**All Interview Transcripts (Coded)**

**Category Colours:**

Light Green: Positive Implications

Dark Red: Negative Implications

Light Blue: Ideas for Extension

Red: Negative Children Interaction

Teal: Advice for Improving Evaluation

Light Gray: Future Work Questions

**Interviewee I**

**Emre**: With the first question I would like to ask you to what degree were your expectations met with this prototype?

**Chaya**: Well, I didn’t really have any expectations but I liked it, I think it can be very useful in clinical practice as well.

**Emre**: Okay, and what do you think was done well in the environment?

**Chaya**: I think it was really adherent to the treatment protocol. So it's really like the steps how we use them as well. Yeah.

**Emre**: Okay. And what do you think that needed improvement? By the way, I'm not asking only about the therapy part. I'm also asking about everything. Yeah.

**Chaya**: I think the movements of the adults like that are speaking to you. That's can be a little bit better. And the facial expressions, because it's a bit robotic, and it can be a little bit intimidating, I think, for small children.

**Emre**: And, any the aspects that you would like to see changed, as well?

**Chaya**: I think for these steps, I think it's really suitable. For the blowing effort, the animal sounds and the things with the objects, I think it's really suitable for these steps. I do think that in the, in the real treatment, sometimes we do in between, meaningless sounds instead of meaningful, because it can be more difficult to do a meaningful sound or meaningful word. So I don't think that it will. If you if you automatically go through all the levels, I think there maybe needs to be in between steps.

**Emre**: Yeah, we got that feedback as well. That's quite important. The reason why we did it this way was to just show you how. So in the future, when this project is developed, hopefully, that will be accounted for. So yeah, we can move on to the next one. Which your expertise, how will a child with selective mutism will interact with the system? Do you think?

**Chaya**: I think it depends because some of the children will not be daring to put it on and to, to adjust to move enough to be able to use it. I think if you want to use it in the start of the treatment, you already need to have some therapeutic base with a child so then it will be easier. And I think it will be a nice trick, especially for to a bit older ones, because they it's harder to kind of motivate them to do something like this, because I think blowing up I'm not going to blow bubbles, I'm already 11 or something, but I think if they can use it through VR tool. It will be something special for them and they will like it more to do it.

**Emre**: Okay, yeah. Okay, that's interesting. And do you think they would be able to follow the rules of the system as well as adults? Meaning like, keeping to the area or the children in general as well.

**Chaya**: I think especially these ones (children with selective mutism) will because it's part of the of the problem that they really don't like to make mistakes. That's right. And, and so I think they will be, especially for selective mutism, it will be very easy to to have them keeping to the rules. Okay.

**Emre**: Okay. Next part is about the evaluation section. Now that we evaluated with clinicians and researchers, right. So what changes do you think that we can make for the evaluation part to have it more fitting for a child do you think?

**Chaya**: I think, to maybe include the parents as well, because it will be very difficult for them to fill the questionnaire or to give answers to you. They will most likely not be able to complete an interview. But it may be in the testing phase, it would be good to ask some of the kids that all have already finished treatments, if they would be able to test it out. But then I do think that they will want some kind of reward for it. Because like, I have a 17 year old boy that I finished treatment with last week, and his parents were like, what would you say if Levvel would ask you to come back and maybe talk to another kid say, Yeah, but I want money for it, like I am a 17 year old boy, yeah, I'm going to do it for free. But if like, maybe they can get like a voucher or something like that. And, and also to be able to give the feedback visually, like multiple choice, or like, with visual analog scale. Like, how much did you like it? And maybe it's also nice for if they do it together with a brother or sister or with parents, that they can each test it out. So it can be something fun that they do together. And then you also get the feedback from the parents, yeah. And from the children. But maybe you will get a little bit more feedback, if you include like, a sibling or parents.

**Emre**: That's true. Yeah. So this is the final question. In the future with the desired developments. How do you see this VR application being used for its intent?

