
Bossy

Test ideas

The walking knowledge



A big surprise (knowledge) after walking

Bridge the break and next test station

1.1. before the test - problems







• Most of your friends are... because it is a test. What...
• Some of your friends feel... because they are tired. What...
should I do to motivate them?

To the test station

Break (play in garden or room)

The test (look at cards to read)

1.2. before the test - options for inspiration



• I speak to you: **Rebo!!!**
• Did you do something...
• What else...
• I can afford...
• You are excited!

To the test station

Break (play in garden or room)

The test (look at cards to read)

The walking story book

Imagine your friend is going to do a test



1.2. before the test - options for inspiration

2 weeks in the morning (2h in total)

Break (play in garden or rest)

Photogrammetry based learning

The test (walk 6 times in total)

To the test station

What else?

Ask you to study

Do you know how many walls?

What else?

But I am afraid that it will make you too excited!

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

2.2. How do I tell you - knowledge 1

Knowledge

Change's idea

Do you like it?

Do you have good ideas?

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

Overview of the test in child brain lab

2 weeks in the morning (2h in total)

Break (play in garden or rest)

Photogrammetry based learning

The test (walk 6 times in total)

To the test station

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

1.3. What is your ideas?

Do you have good ideas?

2.2. How do I tell you - knowledge 2

Knowledge

Change's idea

Do you like it?

Do you have good ideas?

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

1.1. before the test - problems

2 weeks in the morning (2h in total)

Break (play in garden or rest)

Photogrammetry based learning

The test (walk 6 times in total)

To the test station

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

2.1. in the test - tell you knowledge

Knowledge

Change's idea

Do you like it?

Do you have good ideas?

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

2.2. How do I tell you - knowledge 3

Knowledge

Change's idea

Do you like it?

Do you have good ideas?

How do I tell you the knowledge? I have some ideas, do you have any ideas?

Do you like it?

Do you have good ideas?

The walking story book

2.1. 步态测试中的一些小知识

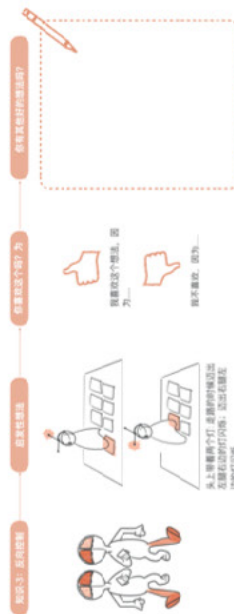
[illegible]

第一學年中學中，就讀於此的學生，在一個一個的房間裏，打個勾，

[illegible]

2.2. 我怎么告诉你这些小知识 - 知识点3

本书可作为高等院校、科研机构、企事业单位、图书馆、档案馆等单位的参考书。



头上带着两个灯。走路的时候迈出左脚右边的灯闪烁；迈出右腿左

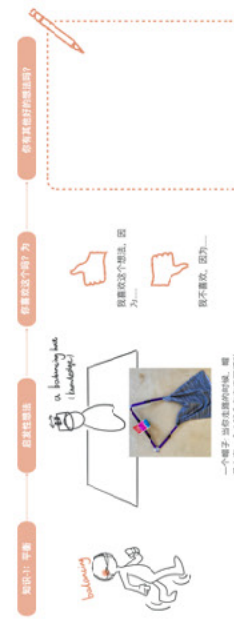
3.2. 你有什么想法?

，請把您的建議寫出來。

2.2. 我怎么告诉你这些小知识 - 知识点1

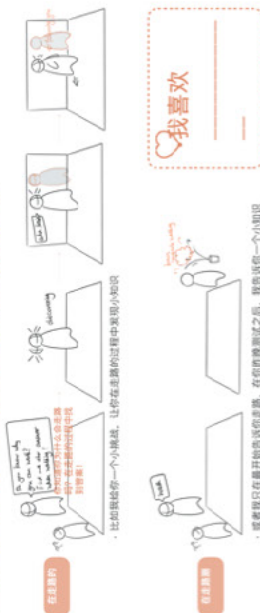
，但選擇時請多久與試看圖才瞭解小如似感，在重買時請理由？

· 中国图书馆法



一个帽子。当你走路的时候，帽

2.3. 或者你想要在测试的最后有一个惊喜？

[illegible]

我喜欢

4. 一些脑子的图片给你启发

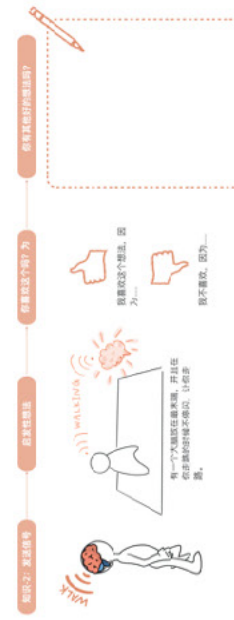


·我喜欢图片——，因为——

2.2. 我怎么告诉你这些小知识 - 知识点2

。但問題我該怎麼向區區副才副都小姐傾訴，有甚麼的困難呢？

• 00000000000000000000



得喜欢这个想法。因

我不喜欢，因为——

3.1. 测试之后的小问题



在修建之前，你總要知道什麼

中国测试

Audio transcripts

Mama tells the story to the kid and records.

1.1. Make your friends relax before the test.

...
Mama: Do you think there is anyway to make them not nervous?
The kid: Just give them a toy, they will be relieved.
Mama: Is there any other way?
The kid: I can't think any other way.
...

1.2. Motivate your friends before the test.

...
Mama: Some friends, they are not willing to do the test, because they think they are tired. Do you think there is any way to motivate them?
The kid: Then, let them sit down first, eat something, and then drink some water, and do the test.
Mama:...(repeat what the kid have said)
The kid: they can also listen to a story, play toys... and eat wowowo (pretending the sound of chewing)
Mama: if I give them those after the test, do you think they are willing to do the test?
The kid: but there are not enough game consoles.
Mama: we pretend there were enough.
...
Mama: do you have any other ideas?
The kid: No!

2.1. Walking knowledge in the test.

...
Mama: (Mama is talking about the balancing knowledge) your brain controls your walking balance...
The kid: take it off...
Mama: then, you can't walk.
The kid: put it in a different place.
Mama: The brain is, first of all, one thing and you can't take it off; if you don't have it, you can't walk, because you can't keep your balance and you are easy to fall down. You can't stand up.

2.2. signal

...
Mama: when you walking, your brain tells you to lift your left foot, lift your right foot, lift your left foot, lift your right foot...do you like it?
The kid: no
Mama: why? What if you walk and feel again?
The kid: I will walk with single leg.
Mama: you don't want to walk with your two feet?
The kid: (distracted by his toy)
Mama: do you like it?
The kid: no, I don't like the sound.
Mama: do you have any ideas?
The kid: no.

2.3. balance

...
Mama:do you like it?
The kid: good idea.
Mama: why?
The kid: I don't know?
Mama: why?
The kid: it's too hot!
Mama: but you say it is good.
The kid: it is good, but it is hot.



Mama asks the kid to have a try of walking

Knowledge during or after the test

...
Mama: what if I don't tell you anything when you are walking. And then I give you a gift or snacks?
The kid: gift! I don't like snacks

What to tell about the test of photogrammetry.

...
The kid: This is quite simple.
Mama: Do you have any good ideas?
The kid: emm...So you throw the camera out.
Mama: But then the camera cannot photo you?
The kid: The camera cannot "monitor" you and then they(children) can come.
...
Mama: no, the camera must be here.
The kid: I'll come up with another idea. If you behave well, you will have a big meal after the test.
...
Mama: What if they have sensors on the head? Are you afraid of those sensors?
The kid: No.
Mama: Are you nervous?
The kid: No.
Mama: Why not?
The kid: it is just like I am wearing a swimming hat, so I am not afraid.

Kid-2 test results

Audio transcripts

Mama tells the story to the kid and records.

1.1. Make your friends relax before the test.

...
Mama: How will you make your friends relaxed?
The kid: Close eyes and have a deep breath.
...

1.2. Motivate your friends before the test.

...
Mama: Some friends, they are not willing to do the test, because they think they are tired. If you are tired, what will you do?
The kid: have a rest.
Mama: any other ways?
The kid: There can be lots of interesting things there.
Mama: what is the interesting things, people or objects or...
The kid: turning a circle is a good thing... everyone thinks turning a circle is playful.
Mama: then, that's an interactive game to make the your friends interested.
The kid: yes.
...

Mama: but how about before the test? Turning around is in the test.
The kid: read comics!... Or watch cartoons!
Mama: what else?
The kid: play a small game before the test.

1.3. Motivate kid during the test

...
Mama: in order to better complete the walking test, in addition to the above means I told you, do you have any other ideas?
The kid: the conductor wears a cartoon dress, and there are little bears on the dress.
Mama: what else?
The kid: The instructor gets a walkie-talkie, and then I get a walkie talkie. Then I walk on, and speak to the conductor, and the instructor tell me what to do.
Mama: and then it's done, isn't it?
The kid: yeah.

2.1 the brain knowledge

The kid choose the 3rd knowledge before the explanation. And mama explains it to him.

2.2. right brain-left leg

...
Mama: How do you know the left brain controls right leg and right leg control left leg?
The kid: they have orders!
Mama: you see this image, do you see the means of testing the knowledge?
The kid: they have two balls on the head; when walking, the balls wobble.
Mama: do you like it?
The kid: yes, yes, I like it.
Mama: why do you like the wobbling?
The kid: because it can help me control the direction?
Mama: then?
The kid: it can tell me the direction.
...

Mama: what else can you test this knowledge?
The kid: at hospital, someone has the left brain broken and his left leg cannot move. Some one has the right brain broken and his right leg cannot move.

2.3. signal

...
Mama: do you like the signal behind when you walking?
The kid: yes.
Mama: why?
The kid: because the signal knows that I am walking.

2.4. the least likeness knowledge

...
The kid: the 2nd one.
The student: why?
The kid: "the falling down" is in mind. I cannot hear.
The student: if you can hear it, then do you like it?
The kid: a little bit like and a little bit dislike.
The student: which part do you dislike?
The kid: keeping saying "don't fall down". It is prolix.
The student: which part do you like?
The kid: the small part in the brain tells me the knowledge.

Knowledge during or after the test

The student:... (explain and ask if the kid wants a surprise or learn in the process)
The kid: after the test.
The student: why?
The kid: after... then, my wisdom is enhanced.

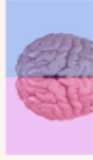
What to tell about the test of photogrammetry.

...
The kid: they don't have to see the camera and they would not feel nervous and close their eyes and have deep breath.
Mama: can you describe what you will do in detail?
The kid: I will let him calm down and then tell him that there are cameras but you don't need to be afraid. Don't see them and be relax!
Mama: what else?
The kid: Ask him play games, watch cartoons and listen to music!



Brain image

...
Mama: which image do you like?
The kid: I like the first image.
Mama: why
The kid: because I can see the entire brain
Mama: ah, the whole structure. Which one do you dislike?
The kid: the ninth.
Mama: why?
The kid: because it is not complete. I can't see the entire brain.
Mama: if it is not complete, will that be an influence?
The kid: I can't see its condition and the volume.
Mama: the form, right?
The kid: yes.



Kid-3&4 test results

Kid-3 Message transcripts

Mama and student communicate via message

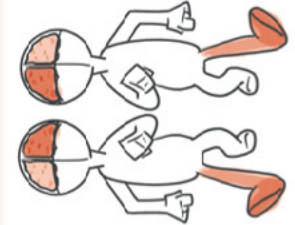
Ideas about the learn-by-doing ...

Mama: it seems that he accepts these ideas, but I am not sure if he understands them.

2.1 the brain knowledge

Mama mentions that the kid likes the 3rd knowledge because the opposite control is fun and wired to the kid.

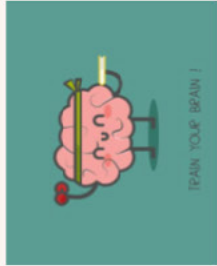
Mama: he has thought that it should be the left (brain) controls the left (leg).



Brain image

Mama mentions that he likes the image that shown before and the image with a smiling face.

The kid doesn't like other images because they scare the kid.



Kid-4 Message transcripts

Aunt and student communicate via message

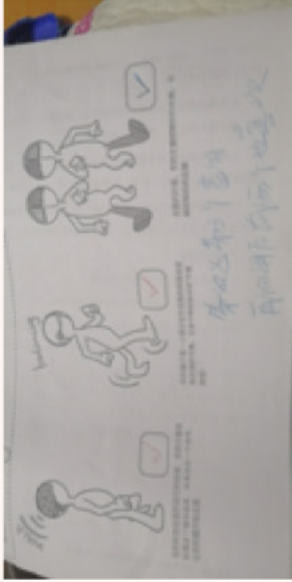
How to release the nervousness before the test

The conductor mentions that the kid has been inspired before. Then this time he mentions eating candies.

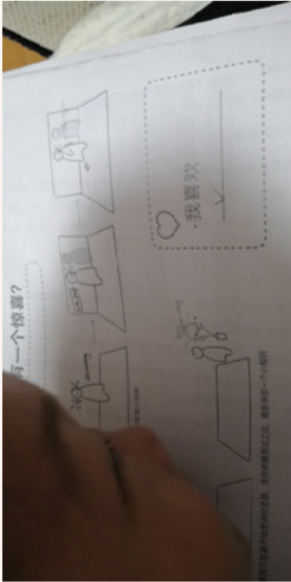
When the kid is asked if he has any other ideas, the kid mentions running, writing characters, and eating bread.

The walking knowledge.

The kid selects the 3rd knowledge first. And after depicting in detail, the kid also mentions he likes the other 2 knowledge.

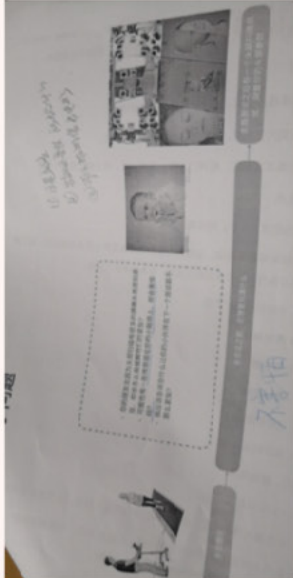


The little kid cannot tell the reason of the likeness, in terms of the ideas.



The next test station

The kid mentions he is not afraid of the next test.



Test Conclusion

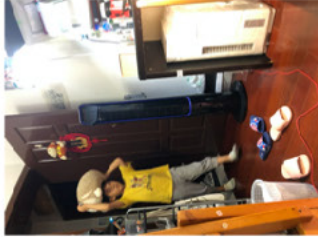
Interventions

How to tell the knowledge



Children are not able to tell if the idea is good or not for them. The design should be decided by adults.

Results



When the kid is told the story, mama asks him to have a walk. What he can perceive is only from his current status. He can not speak a lot from the image.

Screenshot

Bridge the break

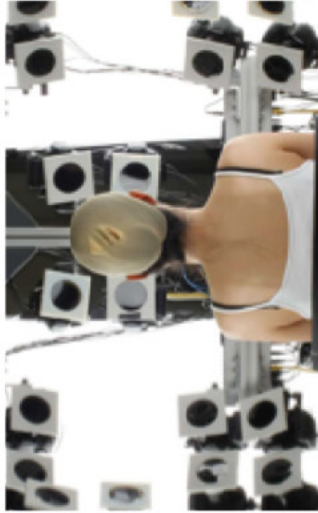


All the children mention eating to release the nervousness.

