TRANSFORE

DEVELOPING VIRTUAL REALITY IN FORENSIC MENTAL HEALTHCARE: a contextual inquiry

VooRuit met VR

DEVELOPING VIRTUAL REALITY IN FORENSIC MENTAL HEALTHCARE: a contextual inquiry

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TRANSFORE

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Samenvatting

Inleiding: Virtual Reality (VR) wordt steeds vaker succesvol ingezet in de Geestelijke Gezondheidszorg (GGZ). VR in de reguliere GGZ is effectief, biedt realistische oefensituaties, kan aangepast worden aan de individuele patiënt en wordt gezien als een motiverende behandelvorm. In de forensische zorg wordt VR nog niet als behandeling ingezet, alhoewel het veel potentie lijkt te bieden. Transfore, een organisatie die zorg biedt aan mensen met (risico op) grensoverschrijdend gedrag, is het project 'VooRuit met VR' gestart met als doel een VR behandeling te ontwikkelen. De huidige studie is een onderdeel van dit project, waarbij gebruik gemaakt wordt van de 'CeHRes Roadmap'. Dit is een instrument dat gebruikt wordt voor het ontwikkelen, implementeren en aanpassen van eHealth technologieën. In dit onderzoek staat fase 1 'de contextual inquiry' centraal, bestaande uit de beschrijving en analyse van de huidige situatie binnen Transfore. Dit om uit te zoeken waar VR volgens de key-stakeholders, de patiënten en behandelaren, naar verwachting een toegevoegde waarde kan hebben.

Methode: Een literatuurstudie, waarbij gebruikt gemaakt is van wetenschappelijke literatuur, werd uitgevoerd om de huidige situatie van VR in de forensische zorg in kaart te brengen. Door middel van desk research zijn de stakeholders voor het project geïdentificeerd. Daarnaast werd desk research en de resultaten van de interviews gebruikt om het huidige behandelaanbod, de organisatiestructuur en het gebruik van protocollen binnen Transfore in kaart te brengen. Tot slot hebben semi-gestructureerde interviews plaatsgevonden bij de key-stakeholders (de patiënten en de therapeuten) met een variatie op de scenario-based methode. Acht behandelaren en drie patiënten van Transfore werden gevraagd om scenario's te creëren van behandelsituaties die vatbaar zijn voor verbetering.

Resultaten: De literatuurstudie liet zien dat er weinig onderzoek is gedaan naar VR in de forensische zorg, echter de zes gevonden artikelen geven aan dat het veelbelovend is. Uit de resultaten van de interviews kwamen vier hoofdcodes, deze codes geven (onderdelen van) behandelsituaties weer waar volgens de geïnterviewde behoefte ligt aan verbetering. De hoofdcodes zijn: 'psychiatrische stoornis', 'vaardigheden training', 'gevoelens van de patiënt' en 'inzicht'. Daarnaast gaven de geïnterviewde behandelaren aan dat het protocolgebruik in de forensische zorg moeilijk bruikbaar is, omdat de forensische patiënt te complex is met ieder zijn eigen problematiek.

Discussie: Uit de resultaten blijkt dat er behoefte is aan een gepersonaliseerde behandeling, waarbij de therapeut een realistische behandelomgeving kan creëren. Het trainen van vaardigheden, die centraal staan voor de resocialisatie van de forensische patiënt, moeten in

de behandelkamer plaats kunnen vinden als veilige tussenstap tussen de gesloten setting en de maatschappij. Een realistische tussenstap binnen een realistische context kan er namelijk voor zorgen dat de patiënten behandeld worden in een veilige omgeving, zonder derden in gevaar te brengen. Daar er behoefte is aan een gepersonaliseerde behandeling, waar VR aan kan voldoen, is er ook behoefte aan een protocol waarvan afgeweken kan worden om de behandeling individueel toe te kunnen passen. Daarbij is het belangrijk om zowel patiënten als behandelaren te betrekken bij de ontwikkeling van de VR behandeling en de VR protocollen. Deze studie heeft aangetoond dat VR in de forensische zorg veel potentie heeft, met name in de behandeling van het resocialisatie proces van de patiënt.