**Chaya**: I think we can use it, especially in situations where we cannot go to school. Because we do the treatment at school because the problem is most present there. But, for example, now in summer holidays, or like, if there's a logistical reason why it's not possible to do the treatments at school, it can be really, like applicable to do with here and outpatient clinic. I don't think it will be practical to bring it to school. Because I think like there's more risks to it like that, then you have to you need more, because then all the therapists need to have one like take it to school, like a hook it up to the computer. Yeah, I don't think that will be feasible. But I do think that it will be feasible to use it like, on our location. And then especially like, as a nice way, like in the early steps of the treatments. Okay. Yeah. Well, would it would it be able to, like, respond to language? Oh, yeah. Because it did when I spoke.

**Emre**: No, no, no, that was me controlling.

**Chaya**: So, so it wouldn't be possible to like totally.

**Emre**: Language recognition?

**Chaya**: Yeah. To practice conversation.

**Emre**: Um, might, might be but also very difficult. Yeah. And also English is, I think, the most prominent and more most developed speech recognition. Yeah. So yeah, as far as I know.

**Chaya**: Sometimes we use like, question cards. With general questions about colors or about food. And those could be programmed maybe in the, in the system, and then you only have to answer one word. Or maybe to like with the with pictures that you had to name to kind of make it more interactive, like having when you say, instead of like, picking a sticker afterwards, but already like seeing the tally go up?

**Emre**: Or kind of progression? Yeah, keep it more engaging interest.

**Chaya**: And like, kind of like, I'd never play video games, but a little bit more like that. If you see them. Oh, or when you pick the sticker to have the same confetti, like when you pick the balloon? Yeah.

**Emre**: Yeah, some more general excitement and engagement. Okay. Okay, that's, that's good. Yeah, well, that's it . Thank you very much!

**Interviewee II**

**Emre**: With the first question, I would like to know if there are any further aspects what you would like it to be changed in the application? What’s on here now, what would you like to see changed?

**Els**: I would make the speech of the teacher a little bit shorter.

**Emre**: In the tutorial?

**Els**: Yeah, because it is too long for a child, they will loose concentration I think. So you need to simplify it more and make it more in a child-wise matter like “I want to tell you something about selective mutism, it’s having anxiety to speak, but I know you can speak very well, but sometimes you are afraid to speak. That does not matter, we will help you. So we start with the first step, which is blowing”. Like this.

**Emre**: Okay, that is good to know, because the people that are speaking are my roommates and the person that I did the application with so.

**Els**: Well it is a great speech, but its too long for a child. We work with children from three four five years old. All that is said is okay, but children don’t want a long speech, they want a short one. And get on with the job.

**Emre**: Yes, that makes sense. So earlier you said jumping from blowing to vocalisation was a big step. Which leads to my question, how do you see this application being extended other than what you have said before?

**Els**: Yes. I would make an intermediate level. So, playground with the blowing then going into the corridor and making little sounds or making animal noises or just what do you do if u laugh, what do you do if you cry. Just, practising with sounds. And then going further with words.

Emre: Yeah, so in the application there are big steps, but having more levels in the middle?

**Els**: Yeah having more levels. Every time when they are doing great, then you can go to the next level and you can control that so.

**Emre**: Okay. So, next question: With your expertise, how well a child with selective mutism interact with this system do you think?

**Els**: I think they will like it, I think it is funny for them because it is real people but its not “real” people to be afraid of. So they will like it. And I expect that they will probably talk sooner because they like to play a game. Its more a kind of a game for them.

**Emre**: And do you think they will be able to follow the rules as well as adults per say? Like, do you think they will be inclined to nod when they need to, point or look?

**Els**: Yeah, if the question was just nod? And they will nod. And if its repeated, so nod again, or blow. It is very easy to follow, even with children. Its not a problem I think. And the teachers, they don’t talk a lot, only in the beginning.

**Emre**: So they should you are saying right?

**Els**: Yeah, they should be short, everything should be short. Like “Hello!”, “Nice to see you”, “Shall we play a game?”, “Do you want to know how the game is going?” and then nod and we play the game.

**Emre**: Yeah, also with the previous feedback that we got, they also said to have more dialog. Have more feedback, because after you score there is just this (thumbs up) going on, they want more of those. That was important so yeah.