Bridge the next test station



One idea is generated by one kid.

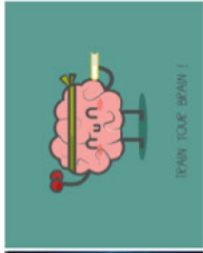
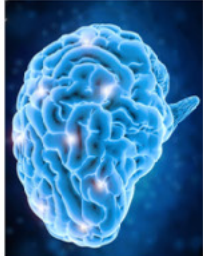


One kid notices a hat in the image and imagines it as a swimming hat. This can be a good start of the next test.

The kid: it is just like I am wearing a swimming hat, so I am not afraid.

Interventions

The brain image

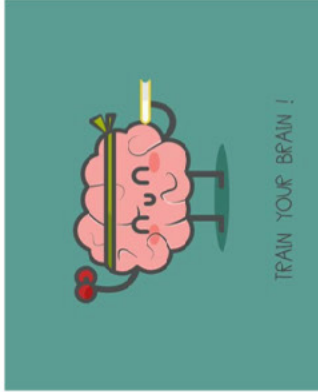


Results

Some children can accept a real brain image, but some cannot and feel scared with the images.

Some elements such as smiling face can add the affinity to children.

Screenshot

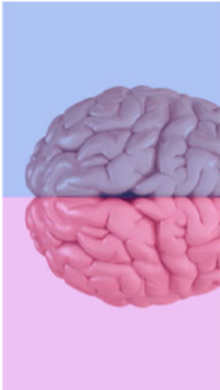


The kid like this image with a smiling face.

The kid doesn't like other images because they scare the kid.

In previous research, the children also pick up smiling emojis a lot.

The brain image



The completeness of the image is also important for children, because they want to see the entire object.

...
Mama: which image do you like?
The kid: I like the first image.
Mama: why
The kid: because I can see the entire brain
Mama: ah, the whole structure. Which one do you dislike?
The kid: the ninth.
Mama: why?
The kid: because it is not complete. I can't see the entire brain.
Mama: if it is not complete, will that be an influence?
The kid: I can't see its condition and the volume.
Mama: the form, right?
The kid: yes.

Reflection

- In terms of the ideas of the walking knowledge, the sketch is plain without lots of inspirations to children. They can not speak out more. They can speak more with a richer images.

Iteration-7

Kids profile

Kid at age of 4



Description from parents:

Naughty **Cautious**
Clinging **Sensitive**
Bossy

Kid at age of 3

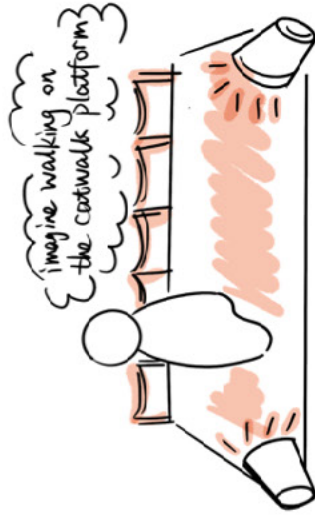


Description from parents:

Timid **Intelligent**
Compliant
Sensitive

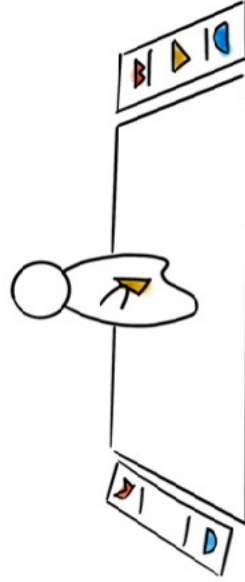
Test ideas

A walking story



Play a video of T-platform to the kid and asks him to imagine walking on this platform.

Matching game at points



A matching game at points.

Parents walking at points



A walking instruction in the children's eyesight

测试说明

场地准备:

- 固定一个5m*1m的区域用来走路, 设定好界线;
- 两端再各留0.6m的距离做额外测试空间准备



材料准备:

- 视频; 可以配对的玩具



测试介绍:

测试前给小朋友讲述一下测试背景:

- 想象一下你今天在儿童医院做一个一日体检, 你已经完成一半的体检任务了, 你刚刚在医院小花园里玩了一会, 现在休息结束, 即将要进行接下来的测试, 接下来是一个走路的测试..... (此时问小朋友你现在的想法怎么样, 心情怎么样, 你是好奇这个测试, 还是紧张?)

接下来开始做走路测试, 测试内容为让小朋友从左图橘色原点出发, 来回共计走六次。

每次走路测试会用到不同的材料, 测试完半可以问问小朋友喜不喜欢那些材料以及为什么。

第一轮走路

- 走路的故事

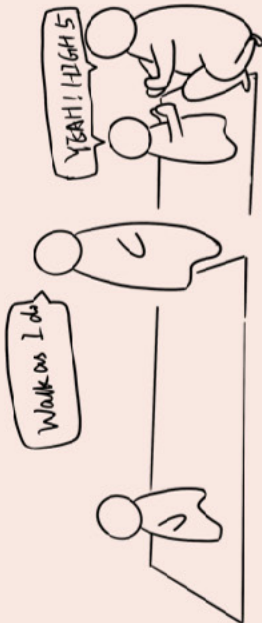
https://www.bilibili.com/video/BV19E411X7sn/?spm_id_from=333.788.video-card.2



播放视频, 并让孩子想象走在T台上, 完成走6次

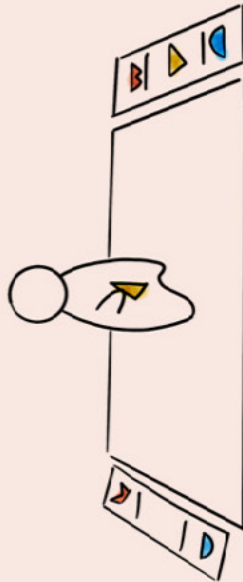
第二轮走路

- 家长站在一头原地踏步, 孩子从另一头走过来;
- 走过来之后和他击一个掌;
- 家长再跑去另一边, 再原地踏步,
- 小朋友走过来, 击掌;



第三轮走路

- 把三个玩具一个个从一端放到另一端



Kid-1 test results

Intervention-the story	Screenshot-1	Screenshot-2	-	-	-
 <p>The kid is asked to imagine selling his toy on the platform.</p>	 <p>He walks well for the first 2 times.</p>	 <p>The he begins his turning around for several times.</p> <p>The kid: I cannot walk for 6 times. My brain asks me to play the toy.</p>	-	-	-
Intervention-Parent at points	Screenshot-1	Screenshot-2	-	-	-
 <p>The kid plays the toy used in the next test. And the conductor asks him to leave the toy and goes to hor to clap.</p>	 <p>The kid walks to the conductor and claps. When they claps, the kid feels the floor a little bit slippery and the force of the clapping makes him backward.</p>	 <p>The kid feels it interested. He claps and pretends falling down for each time.</p>	-	-	-
Intervention-Game at points	Screenshot-1	Screenshot-2	-	-	-
 <p>The conductor is ordering the toys.</p> <p>The kid: do you ask me to sell the toys?</p> <p>The conductor: no, let's match your toys.</p> <p>The kid: no, let's make the toys in a mess (disturb the order of the toys)</p>	 <p>He selects the right toy for a match and goes back.</p>	 <p>For the 2nd matching, he matches wrong and he stays at the point to match the toys for a long time.</p>	-	-	-

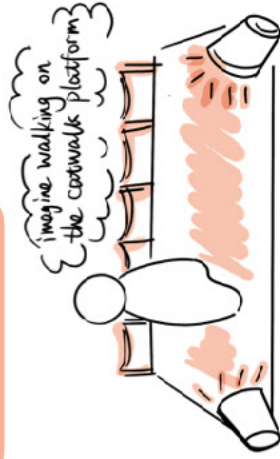
Kid-2 test results

Intervention-the story	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
 <p>The conductor shows the video to kid and asks him to imagine walk on that catwalk platform.</p>	 <p>The kid is asked to walk but he hesitates.</p>	 <p>The conductor shows the kid to walk on a catwalk platform. The kid still hesitates.</p>	 <p>He just doesn't walk. The conductor mentions that the kid looks the video and feels like that the surrounding is the water. He is afraid of the water.</p>	 <p>The student asks to play another video with more kids on platform. The kid watches 3 times and he is still afraid of walking because he thinks there are water. He is afraid of the height and the water.</p>	-
Intervention-Parent at points	Screenshot-1				
 <p>The conductor plaffes at the points and instructs the kid to plaffe</p>	 <p>The kid feels the interests of clapping. He runs to the conductor and claps with a big force.</p>				
Intervention-Game at points	Screenshot-1	Screenshot-2			
 <p>Three objects are puts on the ground and the kid is asked to move the objects to the other point.</p>	 <p>When he picks up one object, the kid looks at the conductor and the conductor asks him to put at the other point.</p>	 <p>The test is finished fluently and the kid feels fun and asks the conductor to play again.</p>			

Test Conclusion

Interventions

A walking story



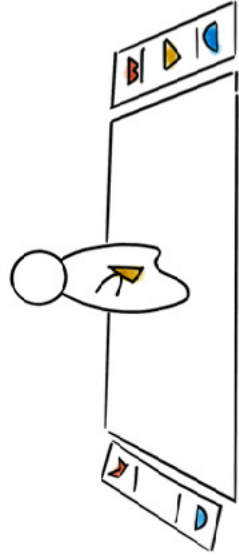
The video or oral description are not immersive enough to ask children to imagine. But some stories in video can already scare children.

Parents walking at points



The clapping at points can motivate children. However, the parents are easy to walk in the way of stepping, which affects children's natural walking.

Matching game at points



The simple matching game can already motivate children in a fun way. A complex matching diverts children's attention a lot.

Results

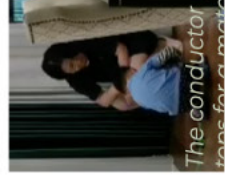
Screenshot



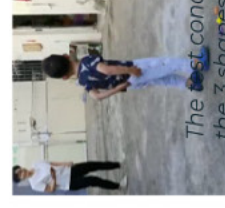
After watching the video, the kid is asked to walk but he hesitates.



The conductor piffes at the points and the piffie influences the child's walking status.



The conductor uses spinning tops for a match. For the 2nd matching, he matches wrong and he stays at the point to match the toys for a long time.



The test conductor asks to place the 3 shapes to the other points one by one. The test is finished fluently and the kid feels fun and asks the conductor to play again.

Test Conclusion

Next step

- There are enough insights for the initiation of the walking;
- Some insights of remaining walking is also gained during the test, but this insights need further evaluation;
- Time to generate concepts; in the complete concept, if children can remain their natural walking can be known.

Iteration-8

Kids profile

Kid at age of 4



Description from parents:

Naughty **Cautious**
Clinging **Sensitive**
Bossy

Kid at age of 5

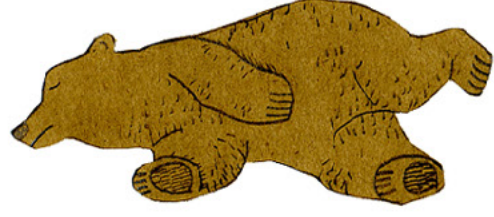
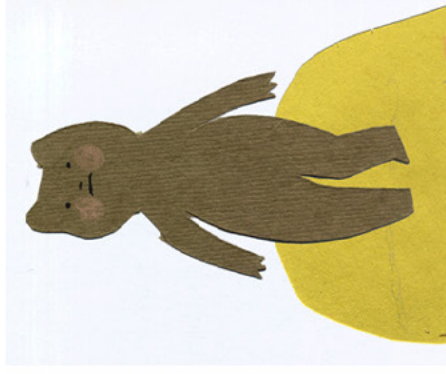
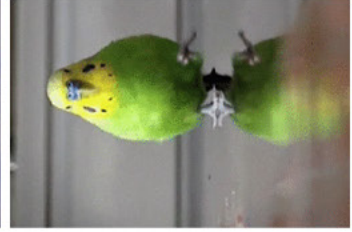
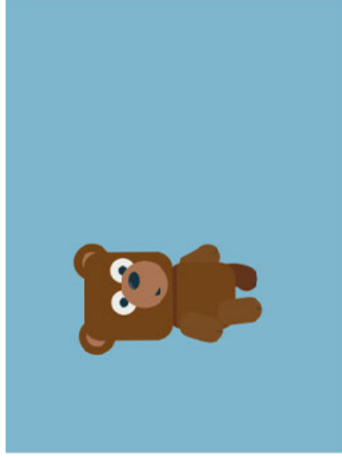


Description from parents:

Bright **Lively**
Easily satisfied **Active**

Test ideas

Different animal imitation

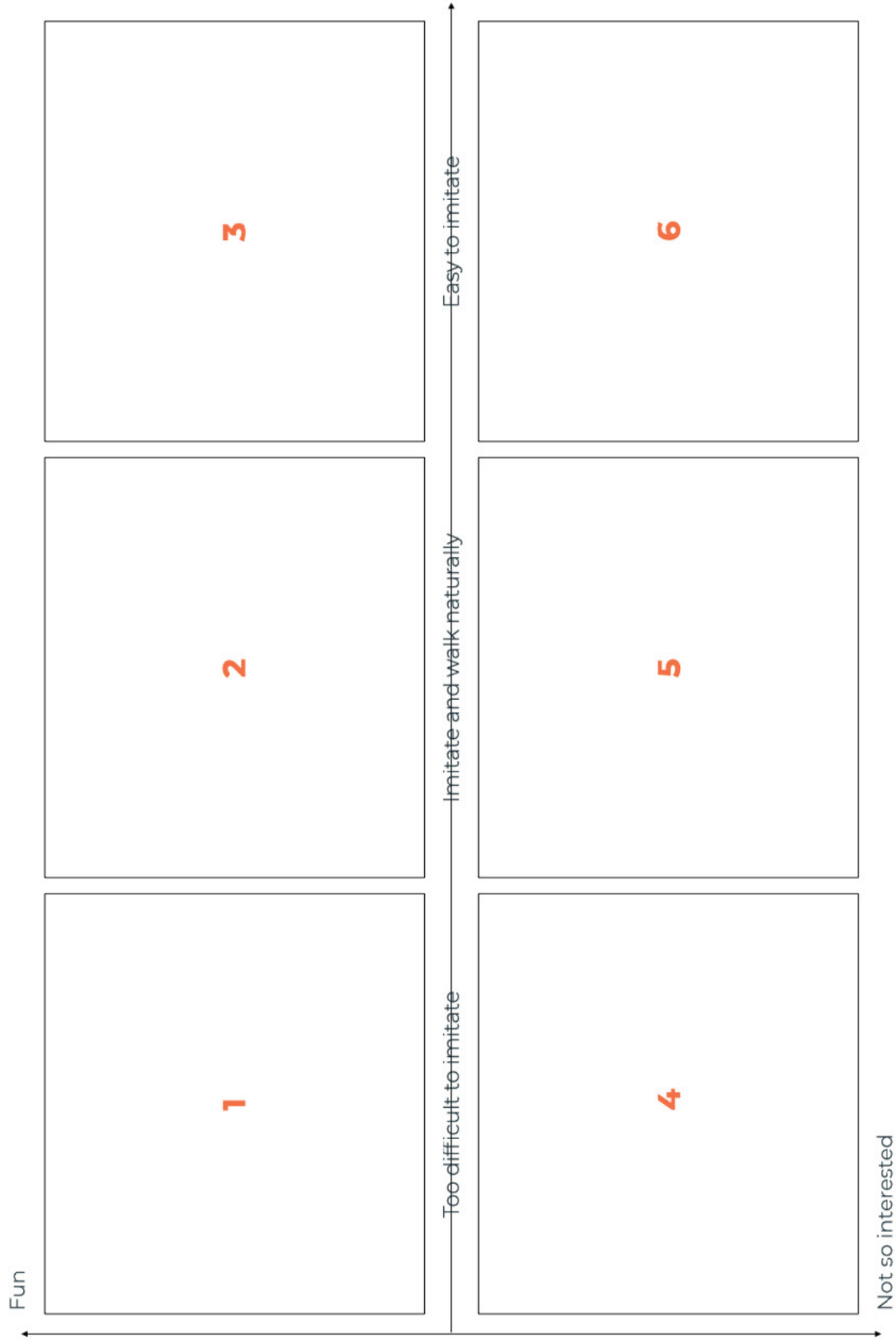


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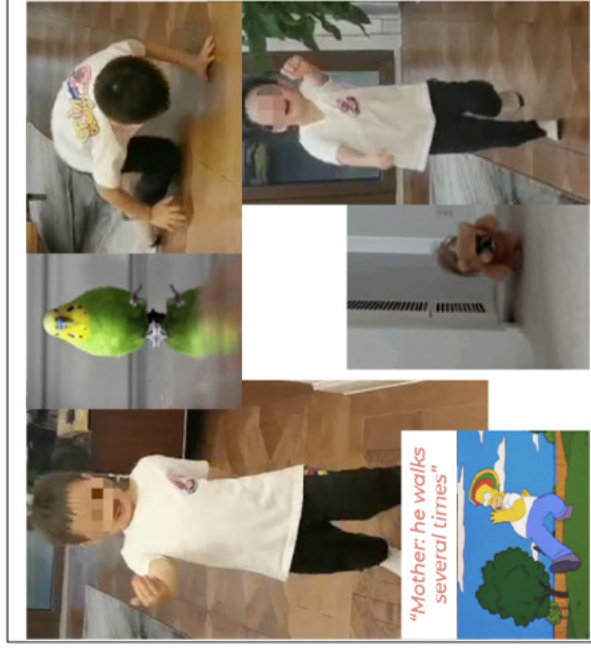
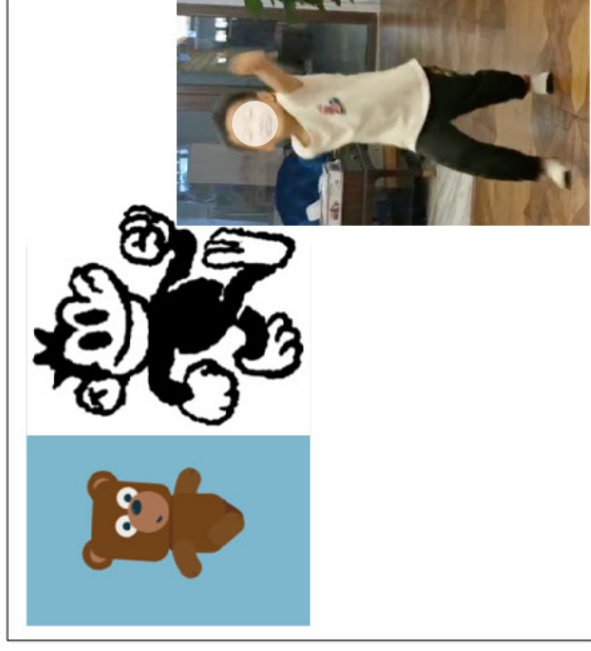
Test process

The test results are categorised into the following graph according to the video or parent's interview.



Kid-1 test results

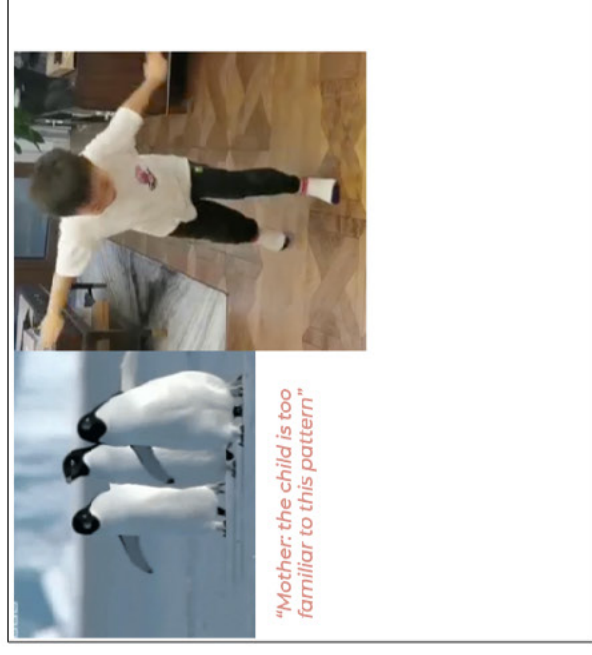
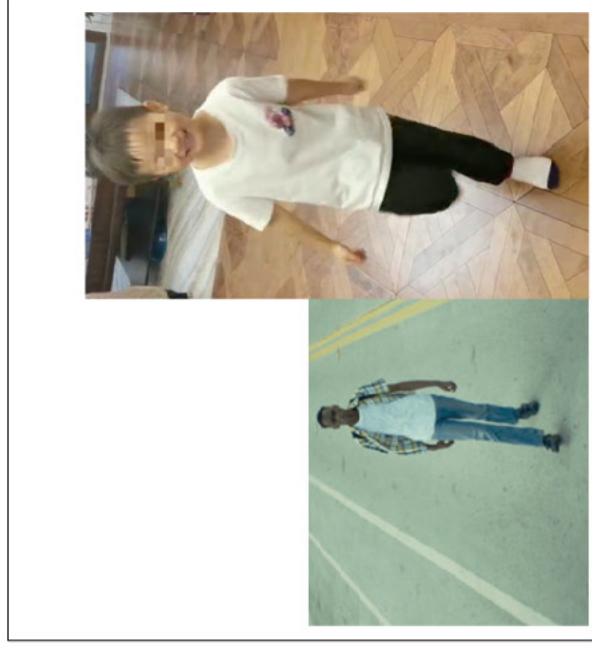
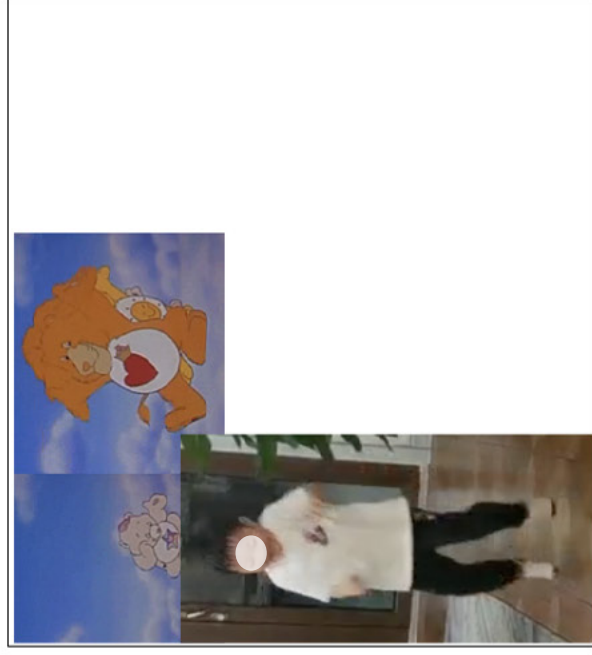
Fun



Too difficult to imitate

Imitate and walk naturally

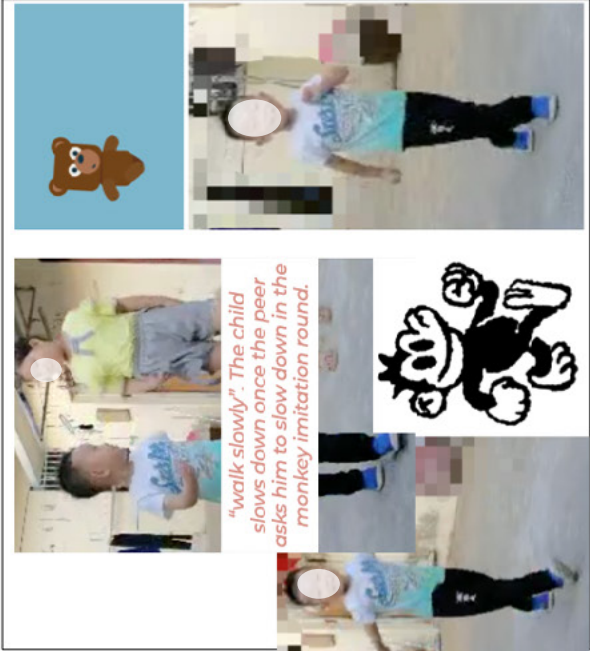
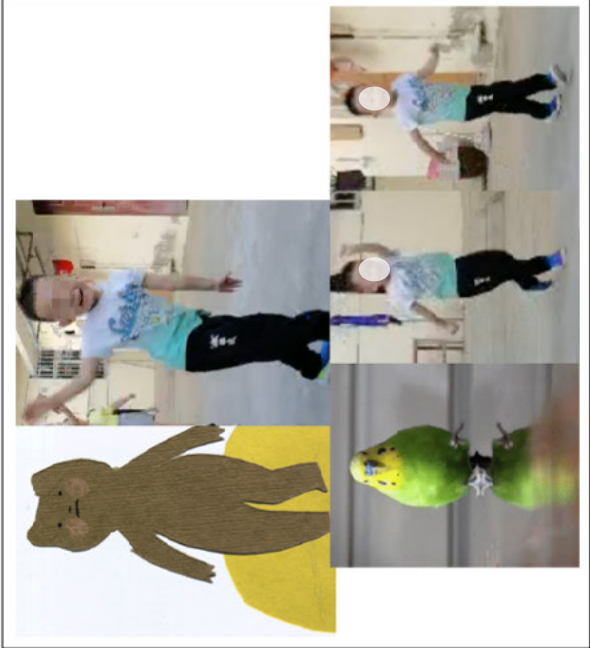
Easy to imitate



Not so interested

Kid-2 test results

Fun



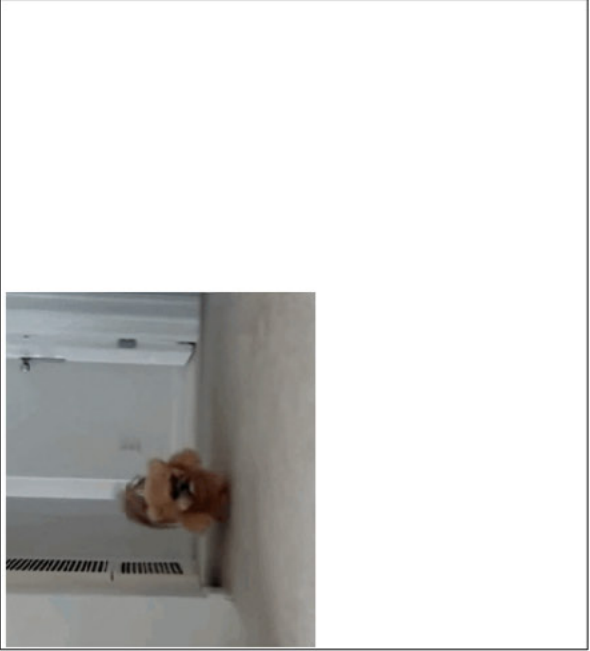
He watches the animation twice.
The 1st time, he notices the feet.
The 2nd time, the child notices the
arm swing and imitate easily

Too difficult to imitate



"I don't want to
learn, it's ugly"

Imitate and walk naturally



Easy to imitate

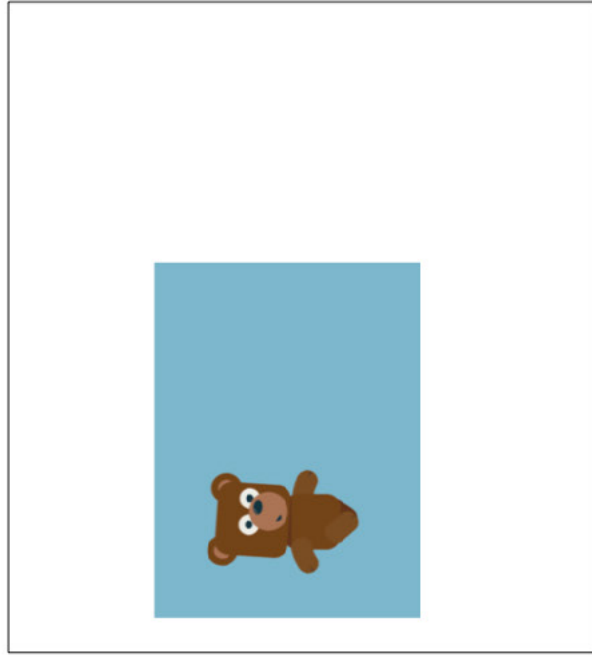
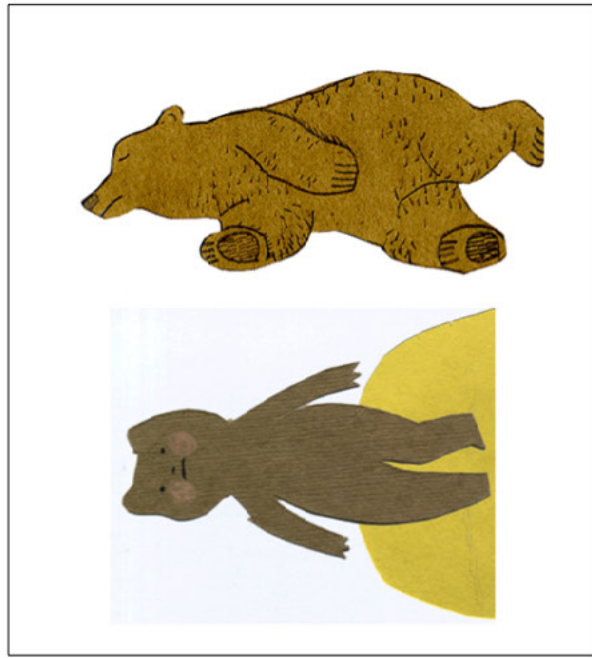


"this is walking,
just walking"