Summary

Introduction: Virtual Reality (VR) is a promising eHealth tool for the mental healthcare. The use of VR within the forensic healthcare is still limited, but recent studies showed that VR has a potential for this setting. VR as a treatment in the mental healthcare is effective, offers realistic exercise- and experience- situations, makes the treatment very personal through the adaptability of the VR-environment and motivates patients. The question is whether the VR treatment will also be a successful treatment in the forensic setting. Transfore, an organisation that treats offenders with psychiatric disorders, started a project 'VooRuit met VR' with the aim to develop a VR-treatment for Transfore. The present study is part of this project and makes use of the development- and implementation model the 'CeHRes Roadmap', where the focus is on the first phase of this model, named 'the Contextual Inquiry'. The goal of this study is to perform a thorough contextual inquiry, together with the key-stakeholders, to collect information on what type of VR-treatment will be useful within Transfore. The key-stakeholders in this research are the therapists and patients of Transfore.

Method: A literature study, using scientific literature, was performed to collect more information concerning VR in the forensic healthcare setting. By means of desk research the stakeholders were identificated. Desk research and the results of the interviews were also used to investigate the current treatment situation, the organisation structure and the use of protocols within Transfore. Finally, semi-structured interviews with the key-stakeholders took place by using a variation of the scenario-based method. Eight therapists and three patients of Transfore were interviewed and were asked to create scenarios of treatment situations to give the researcher more insight into the possible improvements of the current treatments.

Results: The literature study showed that limited research was performed about VR in the forensics mental healthcare setting. The results of the six founded articles seemed promising. The interviews resulted in the identification of four main codes, which consisted of treatment situations that need to be improved by the interviewed participants. The four codes were: 'psychiatric disorder', 'training daily skills', 'eliciting states' and 'creating insight in diseases by patients, therapists and family'. In addition, the interviewed therapists indicated that the use of protocol is difficult in the forensics setting, because the forensic patient is characterised by a complex and instable character and needs personalised treatments.

Discussion: The findings of the present study showed the need for a personalised treatment, where the therapist can create a realistic and immersive treatment environment for the forensic patient. The training of daily skills, which play a central role in the resocialization of the forensic patient, have to be performed in a realistic context in the treatment room as part of a safe intermediate step, without endangering the society. This intermediate step can be used as step between the clinical treatment environment and the society. A basic VR-protocol is needed, with possibilities for deviation and adjustment to deliver a personalised treatment

to the forensic patients. Therefore, it is very important that both patients and therapists are involved in the development of the VR-treatment and the VR-protocol. Finally, this study showed a high potential for a VR-technology in the forensic setting. Focus must be on a personalised and motivational treatment in a secured environment, with resocialization as important aim.

Index

1. Introduction

The forensic mental healthcare focuses on the provision of care and treatment to people with psychiatric disorders with (the risk of) unacceptable behaviour. This involves patients with a treatment for sexual and/or aggressive disorders. The goal of the forensic mental healthcare is to prevent recidivism, to minimize the risk of offence, protecting the society and resocialization of patients (GGZNederland, 2014). Besides that, patients can choose by themselves to follow this treatment, mostly of them are forced by a judicial statement of a judge. There are different treatment settings in the forensic mental healthcare with different security levels. Four different security levels are present, with variation in patient freedom (Dienst Justitiële Inrichting, 2017). Forensic patients that participate in mandatory treatment have limited insight in their own health and diseases, show limited treatment motivation and are commonly not compliant to their treatment. In addition, forensic patients are often characterised with a complex and instable character (Bierbooms, Bouman, Dijkslag, Kimpen, Muller & Wieske, 2015). These characteristics of forensic mental healthcare patients make it difficult for organizations to deal with emerging healthcare changes.

In recent years, some important developments emerged in the forensic mental healthcare, such as increasing costs, shortage of educated personnel, ageing of personnel and increasing self-management of patients (Bierbooms et al., 2015). An increased self-management in healthcare means that patients are co-responsible for their own health and wellbeing (Notenboom, Blankers, Goudriaan, & Groot, 2012). The use of new technologies, like eHealth, can play a promising role to overcome these problems. Self-management is a central topic in EHealth treatments, where patient take responsibility in their own treatment. The goal of eHealth is to provide more effective healthcare solutions (Bierbooms et al., 2015). According to the definition reported by Eysenbach: "*eHealth is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology*" (Eysenbach, 2001). The regular mental healthcare is already familiar with the use of eHealth, where the use of eHealth in forensic mental healthcare settings is still scares (Bierbooms et al., 2015). However, the use of eHealth can also play a promising role in the forensic setting, since it can result in more efficient and effective healthcare. EHealth is 24 hours per day available at flexible times, where care can be offered

quickly. This is a great advantage for the forensic setting where patients often show an unstable character (Bierbooms et al., 2015; Wentzel, van der Vaart, Bohlmeijer, & van Gemert-Pijnen, 2016). Another possible advantage of using eHealth may be an increase in patient motivation (Donkin & Glozier, 2012), which is often low in the forensic healthcare (Bierbooms et al., 2015). However, attention needs to be paid to establish a good match between face-to-face and online appointments, to ensure that forensic patients remain faithful to their therapy (Bierbooms et al., 2015). Face-to face meetings in combination with online appointments are called blended-care treatments. The first results of this blended-care treatment are successful (Wentzel et al., 2016).