**Els**: Yeah, feedback: “You did very good!”, “You did great!”, yes. The feedback you can do more of it but not more of the introduction.

**Emre**: Okay, so the next question I have is, for this project right now we are evaluating with you right? But in the future, evaluating with a child would be the more desirable option. What changes do you think that could be made for the evaluation part to have it more fitting for children with selective mutism? Like, I will give you a questionnaire, it is quite an extensive questionnaire. Usually I would do the questionnaire first but then the interview was better to do before I thought. So what is your opinion?

**Els**: You have to do more simple questions like: “Did you like to play the game?”, “What is nice in game?”, “What do you don’t like in the game?”, “What should be changed in the game?”, that kind of questions. And just call it a game. And then ask them what do you think I should put it, do you want another teacher? Give examples. Because otherwise they will have to think about everything, it is better to give examples. Keep it short.

**Emre**: Would a questionnaire be appropriate, or interview is better?

**Els**: Interview is better. Because you can direct them, repeat things. Questionnaires are boring for children. Give them a lot of positive feedback, give them a reward.

**Emre**: Okay, that is good. The next question in the future with the desired developments, do you actually see this VR application being used for its intent?

**Els**: Yes, I think so, yeah, you can use it.

**Emre**: So, having this device (Oculus Quest 2) is not a big issue for children do you think? It’s not too heavy or?

**Els**: No, I don’t think so. Most children already game or play little games. It is not too heavy I don’t think so. Do you have the smaller version for children of this? (Oculus Quest)

**Emre**: Not this exact same version, but there is VR for children yes.

**Els**: Children are very good with computers than I am so. Even if they are three four years old they are already playing with them so.

**Emre**: Do you think that this VR game technology is better than the 360 video for the therapy? Which one do you think is more appropriate?

**Els**: They are so different I think. Maybe this one you can change more and put more intermediate levels in, so that is easier to use. Because with that one (360 video) I want to change something and they say it is difficult because they have to shoot the whole scene again. So then, if you want to develop more I think this one is more easier to make and to use. And this is more like a game, and the other is more like a movie.

**Emre**: Yeah, so if you remember in the meetings, we were talking about this thing called the uncanny valley. Which was to what extent do the characters seem uncomfortable. So, keeping that in mind, maybe the 360 video is better because it is real. But this one, sometimes it is really hard to get the characters to be lifelike. In the meetings, I showed you a character that would move his face accordingly to what he was saying, but with this one, only the mouth is moving.

**Els**: Yes that is better. Because with the other one that you showed us, it looked like a monster.

**Emre**: So you felt more comfortable with this one?

**Els**: Yeah, a lot more comfortable.

**Emre**: Okay, that is good. All right well that concludes it actually so thank you very much!

**Interviewee III**

**Emre**: My first question is to what degree were your expectations met with this prototype? In the sense that, what was done well and what needed improvement?

**Lynn**: The different environments I really liked. And the progression of the game, first the blowing then the verbal exercise and also the movement part like pointing and nodding. That is also an important thing for selective mutism practise because sometimes they have so much anxiety that they block with their body so its difficult to nod or point so I think that it is good that they are integrated in the game. Does that answer your question?

**Emre**: Yeah, and improvements wise?

**Lynn**: The pictures and also adding the words to it because some children find it very difficult like do you mean flower or sunflower? And when the words are underneath it, it is better. And the voices can be friendlier and more child-focused and a little bit more excitement. Like, “We have to play a game”, “Oh, well done 1-0 for you!”. So that they really get excited to play the game.

**Emre**: And probably the with the pointing right, because it didn’t quite work as well so that is definitely another improvement that we need to make.

**Lynn**: Yeah, with the sticker.

**Emre**: So, how do you see this application being extended further?

**Lynn**: I think it’s a really good application for practising in different situations. So first in a safe situation. First you practice it face to face with the child, then you do it in virtual reality. And you practice if that works. When that has succeeded and it feels safe for a child you can also try it in a different environment, like in a school first in an empty room, then in the hallway, then at the family’s place. Because sometimes they are also afraid to speak at other places outside school and home, like in a store, so you can practice in those situations, I think that’s very good. And then you have the distraction of the game so they forget for a minute that you are in that room at your aunt’s, so the threshold goes lower with the game I think.