Not so interested

Kid-2 test results

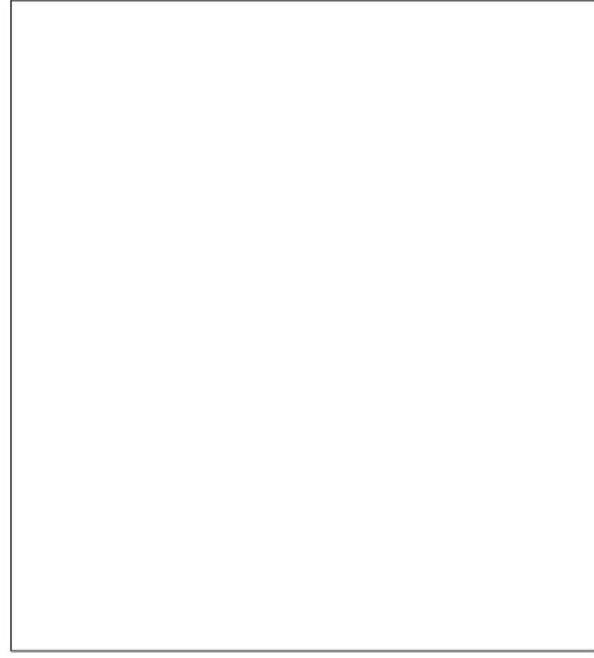
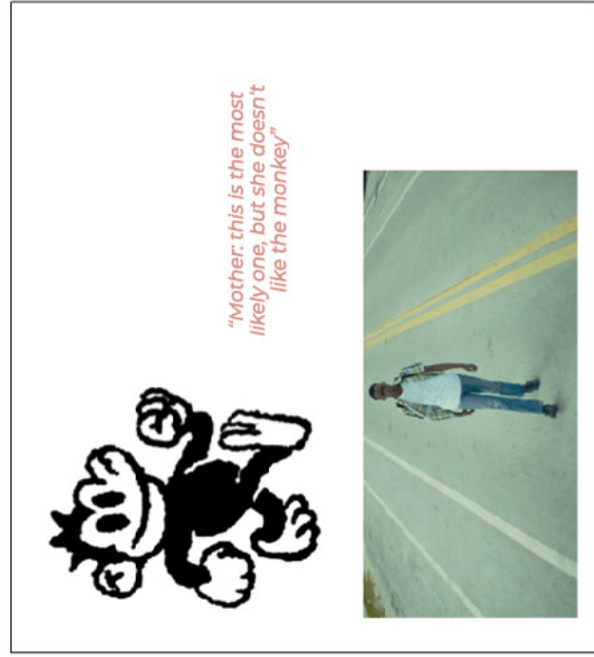
Fun



Too difficult to imitate

Imitate and walk naturally

Easy to imitate



Not so interested

Test Conclusion

Results

Screenshot

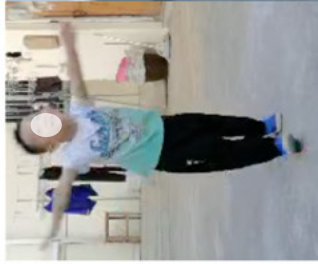
Video can seduce natural walking

Children can easily understand the walking in these images. And the side walking doesn't affect their walking status. The arms can wave slightly to seduce a more natural walking.



Fun and easy to motivate children

Exaggeration, such as high abdomen, stretching arms or fast speed can easily motivate children and make them excited.



Effects of "Slow down"

When children is motivated, the "slow down" will not decrease their emotions and children can slow down with this words.



Evaluate the motivating

Once children is motivated and feel fun during the walking. They would like to repeat. Ask them if they want to repeat can be the way to evaluate.



"walk slowly".

"Mother: he walks several times"

Iteration-9

Kids profile

Kid at age of 4



Description from parents:
Naughty **Cautious**
Clinging **Sensitive**
Bossy

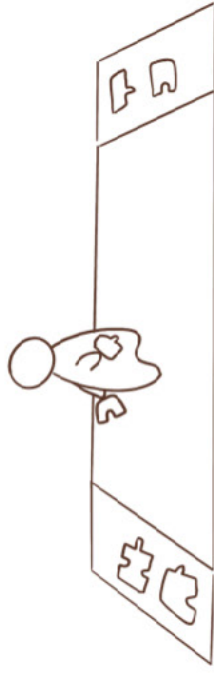
Kid at age of 5



Description from parents:
Bright **Lively**
Easily satisfied **Active**

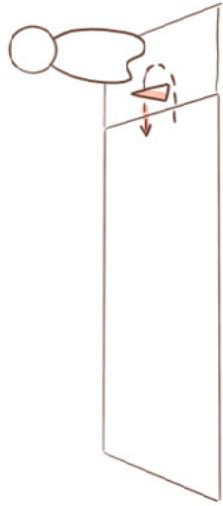
Test ideas

Collecting puzzle



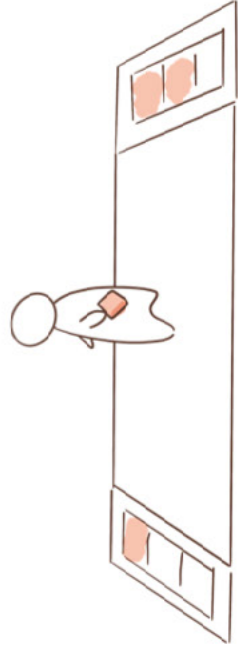
Play a video of T-platform to the kid and asks him to imagine walking on this platform.

Turning at point



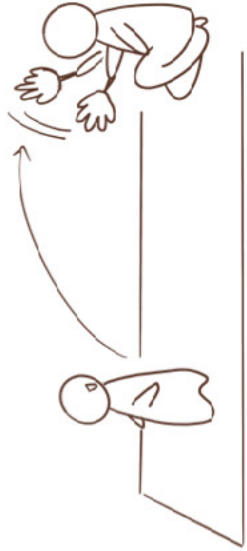
Avoiding the obstacle at points

Filling in the blanks



Paste 6 stickers at points

High five challenge at different height



Parent changes the height of the hand and ask child to have a high five

测试说明

场地准备:

- 圈定一个5m*1m的区域用来走路, 设定好界线;
- 两端再各留0.6m的距离做额外测试空间准备



材料准备:

- 障碍物, 小贴纸, 拼图



测试介绍:

测试前给小朋友讲述一下测试背景:

- 想象一下你今天在儿童医院做一个一日体检, 你已经完成一半的体检任务了, 你刚刚在医院小花园里玩了一会, 现在休息结束, 即将要进行接下来的测试, 接下来是一个走路的测试..... (此时问小朋友你现在是怎么想的? 心情怎么样, 你是好奇这个测试, 还是紧张?)

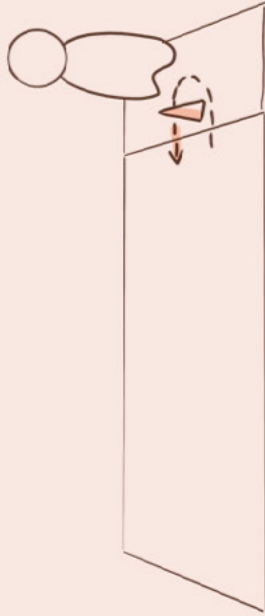
接下来开始做走路测试, 测试内容为让小朋友从左图桶色原点出发, 来回共计走六次。

测试后请回答

- 您觉得小朋友做哪一轮测试最开心?
- 小朋友最喜欢哪一个测试? 为什么?

第一轮走路

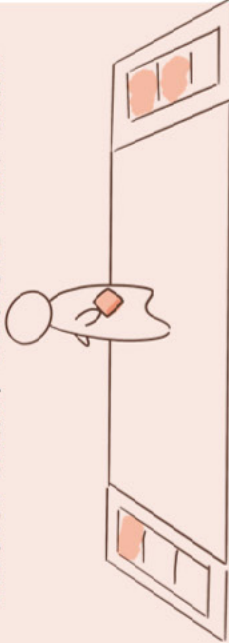
- 躲避障碍物



让小朋友走到终点的时候绕个圈

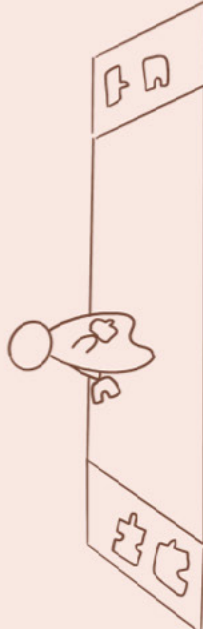
第二轮走路

- 给小孩子六张贴纸, 让小孩子走一次放一张贴纸



第三轮走路

- 让小孩子收集拼图, 完成六次走路



第四轮走路 (一定放最后)

- 每次拍手手的位置忽高忽低, 让小孩子去击掌



Interview questions

完成测试之后请回答

1-1. 你觉得小朋友最喜欢哪一个?

1-2. 你觉得小朋友玩哪一个最开心?

1-3. Do you think the megaphone motivate the kid's willingness of walking?

1-4. What do you think of the kid's walking status near the end?

2nd walking record

2-1. What is the kid's response to the 2nd test?

☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

2-2. What do you think of the kid's first few steps?

☐ Walk in cautious ☐ Walk in relax

2-3. Do you think the megaphone beats motivate the kid's willingness of walking?

☐ Yes ☐ No

2-4. What do you think of the kid's walking status near the end?

☐ In cautious ☐ In relax ☐ In impatience

2-5. Talking or beating with megaphone, which one does the kid prefer?

☐ Talking ☐ Beating

3rd walking record

3-1. What is the kid's response to the 2nd test?

☐ Nervous ☐ Relaxed ☐ Inpatient ☐ Curious

3-2. What do you think of the kid's first few steps?

☐ Walk in cautious ☐ Walk in relax

3-3. Do you think the walking company motivate the kid's willingness of walking?

☐ Yes ☐ No





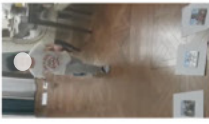





3-4. What do you think of the kid's walking status near the end?

☐ In cautious ☐ In relax ☐ In impatience

3-5. Talking with megaphone or walking company, which one does the kid prefer

☐ Talking ☐ Company

Kid-1 test results

Intervention-stickers	Screenshot-1	Screenshot-2	Screenshot-3	Intervention-turning	Screenshot-2
					
The kid is asked to paste 6 stickers at points.	He is taking the sticker from his hand during walking.	He pastes the stick with force and says The big one, and then a small one.	He accelerates a little bit for the last time of walking and have a jump at the end.	The child initiates and runs. The kid: hahaha, hahaha...	He keeps running for 6 times. The kid: I can run and do exercise to enhance my body. And turning makes me dizzy.
Intervention-collecting puzzles	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Intervention-puzzle piece
					
The kid collects 6 complete puzzles.	He runs to collect the puzzle.	And for each time at point, he jumps first and then collect the puzzle.	He begins to watch the puzzle and make a story of the puzzle. This puzzle and this puzzle are fighting with each other, fighting, fighting, fighting	With a looking at the puzzle, he slows down a bit.	The kid is angry when her mother breaks the complete puzzle. The kid: don't take my puzzles next time. I will be angry once you take them. I like they are together.
Screenshot-2	Screenshot-3	Intervention-high5 at different height	Screenshot-2	Screenshot-3	Screenshot-4
					
The test conductor gives the kid 6 pieces of puzzle. The kid finishes the 3 pieces at one point first.	And then he finishes the other 3 pieces at the other point.	The kid runs to the test conductor, he is easily motivated by himself and claps with the test conductor	The kid wallows. He points to the other point and asks the test conductor to that point. The kid: You go there!	Another other round of high five remains the previous status.	The kid's hands don't hit the test conductor's. But he is already over motivated by himself and falls down.

Kid-2 test results

Intervention-high5 at different height	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
  <p>The test conductor stands at one point and the child finishes the first high five and walks back.</p>	 <p>The next high give, the child finishes one and the test conductor asks the child what about the other lower clap.</p>	 <p>The conductor asks the child to clap with the other hand at the lower height.</p>	 <p>The child is motivated and starts run for the last few times of walking.</p>	 <p>At the end, the child jumps at the point and the have the high five.</p>	-
Intervention-Collecting puzzles	Screenshot-1	Screenshot-2	Screenshot-3	-	-
 <p>The child picks up the first card, and the test conductor asks the child to the other point and walk back pick up another one.</p>	 <p>The test conductor asks the child to walk back and to pick up more. The kid: ah, why? The conductor: no reason, just walk and pick it up.</p>	 <p>The child picks another puzzle and the test conductor asks more time of walking and picking a puzzle. The conductor: walk back and pick more puzzle. The kid: alright.</p>	 <p>The child finally picks up 6 puzzles.</p>	-	-
Intervention-Turning & avoiding	Screenshot-1	Intervention-pasting stickers	-	-	-
 <p>The child turns the ground with his body tilted.</p>	 <p>After turning, he walks along the side of the path a bit because the obstacle is large.</p>	 <p>The child finishes the pasting easily and finishes the walking.</p>	-	-	-

Kid-3 test results

Intervention-high5 at different height	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	-
					-
This is the first high five at normal height.	The child is asked to walk back and finishes the high five.	For the second high five higher, the child jumps and hits the hand.	This time, when the child is going to hit the hand, the conductor moves away her hand quickly. And the child loses the hit.	The last high five, the conductor moves her hand in advance, and waits for the child to hit.	-
Intervention-Collecting puzzles	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
					
The child picks up one puzzle first and would like to pick up another one. The conductor tells her to select one first and walk back.	The child listens to the instruction, walks back and forth and pick up the second one	At the other point, the child matches the puzzle.	The next matching, the child matches the two puzzles first to have a look, and then she picks up one to the other point, and then the matched one.	And she matches puzzles at points again.	The last two cannot be matched but the child follows the instruction and picks up the two puzzles separately to the other point. The kid: the last two cannot be matched
Intervention- Turning & avoiding	Intervention-filling in blanks	Screenshot-1	Screenshot-2	-	-
				-	-
The child walks slowly and she cannot feel the turning interesting.	This is the filling in blanks	The child remembers the turning, after leaving the blanks, the child turns around and walks back	The task is easy to finish.	-	-

Interview results

Kid 1

Which task does the kid like?

Mother mentions that the kid remembers the walking imitation last time and still likes the walking imitation.

Kid 2

1. Which task does the kid like?

The child mentions the turning and avoiding first. When asked why he likes the turning, he mentions the task is easy.

2. Which task is the most fun to the child?

In the observation, high five is the most motivating task for the child. The child is asked why he likes the task, he says:

The clapping makes sound.

3. Puzzle and pasting, which one do you prefer?

The kid: I like puzzle.

The conductor: why?

The kid: it is easy.

The conductor: how about the pasting stickers?

The kid: I like stickers, it is easy as well.

But I like puzzle.

4. Turning and puzzle, which one do you prefer?

The kid: turning, it is easy.

Kid 1

Which task does the kid like?

Mother mentions that if asking child to select one, the child will think for quite a while.

The child doesn't like the turning, but she cannot tell the reason.

The child like the puzzle, because she says:

*I have collected the puzzles and I know how to match them!
And I like picking them up!*

The child also like the high five, because she says,

There is sound! I like the hand at higher height and I can come to that height.

Test Conclusion

Interventions

Results

Screenshot

A walking story

The video or oral description are not immersive enough to ask children to imagine. But some stories in video can already scare children.



After watching the video, the kid is asked to walk but he hesitates.

Parents walking at points

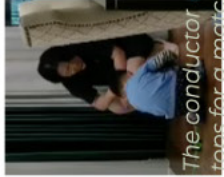
The clapping at points can motivate children. However, the parents are easy to walk in the way of stepping, which affects children's natural walking.



The conductor piaffes at the points and the piaffe influences the child's walking status.

Matching game at points

The simple matching game can already motivate children in a fun way. A complex matching diverts children's attention a lot.



The conductor uses spinning tops for a match. For the 2nd matching, he matches wrong and he stays at the point to match the toys for a long time.



The test conductor asks to place the 3 shapes to the other points one by one. The test is finished fluently and the kid feels fun and asks the conductor to play again.

Test Conclusion

Next step

- There are enough insights for the initiation of the walking;
- Some insights of remaining walking is also gained during the test, but this insights need further evaluation;
- Time to generate concepts; in the complete concept, if children can remain their natural walking can be known.

Iteration 10 - draft concept evaluation

Kids profile

Kid at age of 4



Description from parents:
Lively Outgoing
Compliant Smart

.....

Kid at age of 5

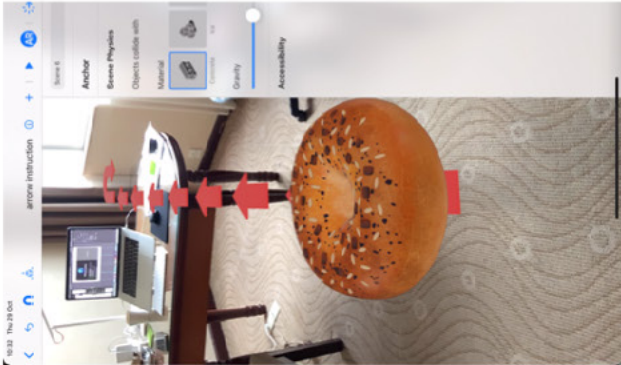


Description from parents:
Inarticulate Naughty
Polite Helpful
Persistent

.....

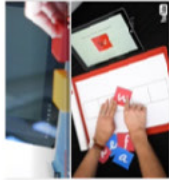
Concept

Mindless guidance

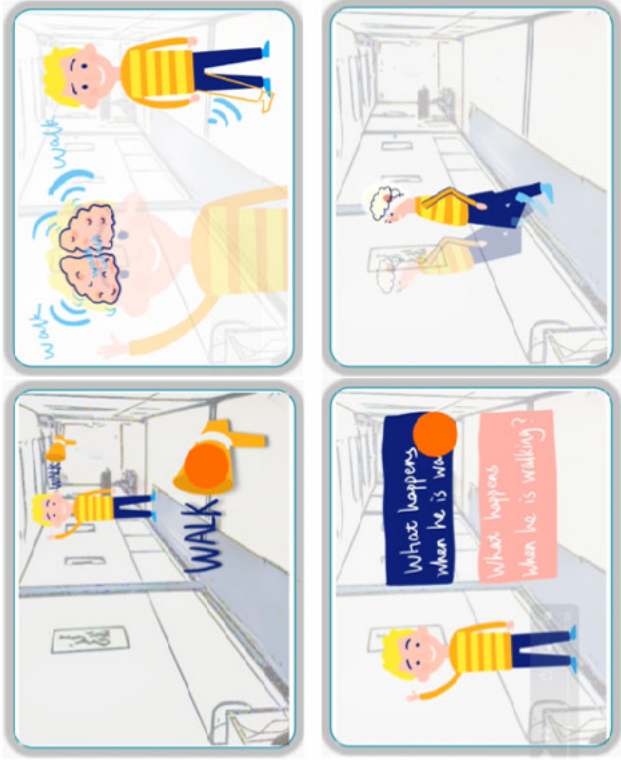


AR arrow with distance to child

Tangible interaction



Peer and brain knowledge



Brain knowledge on the screen, at two points during walking.

Kid-1 test results

AR guidance	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
 <p>The student is positioning the AR area.</p>	 <p>The kid is instructed to follow the arrows to walk</p>	 <p>The kid is following the arrows.</p>	 <p>As the AR environment only sets one straight walking. After finishing, no arrows are shown, and the kid begins to step back.</p>	 <p>When she steps back to the initial point, she is asked where is the donut, the kid rises her hand to indicate the position.</p>	 <p>The student: do you think it is fun? The kid: (focusing on the walking and doesn't answer)</p>
Screenshot-6	Screenshot-7	Screenshot-8	The walking knowledge		
 <p>The kid walks forward and walks back again. She is asked if she would like to do it again. She nods.</p>	 <p>She is informed that at the end point, there is a turning arrow.</p>	 <p>Then, when she walks to the end point, she turns around.</p>	 <p>The kid is told that the student would teach her some walking knowledge, she is reluctant..</p>		
			Screenshot-1	Screenshot-2	
 <p>The kid is introduced the knowledge.</p>			 <p>The student tells her that she would be taught in a gamified way. <i>The child: (jumps) ah?!</i></p>	 <p>The kid is introduced the knowledge.</p>	
Screenshot-3	Screenshot-4	Screenshot-5	Screenshot-6	Screenshot-7	Screenshot-8
 <p>The kid is asked to go to the other point to know more about the knowledge. And the child runs to the other point.</p>	 <p>The child is mentioned by the student that, on the screen, the peer tells her to walk, instead of running.</p>	 <p>Then, the next time, the kid walks.</p>	 <p>When the kid is taught the knowledge. The kid suddenly says "I can walk backwards." And then, she walks backwards.</p>	 <p>The kid walks backwards again and again.</p>	 <p>The kid is asked to walk to the other point for the final knowledge, she runs to that point.</p>

Kid-1 test results

Screenshot-9	Screenshot-10	Screenshot-11	Screenshot-12	-
				-
<p>‡The student: did you run or walk just now? The kid: I walk... I run! The student: but we are asked to walk, can you walk again? The kid: (nodding)</p> <p>The kid walks back and forth.</p>				
Tangible interaction	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4
				
<p>The child is asked to try another way to learn the knowledge. And 4 sticks are put at one point.</p> <p>The child takes one stick and walks to the screen.</p> <p>Once the kid is taught the knowledge, she is asked to pick up another stick. The kid finishes all the sticks.</p> <p>The child is asked if she remembers the previous knowledge. The child replies no and the student tells the kid again.</p> <p>The kid is taught the 3rd knowledge, she is pointing her leg.</p> <p>The kid is asked her brother for the test.</p>				
-	-	-	-	-

Kid-2 test results

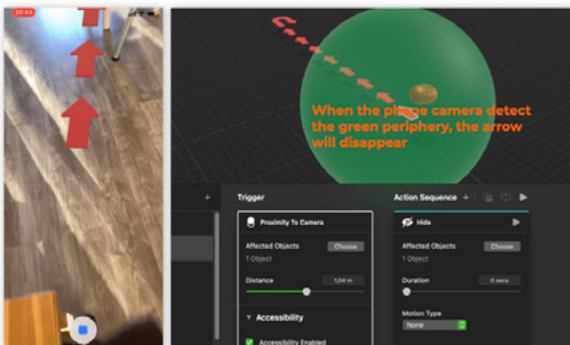
AR guidance	Screenshot-1	Screenshot-2	Screenshot-3	Screenshot-4	Screenshot-5
<p>The kid is using the AR guidance</p> 	 <p>He understands the turning arrow and turns around independently</p>	 <p>However, as it is a one straight walking, there is no arrow anymore. The kid looks back for a check.</p>	 <p>The kid is asked if he is fun about it. He mentions no because not all the arrows can be eliminated and he wants to eliminate all the arrows.</p>	 <p>The student tells the kid for the next time, because this version, not all the arrows can be eliminated. The kid sticks with the eliminating and refuses giving the student the phone.</p>	 <p>The kid gives up the eliminating and walks away.</p>
The walking knowledge	Screenshot-1	Screenshot-2			
 <p>One peer says hi on the screen, therefore, the kids rises his hand and says hi.</p>	 <p>The kid walks to the other point for the following walking.</p>	 <p>When the kid listens to the knowledge, he waves his arms. And it is the same as the following walking.</p>			
Tangible interaction	Screenshot-1	Screenshot-2	Screenshot-3		
 <p>The kid is asked to pick up sticks for the knowledge</p>	 <p>He selects for a while. Then, because there is no instruction on where to go, he stands there and wanders</p> <p>The kid: <i>where should I go?</i></p>	 <p>The kid is asked to walk to the screen. He walks, listens to the knowledge again, and then goes back</p>	 <p>He finishes the following walking fluently.</p>		

Appendix A9

Video clips of 3 concepts

Concept 1

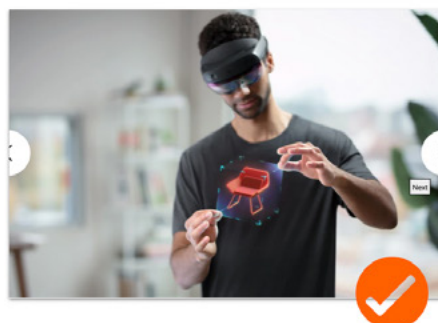
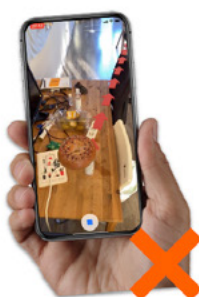
How to use AR



- The AR object can be set with a distance: the arrow can guide child to walk without an influence because there is always a distance between the child and the arrow.



AR device



- AR on phone is possible and can attract children. However, the scene of children holding the phones seems like that the children get addicted to the phone, which is not a good indication to parents.
- The glass can achieve the guidance as well. There is one danger mentioned here, which is the perception of impairment due to the lens quality. A good quality of the glasses should be provided, e.g. Microsoft HoloLens

The game

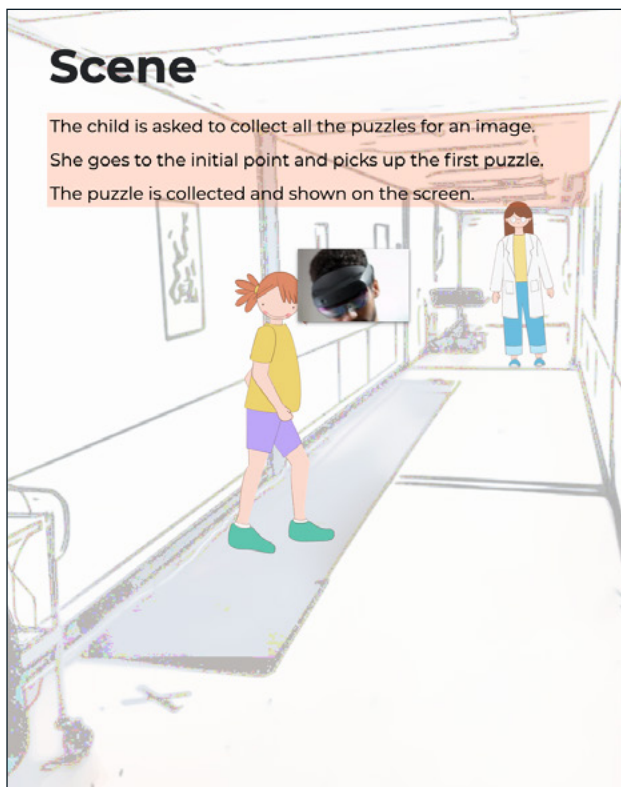


- Follow the arrow and collect all the puzzles.

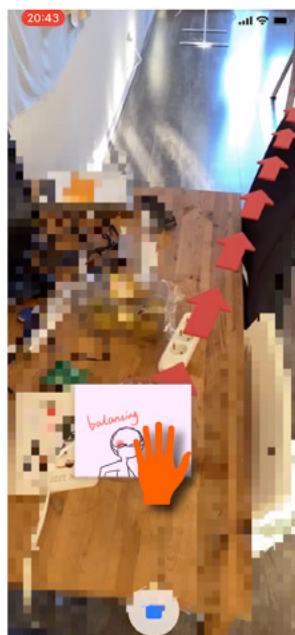


Scene

The child is asked to collect all the puzzles for an image.
She goes to the initial point and picks up the first puzzle.
The puzzle is collected and shown on the screen.

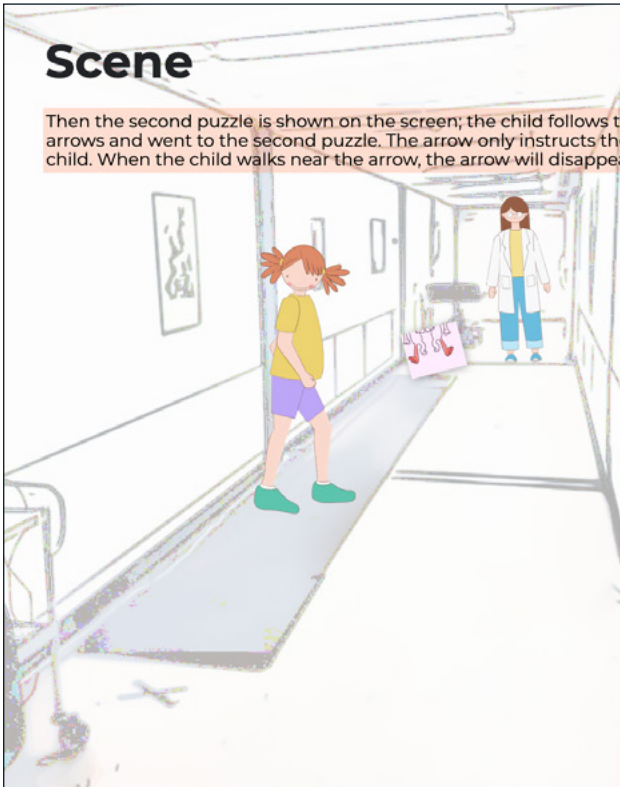


Design



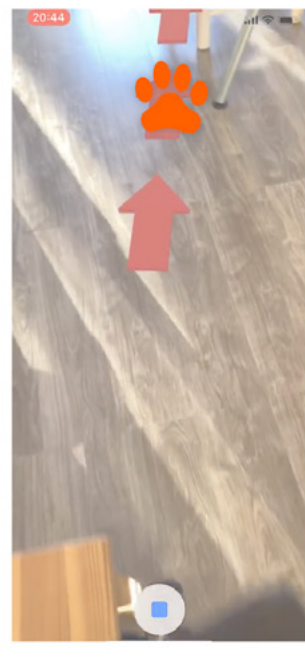
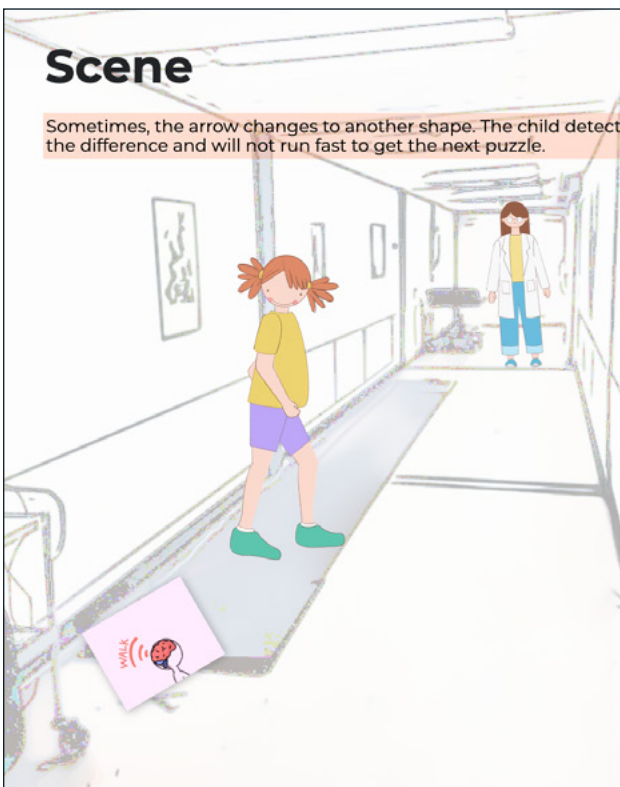
Scene

Then the second puzzle is shown on the screen; the child follows the arrows and went to the second puzzle. The arrow only instructs the child. When the child walks near the arrow, the arrow will disappear.