**Emre**: Okay, in your opinion, how does a child with selective mutism interact with the system? By this I mean would they be able to follow the rules as well as the adults?

**Lynn**: Yeah, I think that will be a difficult part so that’s why it is important to first explain it to the child and do the game with the child so they are already familiar with the game, and then do it in the virtual reality. I think that’s necessary because otherwise they may be confused or that they don’t understand it correctly or they are afraid to do it because you have the glasses on so you cant be alert of your environment, and with social anxiety, you always want to check your environment. So I think that is good if they do the first steps with a therapist and then do it in the virtual reality.

**Emre**: Okay, so this is a question about the evaluation part. What changes can we make to this evaluation part to have it more fitting for a child?

**Lynn**: Maybe what they think about the game and the steps or if they need a step between the games.

**Emre**: So I think Lisbeth said in the questionnaire just have it more simple. And some questions are very similar so the children cant really differentiate. So have it more abstract and shorter.

**Lynn**: And also have in Dutch for the Dutch children.

**Emre**: Yes of course.

**Lynn**: But also, how did you feel about the game? And then you can ask scale questions from 0 to 10 about how afraid were you in the beginning, how afraid were you at the end? I would be curious to know when they do the game often, if their anxiety goes lower.

**Emre**: Ah, okay. So in the future with the desired developments, do you see this VR application being used for its intent?

**Lynn**: Yeah, I believe that it has perspectives and possibilities for the future. Most importantly that they can practice at home. So now I see the child once a week, and when they practice more that week, so also at home or when they are in other environments with the virtual reality, I think the treatment can go faster because they practice more.

**Emre**: And this will be the last question, to what extent did the characters in the application seem uncomfortable?

**Lynn**: First, the woman teacher, she has a little bit of a not friendly voice so its better when she can laugh in the application, that would be an improvement.

**Emre**: And the looks? Just in general?

**Lynn**: I think its good that It is a woman and a man. Its good that you can practice with different persons. And they look like teachers so that was good.

**Emre**: All right well that concludes it, thank you very much!

**Interviewee IV**

**Emre**: So, in your opinion, to what degree were your expectations met with this environment?

**Lisbeth**: I appreciate, I think the classroom etc. and surroundings are really real life. Yes, the teachers are a little bit stiff and automatic, but I can't expect on this budget to be better. So I think and the fastness with which you produce this product is higher than my expectations? So I appreciate what you did in this shortest of time. Yeah, and I can't expect with no budget, a much clearer figure. So, are my expectations are met? Yeah. Perhaps if there could be some fine tuning, it will be better as to the sound as to the delay between the nodding to a sound delay between the nodding or the directing with your finger before the reaction occurs. But I think that is fine tuning which can be solved. Just for the children. Because Yeah, I understand, oh, this is an experiment. Now I'm visiting the rehearsal. So to say, for the final project, it would be nice if the vision of the pictures on the wall became more clear, or is the teacher is more friendly? Or the reactions came with? I think the perhaps this is something will be fine-tuned. And but it's a little bit. My expectations are met.

**Emre**: Okay. That's good to hear. Adding to that, how do you see this application being extended? Let's say, so now we have three levels. With the blowing and then like that?

**Lisbeth**: Okay. Yeah. Yeah, it depends on the sort of time you have on what time is left of you, because there are the steps on the protocol, and I don't know them by heart. So it would be possible to talk to the steps in the protocol or to talk to a pupil or something. So I think these are the first three steps of the protocol.

**Emre**: Not the first three, but just, we just did this to just to show possibilities, pretty much.

**Lisbeth**: The possibilities. Okay, well, this is beautiful, but then I have to look at protocol really. I don't know it by heart. I’m not a therapist.

**Emre**: Would you say like implementing the whole protocol could be a good extension for the, for the future of this application? Maybe, for the future?