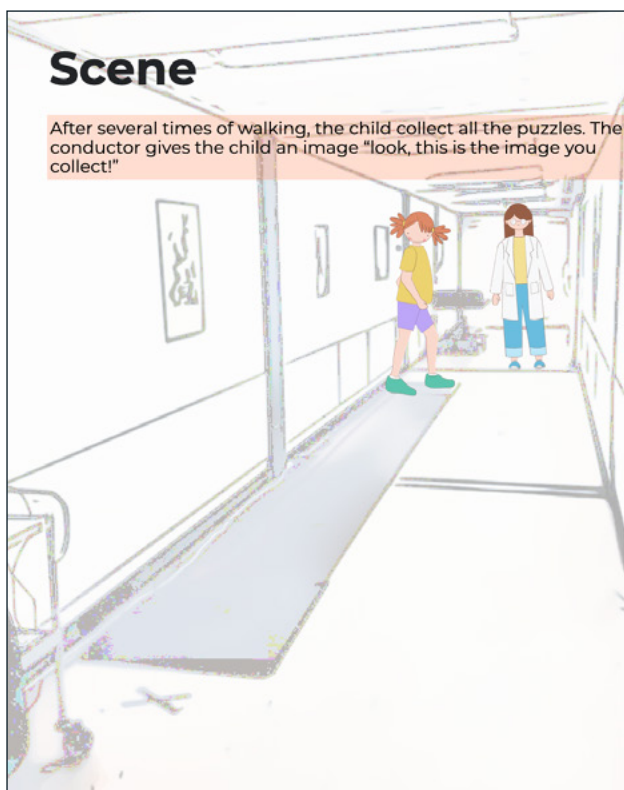
Scene

Sometimes, the arrow changes to another shape. The child detects the difference and will not run fast to get the next puzzle.



Scene

After several times of walking, the child collect all the puzzles. The conductor gives the child an image "look, this is the image you collect!"



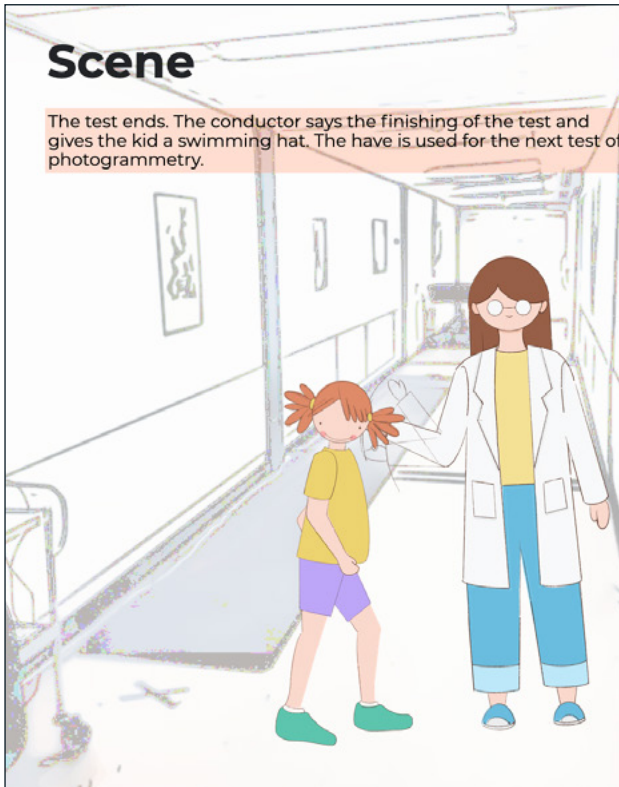
Scene

The child and the parent receive an interactive image and parents can tell the knowledge to the child, later when they go back to home.



Scene

The test ends. The conductor says the finishing of the test and gives the kid a swimming hat. The have is used for the next test of photogrammetry.



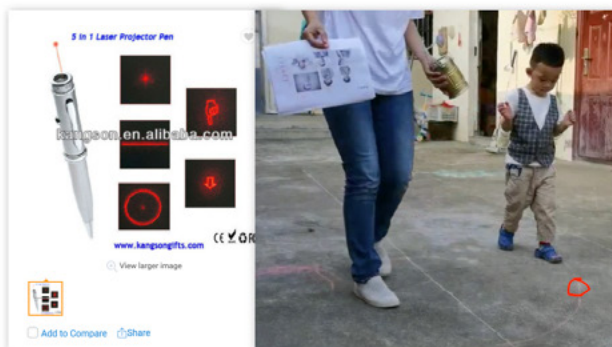
Design



- One child mentions that this is a swimming hat. And the swimming hat can make his friends feel relaxed.
- Therefore, the swimming hat can be a good start for the next test of photogrammetry.

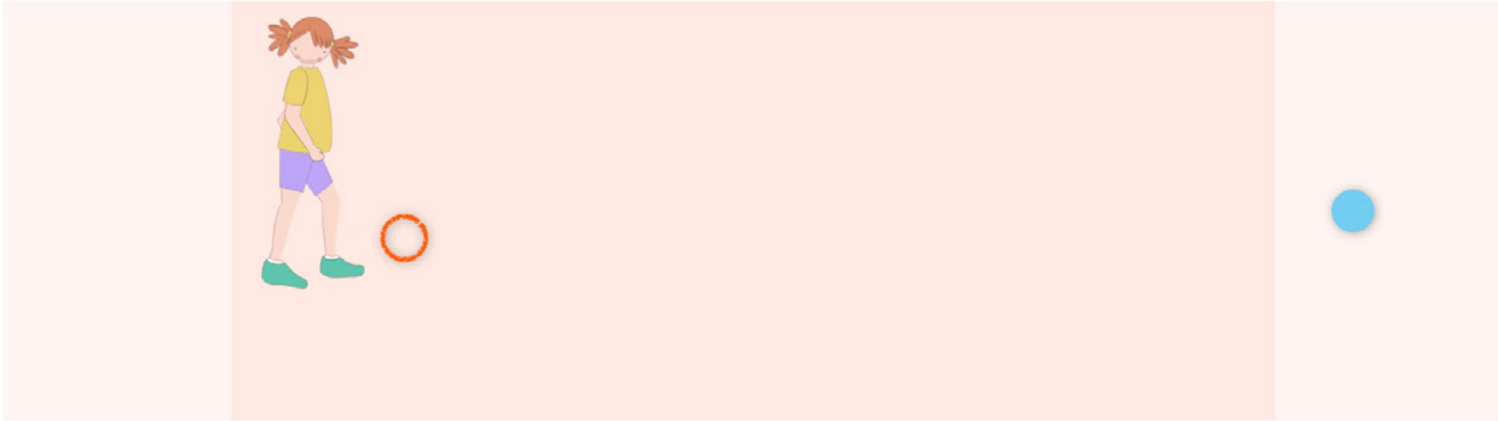
Concept 2: Laser light guidance game

- A low tech of concept 1

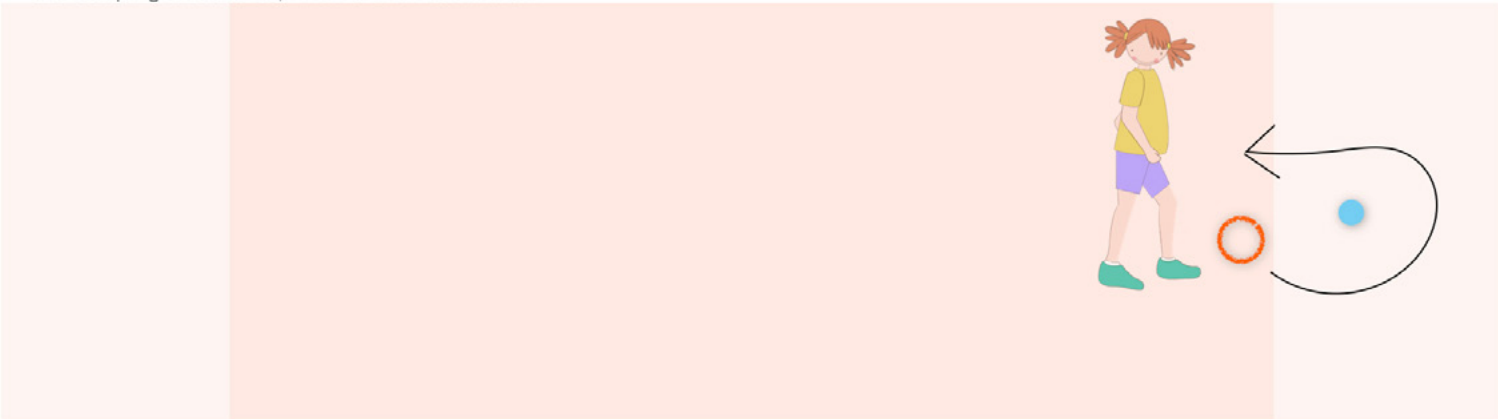


- The laser light with different pattern can be used to guide the child. The flashlight cannot be used due to the low illuminance.

- Child follows the laser light and walks



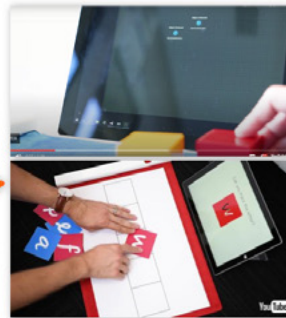
- At the point, a turning is designed because this is a moment of losing balance and escaping an obstacle, which are fun to children.



- The shape is changed from time to time so as to keep child's attention



Story with animal imitation



- A interactive board by Microsoft: Project Zanzibar.
- The screen will interact with the card on a tangible board.
- In this way, child needs to walk 7 times

Scene

1st of walking, child is given a monkey and asked, do you know how monkey walks?

Design



Monkey Elephant Bear Joep

Scene

The screen is triggered and animates. In the animation, the monkey walks out (like a human-being) and then the screen asks children to walk back like the monkey.

Design



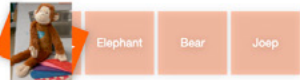
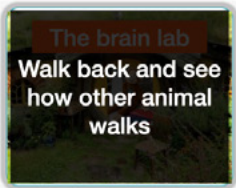
Walk back and see how other animal walks



Scene

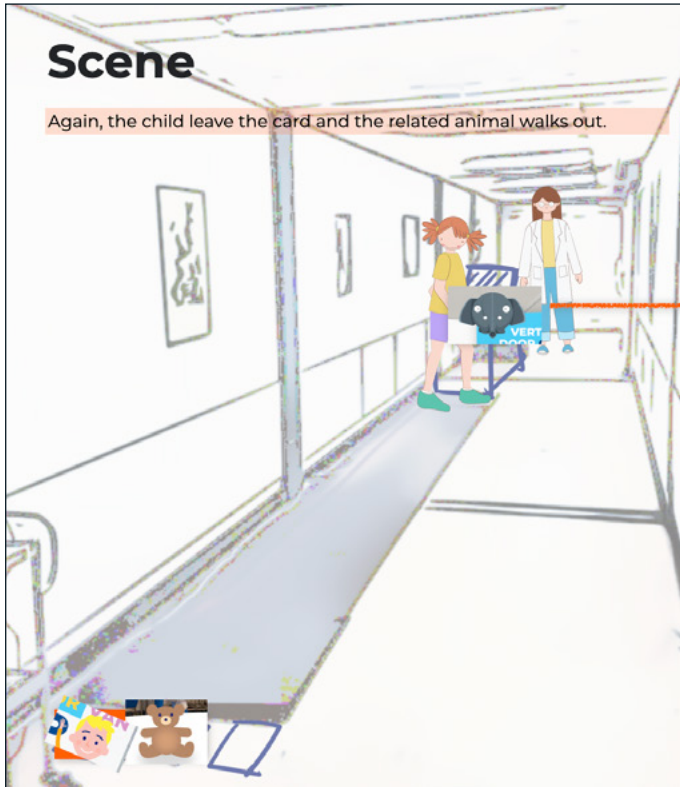
The child walks to the other point and picks up one animal.

Design



Scene

Again, the child leave the card and the related animal walks out.

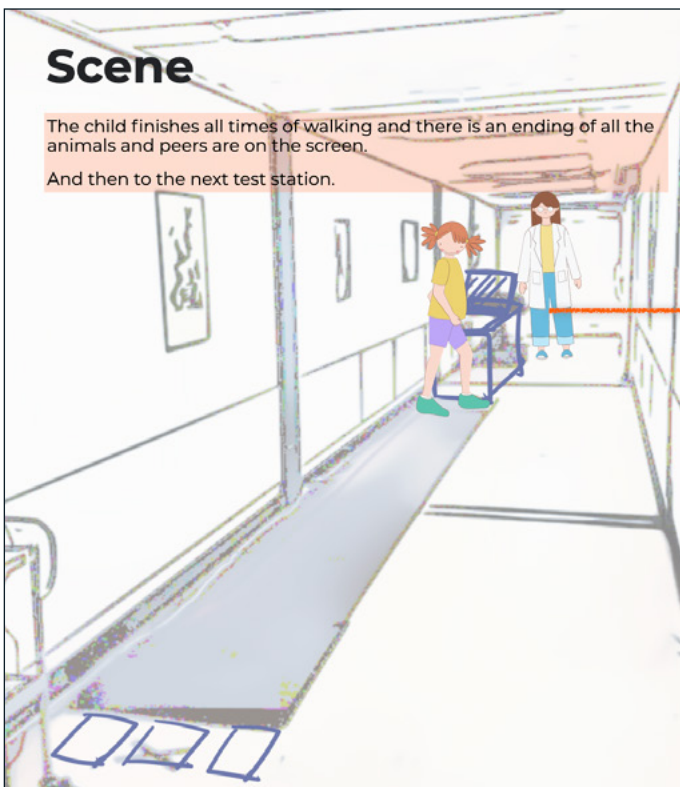


Design

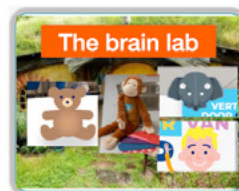


Scene

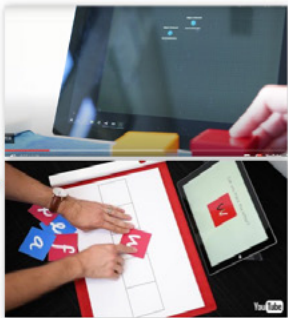
The child finishes all times of walking and there is an ending of all the animals and peers are on the screen.
And then to the next test station.



Design



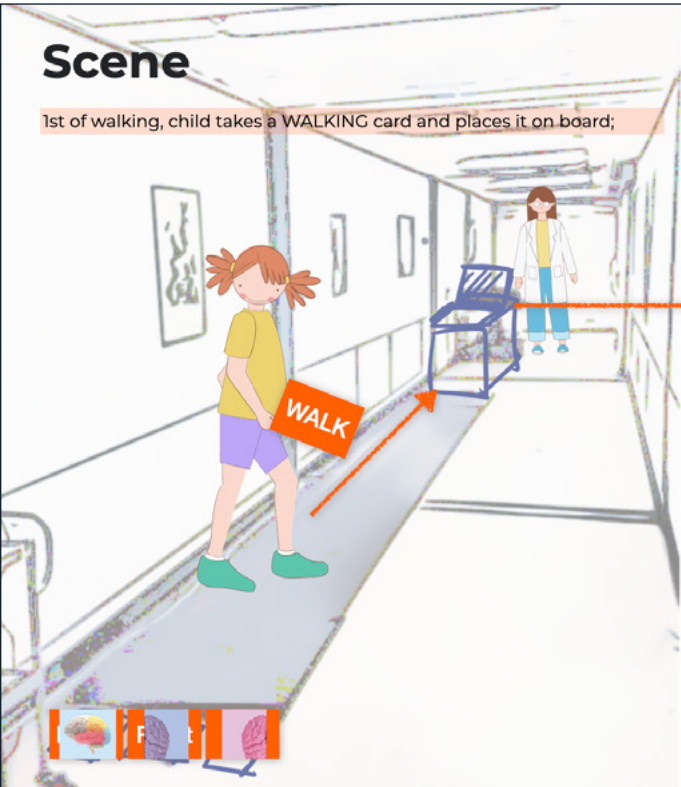
Story with self-exploration



- The walking knowledge is for older children

Scene

1st of walking, child takes a WALKING card and places it on board;



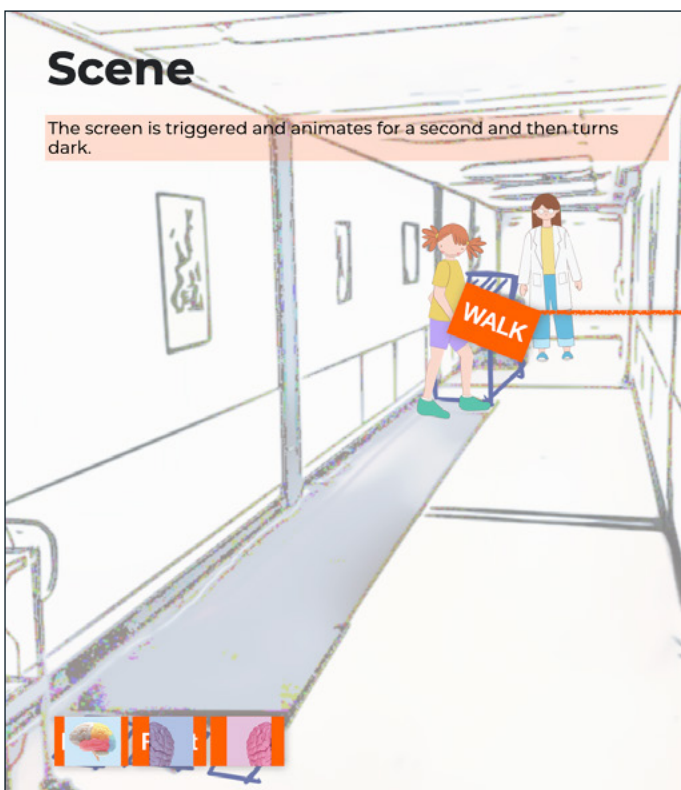
Design



Walk	Balancing	Right brain	Left brain
------	-----------	-------------	------------

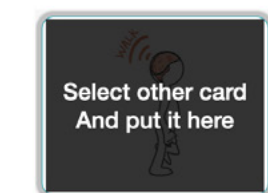
Scene

The screen is triggered and animates for a second and then turns dark.



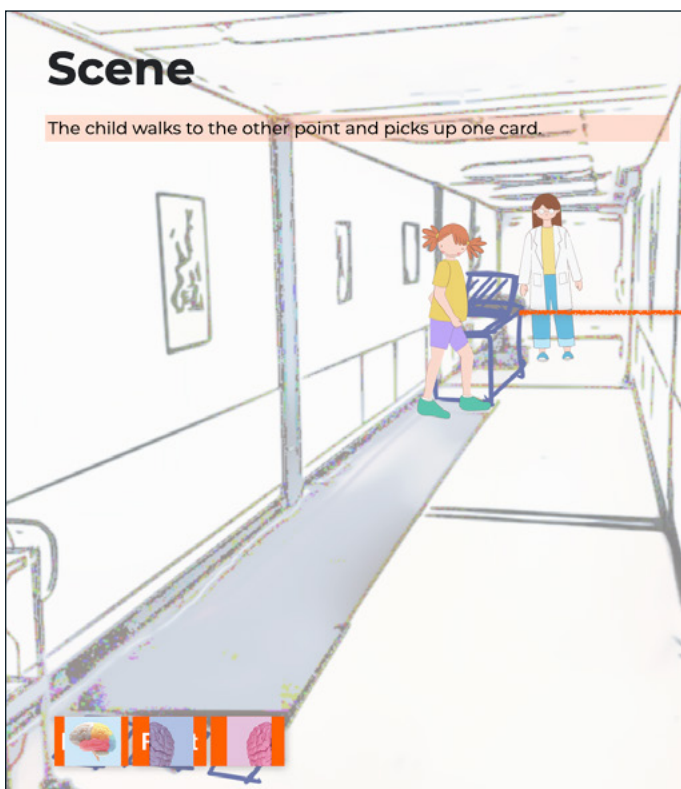
Design

Select other card
And put it here



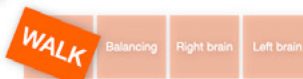
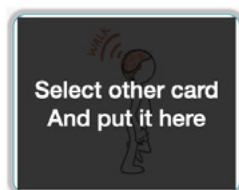
Scene

The child walks to the other point and picks up one card.



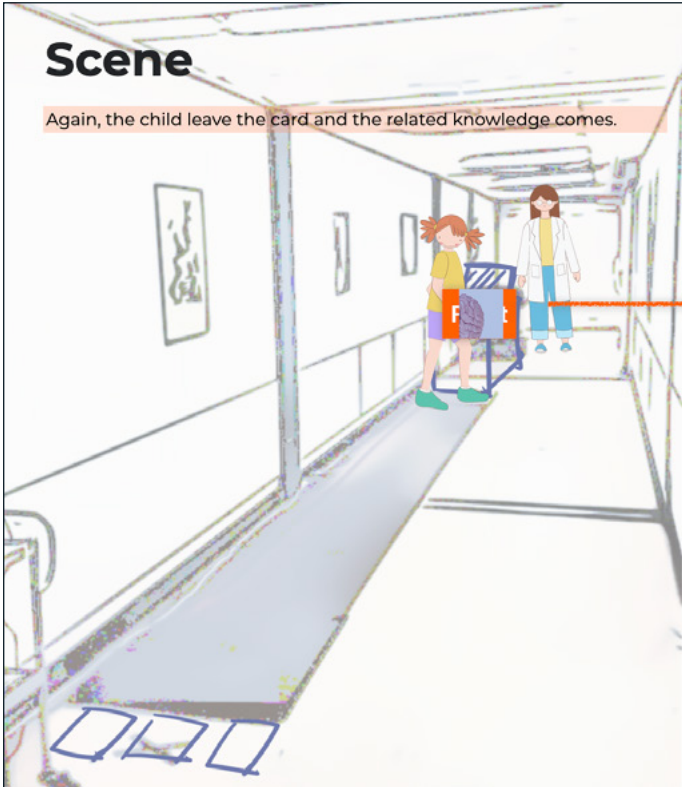
Design

Select other card
And put it here



Scene

Again, the child leave the card and the related knowledge comes.

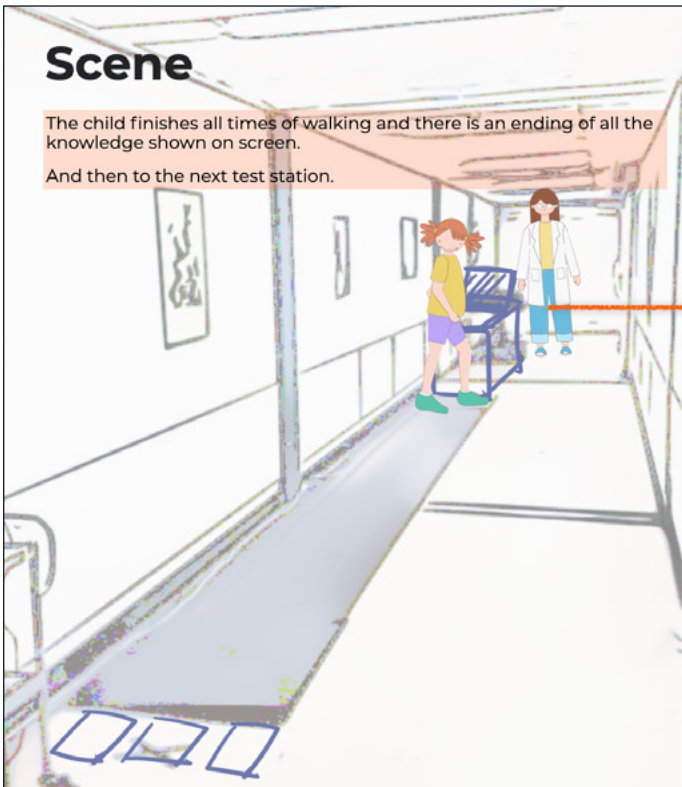


Design

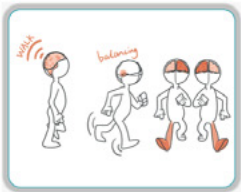


Scene

The child finishes all times of walking and there is an ending of all the knowledge shown on screen.
And then to the next test station.



Design



Appendix A10

Concept evaluation

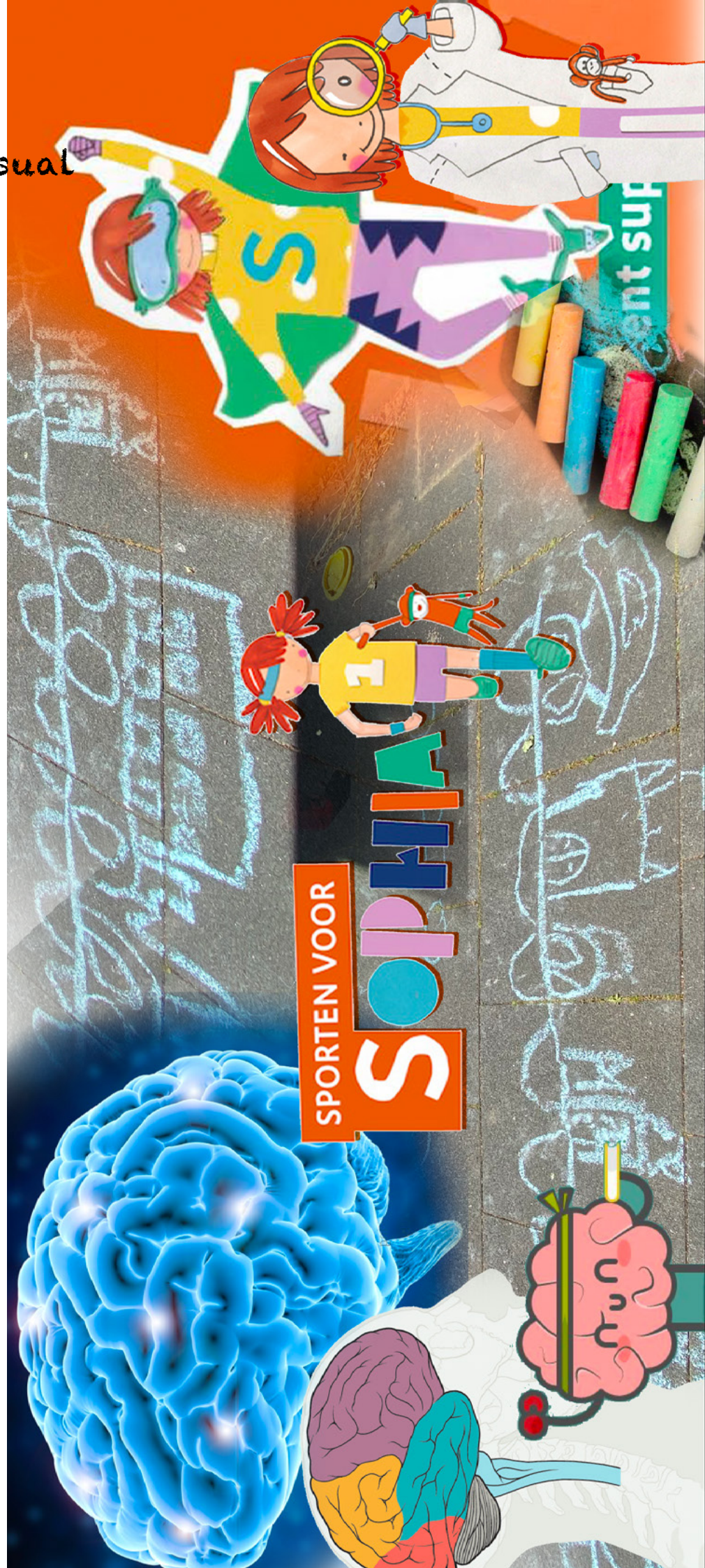
Stakeholders	Walking knowledge		
Hospital staff 1	Do you think the walking knowledge itself is appropriate/ correct enough to children?	Is there any modification needed?	1-1. To which level do you think the child will take effort on using the technology in this concept? And WH
			(6') I think the children will really like the concept. It is very interactive and I think they will participate really well
Hospital staff 2	<p>she was very enthusiastic on the three pictures and short texts that you made. She thinks that this information is really nice to know, and also understandable for children of 5-6 years and older (without intellectual disability)</p> <p>Why do you want to share this walking knowledge with children? Is it an part of information for doing the test or?</p>	N/A	(?) If the puzzle is age appropriate, it will motivate more children. The example if not appropriate for children.
Hospital staff 3	Yes	The language should be appropriate	(5') most children will like the experience of A glasses; some bashful/frightened may refuse to dte glasses
Researcher Child Brain Lab (supervisor)			