**Lisbeth**: For the future? Yes. Yeah, I really do think so. Yes. Yeah. Yeah, then ending up speaking in a in a full in a classroom full of pupils and the teacher, they have to go they have to give oral reaction to the teacher. So that's the end criterion, the end criterion for speaking in the classroom. So yes, I do think I hope that in the future, we can extend it that the full protocol is met, that they can reverse children can exercise with speaking in a full classroom to their classmates or to the teacher.

**Emre**: Okay. So let's move on to the next question. With your expertise? How do you think a child with selective mutism can interact with the system?

**Lisbeth**: Well, I think they need help from of course, I need help from the therapist and their parents in the beginning. But on the other hand, yeah, the age range varies from three years old to 18 years old. depends on the age also. But I think yeah, of course, we have to explain them in the beginning, how to have or wear the equipment, we have to explain them that the teachers are stiff and automatic. But then we are also Yeah, we have first explained to them, this is a game and you can delete balloons or something or you can, you know, blow the ball, etc. But then they can rehearse with them at home. But of course, perhaps parents have to help them with the equipment, putting the virtual reality. I don't know how it works on the laptop or at home. So of course, you have to help the children. Yeah.

**Emre**: So some sort of a manual or some explanation for the web application?

**Lisbeth**: On the other hand, my very young nephews of six years old are some quicker than I am. Yeah, so I'm not too worried about this, but perhaps with low income families without resources, like having a laptop, etc. I don't know. But perhaps they can borrow something from our institutions so.

**Emre**: Okay, so next question I have about is the evaluation part? So what changes could we make for the evaluation part to have it more fitting to a child that you would say, because now we have a questionnaire like this? And it's really adult oriented, and an interview as well which I have a feeling it's a bit adult oriented as well. So do you have any ideas on how this evaluation could take place with children? Maybe?

**Lisbeth**: Sure. It should be very short. It should be for Yeah, of course younger children can't read. If it is possible to make it click on the laptop that you hear the voice? And they can put on I will say, ranking linear analog scale. With a smiley. Very sad, smiley, very happy smiley. And then in between that they can move where the cursor put on where you think. Was it fun? Did it help you to speak? words? exercises? Difficult? Could you understand everything? Could you hear? Could you see everything? Did it help you? 10 questions on something linear analog scale, and then for the children, but also for the parents because children below 12 years of age don't have everything happens yesterday. And the elements that worked? That can be disagreement between children and parents. So yeah, what kind of elements? What elements are what things that help you? The rewards like the balloons, the stickers for children? What, what kind? What helps you? What elements is difficult to work with? What things help you? The rewards like the stickers? Or what exercises you like best? Which exercise help you the most, but then you come to the open question. I would have a linear analog skill for the children, for the parents? What worked? Was it firm? Would you? Did it help you? To what extent did it help you to? To what extent was it fun? and multiple choice, but if children can’t read from it is possible, like Google Translate? If you click on Google Translate, then you hear it.

**Emre**: you could do it the same way as like an interview maybe? Right?

**Lisbeth**: Just to ask the children, who is going to ask the children?

**Emre**: Whoever is available perhaps I guess?

**Lisbeth**: Yeah. But then you have to ask the psychologist and they have to do already quite a lot. So we don't have a research assistant now. And if you want, if you ask them, you are a student from this university, you know, it's not that psychologists don't want to do this, but we have to do already a lot of ministration. too much administration. And then I think you have to gather your data in a data set. And somebody has to be responsible for it because psychologists they forget it, or psychiatrists, they forget it. And they have to do a lot of administration already. So more, we have to build it in in routing, outcome monitoring. And then that costs money, too.

**Emre**: This will be the last question. So in the future with the desired developments, do you see this VR therapy application actually being used? For its intents?

**Lisbeth**: Yes. Yeah. Yeah, definitely. Definitely. I really do hope so. But I think a lot of psychologists psychiatrists are a little bit scared. Now, do I have to do this? How do I have to implement virtual reality? We do have virtual reality tools, but films from friend of which I don't like. So they are lying there. Nobody's using them. This, This serves a purpose. Okay, this serves a purpose because you can exercise In the classroom, and we don't have a classroom at home, so this is an extra addition, which makes it extra worthwhile.