Concept 1 Evaluation								
Participants Why?	1-2. To which level do you think the concept will influence on the footstep recording? And WHY?	1-3. To which level do you think the concept will influence on the child's cognition process during the gait test? And WHY?	1-4. To which level do you think the concept will influence on conductor's working fluency? And WHY?	1-5. To which level do you think the conductor will need extra help from the parents? And WHY?	1-6. To which level do you think the hospital need the efforts so as to implement the concept?	2-1. To which level do you think the child will take efforts on using the technology in this concept? And WHY?	2-2. To which level do you think the concept will influence on the footstep recording? And WHY?	2-3. To which level do you think the concept will influence on the child's cognition process during the gait test? And WHY?
Results Conclusion Recommendation	(6') I think it will really influence the walking pattern. The kids will probably have to follow the line too much and then it might distort the "natural" walking pattern that you would like to measure.	(4') I think it will influence it a bit, because they have to do more than "just walk".	(2') I don't think that the conductor will have to interfere a lot.	(2') I think that the game will guide enough	(2') If the it can be downloaded on a smart phone (of the parents for example) it would just need to be developed into an app.	(6') I think the children will find it easy to follow the light.	(2') I think it won't influence the walking pattern as much, considering they simply have to follow the light and not an actual line.	(2') I think it won't influence the walking pattern as much, considering they simply have to follow the light and not an actual line.
Discussion Conclusion Recommendation	(3') If the child is looking downwards it will influence the walking pattern. The arrows must be in front of the child and not 'on the floor' this is for using VR glasses. If using a phone; it will definitely influence the gait pattern because children have to hold the phone. Children with a low cognition will not perform the test; they need another stimulation	(1') Not	(?) No comments on this item	(?) Children with low cognition will need another stimulus perhaps from parents. Can parents also see the puzzle or arrows? If so, they can coach the children in picking up the puzzle	(?) This is a new concept and not validated in children. But this is also the case for the others concepts	(?) This is not appropriate for the younger children.	(?) I think a lot of children will try to step on the circle / bullet of the laser and this will influence the pattern	(?) I think a lot of children will try to step on the circle / bullet of the laser and this will influence the pattern
Conclusion Recommendation	(4') Children may be more interested in the experience, exploring the possibilities of the AR than following instructions. Children with balance problems who rely on visual input may be fearful or even unable to walk when the AR input interferes too much with this. Also, children may be focused on the floor closely in front of them, altering their gravity center	(6') See the above	N/A	(3') To don the glasses and instruct the child if it is anxious	(2') The hospital will need to acquire the equipment	(6') There should be little difficulty with the child accepting this concept	(?) The walking speed will be more or less imposed by the instructor handling the laserlight. Children will bend their head and possibly their trunk to adequately see the laserlight on the floor	(?) The walking speed will be more or less imposed by the instructor handling the laserlight. Children will bend their head and possibly their trunk to adequately see the laserlight on the floor

		Overall feedback			
to which level do you think the doctor will need help from the patients? And WHY?	3-6. To which level do you think the hospital need the efforts so as to implement the concept?	Q1: Please rank the 3 concepts, in terms of feasibility at the gait test station.	Q2: If you were a parent, which one would you think were mostly liked by the child?	Q3: Do you have any other comments/ ideas on the concept?	Q4: What else do you think is missed in this evaluation?
don't think so; why any once because simply have talk towards screen; don't think so. think that it is self-naturatory; only with the five part!	(5') getting those screens might be too costly if there are alternative (and cheaper) options; (5') getting those screens might be too costly if there are alternative (and cheaper) options; (5') getting those screens might be too costly if there are alternative (and cheaper) options				
children problems cognition tests have to	(?) My advice: keep it simple for child, conductor and child	1 – 2 - 3	1 I like concept it is simple	Why with VR glasses and not with a normal puzzle?	This is not validated. Use a system what is simple and usable in all children (ages and level of cognition)
VA	(?) Acquiring the equipment	Concept 3> 2> 1 3 will interfere least with the walking pattern; 2 has the beauty of simplicity	I like concept 1>3>2 Most children will be eager to have the AR experience	... I don't see the role of the walking knowledge in the concepts. All ideas have an appropriately playful element in them making the task fun	N/A
		3 > 2 > 1 3 is most playfull for children. And attractif with information for the older children. For 1 (AR) I think it will interrupt too much with natural walking. Or use only very simple arrows to guide direction.	3. Most playfull fort he young ones and informative for older children.	For getting valid gait pattern data, it is crucial that a child works in a natural way, with the head upright, looking at a distance (not to the ground before him). This natural way is best elicited in concept 3. Possibly, adapt 3 by choosing just 2 of the animal patterns and walking in your own way in between.	For these children a double task (walking and using AR) might be very difficult. Therefore concept 1 is too difficult.

Appendix A11

Collages for visual design





VONTUUR
JOEP

VERTELT
DOOR OLLIE

DE KAMERS VOOR EEN RONDE TOEGANG
OP EN ZIJN BEERTJE EN JE
OLLIE!

JOEPEL
STRAAT

JOEPEL
STRAAT

JOEPEL
STRAAT

JOEPEL
STRAAT



outerspace

second nature friend
friend virtual peer virtual reality

nature

nature living environment
nature cartoon roles

virtual

second nature friend
friend virtual peer virtual reality

peer

nature animal friend
nature friend cartoon roles

ocean nature animal
ocean outerSpace virtual deer

friend virtual peer virtual peer
ocean nature friend

nature living environment
nature cartoon roles

nature animal friend

Animal breed cartoon roles nature living environment cart

ature Universum

ocean living environment

nature living environment anim

hero friend cartoon roles
animal cartoon roles



fantasy cute fresh light color

surprise

curiosity

expedition

peace

newness

Verrassing

cream

amazing



grass

sunshine

flowers

cartoon

animal

flower

game

street

roles

playground

Bomen

stone

sand

Evaluation form

Before the child's walking, ask the child the following questions:

1. Are you scared of the hallway, with the accompanny of the parent?

☐ Scared ☐ Little scared ☐ No feeling ☐ Relaxed ☐ Much relaxed

2. When you hear exploring the knowledge/in the jungle, how do you feel?

☐ Scared ☐ Little scared ☐ No feeling ☐ Relaxed ☐ Much relaxed

After the child's walking, ask the child the following questions:

3. Are you nervous during walking?

☐ Nervous ☐ Little nervous ☐ No feeling ☐ Relaxed ☐ Much relaxed

4. Are you fun during walking? Which part do you think is (not) fun?

☐ Not fun ☐ Not much fun ☐ No feeling ☐ Fun ☐ Much fun

5. Do you want to walk again? The kid's answer is:

☐ Yes, I want. ☐ No, I don't.

6. (Older children)Do you remember the walking knowledge? Can you speak them out?

7. If you have a swimming hat, would you be nervous for the next test?

☐ Scared ☐ Little scared ☐ No feeling ☐ Relaxed ☐ Much relaxed

Appendix A12

Final evaluation

After walking, the parent answers the following questions:

8. Do you think the child walks naturally during walking?

☐ Unnaturally ☐ Little unnaturally ☐ No feeling ☐ Naturally ☐ Much naturally

9. Do you think the child achieve fun during walking?

☐ Not fun ☐ Not much fun ☐ No feeling ☐ Fun ☐ Much fun

10. Can you understand the entire walking story?

☐ Hard to understand ☐ Little hard to understand ☐ No feeling ☐ Understand ☐ Easy to understand

11. As a test conductor, to what extend do you think your working is disturbed?

☐ Much disturbance ☐ Little disturbance ☐ No disturbance

12. Do you think the child would be disturbed by the environment at this test station?

☐ Easy to be disturbed ☐ Little distracted ☐ No feeling ☐ Not distracted that more ☐ Not distracted

Parent watches the video and counts

12. How many natural gait cycles are you collected?

在小朋友走路之前，请家长问小朋友如下问题

1. 你觉得有父母陪在你身边你会害怕这个环境吗？

☐ 感到害怕

☐ 有点害怕

☐ 没有感觉

☐ 比较放松

☐ 非常放松
2. 当你听到这个探索知识的小任务时候，你的心情是怎样的？

☐ 感到紧张

☐ 有点紧张

☐ 没有感觉

☐ 比较放松

☐ 非常放松
3. 你走路的时候紧张吗？

☐ 感到紧张

☐ 有点紧张

☐ 没有感觉

☐ 比较放松

☐ 非常放松
4. 走路的过程中，你觉得好玩吗，哪里好玩/不好玩？

☐ 不好玩

☐ 有点不好玩

☐ 没有感觉

☐ 比较好玩

☐ 非常非常
-

在小朋友走路结束后，请家长问小朋友如下问题：

5. 这个走路测试你不想再走一次？小朋友的回答是：

☐ 想

☐ 不想
6. 你在走路的过程中学到了什么小知识还记得吗？能不能说出来？
7. 你觉得有了游泳帽，你的下一个测试会害怕吗？

☐ 感到害怕

☐ 有点害怕

☐ 没有感觉

☐ 比较放松

☐ 非常放松

在小朋友走完之后，请家长完成以下问题

8. 您觉得你对孩子整个的测试过程，走路自然吗？

☐ 不自然

☐ 有点不自然

☐ 没有感觉

☐ 比较自然

☐ 非常自然
9. 您觉得小孩子在走路过程中有收获到好玩的地方吗？

☐ 没有意思

☐ 有点没意思

☐ 没有感觉

☐ 比较好玩

☐ 非常好玩
10. 您能够快速理解整个的走路中的故事引导？

☐ 很难理解

☐ 有点难理解

☐ 没有感觉

☐ 比较易懂

☐ 很好理解
11. 您觉得作为指导员，您的工作有多少程度被影响了？

☐ 很多打扰

☐ 有点打扰

☐ 没有打扰
12. 您觉得这样的测试站，周围的环境会引起孩子的分心吗？

☐ 容易分心

☐ 有点会分心

☐ 没有感觉

☐ 比较不会分心

☐ 不会分心

家长请查看视频，记录小朋友自然步态周期的数量

12. 孩子在走路的过程中，一共收集了多少步态周期？

Kid-1 final evaluation

Screenshot-1	Screenshot-2	Screenshot-3	
			
These are imitating the bear walking	The conductor wants to help the child click the button, the child gets angry and says he wants to click the button. But this angry eliminates quickly After clicking, he continues walking. The kid: let me do it! Let me!	In terms of his self walking, he begins to walk exaggerate posture	-
Screenshot-4	Screenshot-5	Screenshot-6	
			
He excites once he sees himself on the screen. The conductor: who is this? The kid: you... me! The kid: I wear this (blue)coat, but why I wear this (white) cloth.	As the conductor stands at one point and plays all the videos to the kid, the child walks over 6 times of walking. And when he is asked to walk to the jungle again, he asks why again.	He sees himself again in the jungle. The kid: ohhhh... hihihi (see himself)	-
Screenshot-7	Screenshot-8		
			
This is imitating the gorilla and walks	For the last time, when the child sees himself with the bear and the gorilla. He giggles. The conductor: who do you know? The kid: bear and gorilla!	-	-

Kid-1 evaluation form

Before the child's walking, ask the child the following questions:

1. Are you scared of the hallway, with the accompaniment of the parent?

☐ Scared ☐ Little scared ☐ No feeling ☒ Relaxed ☐ Much relaxed

2. When you hear exploring the knowledge/in the jungle, how do you feel?

☒ Scared ☐ Little scared ☐ No feeling ☐ Relaxed ☐ Much relaxed

The kid is afraid of the snacks (in imagination)

After the child's walking, ask the child the following questions:

3. Are you nervous during walking?

☐ Nervous ☐ Little nervous ☐ No feeling ☐ Relaxed ☒ Much relaxed

The kid is afraid of the snacks (in imagination)

4. Are you fun during walking? Which part do you think is (not) fun?

☐ Not fun ☐ Not much fun ☐ No feeling ☐ Fun ☐ Much fun

It is less fun than playing the football.

5. Do you want to walk again? The kid's answer is:

☒ Yes, I want. ☐ No, I don't.

6. (Older children) Do you remember the walking knowledge? Can you speak them out?

I remember the bear and gorilla

7. If you have a swimming hat, would you be nervous for the next test?

☐ Scared ☐ Little scared ☐ No feeling ☒ Relaxed ☐ Much relaxed

Because it is not dangerous.

After walking, the parent answers the following questions:

8. Do you think the child walks naturally during walking?

☐ Unnaturally ☒ Little unnaturally ☐ No feeling ☐ Naturally ☐ Much naturally

because he imitates the walking

9. Do you think the child achieve fun during walking?

☐ Not fun ☐ Not much fun ☐ No feeling ☒ Fun ☐ Much fun

He is in the screen, and he cannot imagine why he is with the bear and gorilla.

10. Can you understand the entire walking story?

☐ Hard to understand ☐ Little hard to understand ☐ No feeling ☒ Understand ☐ Easy to understand

Once, I know the context of two screen, I understand

11. As a test conductor, to what extent do you think your working is disturbed?

☐ Much disturbance ☐ Little disturbance ☒ No disturbance

Once, I know the context of two screen, I understand

12. Do you think the child would be disturbed by the environment at this test station?

☐ Easy to be disturbed ☐ Little distracted ☐ No feeling ☐ Not distracted that more

The screen and the sound catches his attention.

Parent watches the video and counts

12. How many natural gait cycles are you collected?

Around 1/3 of all the gait circles are the natural gait circles

Kid-2 evaluation form

Before the child's walking, ask the child the following questions:

1. Are you scared of the hallway, with the accompany of the parent?

☐ Scared ☐ Little scared ☐ No feeling ☒ Relaxed ☐ Much relaxed

The space is big and my mom is there

2. When you hear exploring the knowledge/in the jungle, how do you feel?

☐ Scared ☐ Little scared ☐ No feeling ☒ Relaxed ☐ Much relaxed

The kid: Because I do the task in a minute! (The tasks in normal)

If it is a test, then I need around 7 minutes

After the child's walking, ask the child the following questions:

3. Are you nervous during walking?

☐ Nervous ☐ Little nervous ☐ No feeling ☒ Relaxed ☐ Much relaxed

4. Are you fun during walking? Which part do you think is (not) fun?

☐ Not fun ☐ Not much fun ☐ No feeling ☐ Fun ☐ Much fun

The kid: pure walking is not fun.

The student: what about with the knowledge

The kid: interesting.

The student: (play the interactive posture again)

The kid: it is fun, because I can move.

The student: do you think touch your brain is fun?

The kid: yes

The student: why?

The kid: I feel a bit itch when touching

5. Do you want to walk again? The kid's answer is:

The student: If with the knowledge, do you want to walk again?

The kid: I can

The student: do you want?

The kid: no, because walking too much wastes my energy

6. (Older children) Do you remember the walking knowledge? Can you speak them out?

(With hints, the child says all the knowledge.)

7. If you have a swimming hat, would you be nervous for the next test?

☐ Scared ☐ Little scared ☐ No feeling ☒ Relaxed ☐ Much relaxed

- I feel scared with lots of machine.

- If there is a swimming hat and some ocean animals, would you be scared?

- No, because there are lots of animals and I feel curious about the animals

After walking, the parent answers the following questions:

8. Do you think the child walks naturally during walking?

☐ Unnaturally ☐ Little unnaturally ☐ No feeling ☐ Naturally ☐ Much naturally

9. Do you think the child achieve fun during walking?

☐ Not fun ☐ Not much fun ☐ No feeling ☐ Fun ☐ Much fun

Easy to understand even in English

10. Can you understand the entire walking story?

☐ Hard to understand ☐ Little hard to understand ☐ No feeling ☐ Understand ☒ Easy to understand

11. As a test conductor, to what extend do you think your working is disturbed?

At the beginning, it might be 40-50%, after I am familiar with, I feel there is no disturbance.

☐ Much disturbance ☐ Little disturbance ☐ No disturbance

12. Do you think the child would be disturbed by the environment at this test station?

☐ Easy to be disturbed ☐ Little distracted ☐ No feeling ☐ Not distracted ☐ Not distracted that more

The kid: I would not be distracted because there is a camera seeing me. Because the cameras is recording me.

12. How many natural gait cycles are you collected?