**Emre**: That's great. Thank you very much.

**Interviewee V**

**Emre**: So, the first question is in your opinion, to what extent were your expectations met with this prototype? Like, what was done well in your opinion to start?

**Jeroen**: I think what was done well was the environment. I think the colours were vibrant and nice for children. Maybe some more detail would be nice, especially in the classroom and the corridor, because there are these blue areas without texture on the walls, so maybe some texture can be included. Think this was nice that there was nice feedback voice recorded responded well with what you saw in the virtual reality, like the blowing game or like saying the name of the pictures. I think that was very well done. The interaction was quite smooth. There were no time delays. I think that’s it.

**Emre**: Okay, on the contrary then, what did you think that needed improvement?

**Jeroen**: I think for children, the introduction of the female character was quite long, and I got distracted. Also the people were very uncanny valley and the lip sync, for me, it didn’t work very well. I couldn’t see their mouths moving. So especially in the character development it needs improvement. And I was wondering, because children with selective mutism are very shy, they might do the blowing game silently. Is it possible to change that?

**Emre**: Yes that would be possible, but you might run into the problem that if another person is too close to the headset and they speak, then it would be more sensitive to pick it up. But it general it would be possible to adjust the threshold.

**Jeroen**: Okay. That’s very nice. And I was also thinking that the children do not probably have experience with virtual reality, or that the social interactions are difficult for them. So maybe they can play in the playground for a while, alone, not with a character to get accustomed to virtual reality on how it works.

**Emre**: I think that can work to an extent, because playing in the playground would require a big area to move around in, or with more controls for moving with the sticks and pressing buttons to push a swing for example. But those interactions and environment changes might require quite a lot of effort and expertise in the area. So we kept everything quite static. But that could definitely be an aspect for the future. Okay, so adding to that, what are some other ways you see this application being extended?

**Jeroen**: It would be nice if the number of children in the classroom, or even the playground can be extended. And to my opinion, I would like to see where all the sounds come from.

**Emre**: So with your expertise, how well could a child with selective mutism interact with the system? Would they be able to follow the rules of the system as well as adults might? Or do some things need to be changed for them to react better?

**Jeroen**: No. I think in the classroom and the corridor is quite easy to grasp, also for a child. But like I said the introduction should be shorter. It might be that vocalising and saying the picture might be a big step for them but I do not treat that much children with selective mutism, so I think the people at Levvel will have more to say about that.

**Emre**: So, what changes could we make for the evaluation part to have it more fitting for a child? Because you did the questionnaire and now the interview, so any changes in mind for that?

**Jeroen**: I think the questionnaire is too difficult for them. Especially for the younger children. Also one more recommendation for the virtual reality which is the stickers they receive. It would be nice if there is a sound when they choose one and that they see that the it is added to a sticker book or something that they know that they have collected them. But relating back to your questionnaire, I think it is too difficult for them. The children should be 12 years or older to answer these questions.

**Emre**: So do you see any way that is it more suitable for younger children?

**Jeroen**: We often use face scales from sad to happy. Faces are more suitable for younger children. And for the questionnaire, especially about the presence in the virtual environment. Some questions look similar, so it might be difficult for the children to differentiate the questions. And I think Lisbeth also gave the same feedback.

**Emre**: Yeah, she said they use smileys and sad faces. She also said that some children might not be able to read. So a button to click to read out the question could be used.

**Jeroen**: Yeah, I think the questions should be very specific and easy.

**Emre**: Okay, next question. In the future with the desired developments that we discussed, do you see this VR therapy application being used for its intent?

**Jeroen**: Yeah definitely, it would be nice if there could be a smartphone version with Google Cardboard. Of course with that, some of the interactions with the environment would be impossible. But I think that with this they can also train at home. But that is for further development.

**Emre**: Well that is it, so thank you very much! I wish you a good day.

**Jeroen**: Thank you, you too.