1.1. Virtual Reality

A specifically promising eHealth technology for the mental healthcare is Virtual Reality (VR). In the last few years, the use of VR in the mental healthcare increased tremendously (Turner & Casey, 2014). The underlying idea is that someone can stand and move in a computer-generated world and feel immersed (Baños et al., 2011; Bordnick, Traylor, Carter, & Graap, 2011; Botella et al., 2007; Fox, Arena, & Bailenson, 2009; Repetto & Riva, 2011; Rothbaum et al., 2006). Immersiveness means that someone has the feeling to be in the real world while being in the treatment room (Furth, 2008). In this way VR can offer the opportunity to create realistic exercise and experience situations, which cannot be achieved in the regular treatment (North & North, 2016). This immersive nature provides a real-life experience, which is emotionally better than imaginable exposure (Riva, 2009). The commercialization, due to the fast developments of the underlying VR-technologies, resulted in reliable, more appealing and affordable systems that can also be used within the (forensic) mental healthcare (Turner & Casey, 2014).

In regular mental healthcare VR is applied for different psychiatric disorders, which can also occur in forensic patients, such as anxiety disorders, specific phobias, Post Traumatically Stress Syndrome (PTSS), schizophrenia, obsessive-compulsive disorders (OSD), eating disorders and autism (Maples-Keller, Bunnell, Kim, & Rothbaum, 2017; Valmaggia, Latif, Kempton, & Rus-Calafell, 2016). Reviews that examined the effect of VR within the mental healthcare reported several positive findings, especially with regard to anxiety disorders (Maples-Keller et al., 2017; Turner & Casey, 2014). According to the reviews, VR in mental healthcare is often based on exposure therapy, where a patient is exposed to a stimulus in a virtual world that can be changed over time. VR in regular mental healthcare has several advantages. The adaptability of the environment makes it possible to train individual patients step-by-step with their own problematic triggers in a safe

environment, which makes the treatment very personal. VR is also a good opportunity for patients who experience difficulty with imagining or visualisation (Maples-Keller et al., 2017). These advantages seem to be relevant for the forensic healthcare setting as well. There are several published studies about VR in the forensic setting, but the adoption of the VR-technology within the forensic setting is still limited. A study of Fromberger et al. mentioned the importance of offering a personalised treatment for forensic patients, for which the use of VR can be a possible solution (Bierbooms et al., 2015; Fromberger, Jordan, & Müller, 2014). According to Benbouriche et al., VR-technology also offers the opportunity to both assess and treat (unacceptable) criminal behaviour in a secure environment, without endangering others (Benbouriche, Nolet, Trottier, & Renaud, 2014). Since limited studies about VR-technology in the forensic mental healthcare setting are available, it would be interesting to examine if VR can play a role in the current forensic treatment setting.

The present study is a first step to examine if and how the use of VR can be embedded within current forensic treatment context. For optimal development and implementation of the VR-technology in the forensic setting it is important that the VR-technology fits into the treatment context and fulfils to the requirements of the end-users. When VR-technology is not fulfilling the needs and requirements of end-users, chances are increased that implementation and adoption of VR-treatments are not working out as they were planned. Therefore, co-creation is needed, where stakeholders need to be actively involved throughout the whole developmental and implementation process of the VR-technology. Within the present study, the CeHRes Roadmap is used as tool to guide this developmental process (van Gemert-Pijnen, Peters, & Ossebaard, 2013a).

1.2 CeHRes Roadmap

Although eHealth, including VR, have many advantages for forensic mental healthcare (Fromberger et al., 2014), the eHealth-Monitor (2016) shows a lack of optimal use of eHealth in both the mental and forensic healthcare setting (Krijgsman et al., 2016). The eHealth-monitor is an annual repeated research that examines the availability and use of eHealth by patients and healthcare employees (Nictiz, 2017). Since the adoption of eHealth technologies in the forensic mental healthcare setting stays behind, making specific choices in developing new eHealth treatments for the forensic setting seem crucial. According to Bierbooms et al., co-creation seems to be the success factor of a solid development and implementation of eHealth in the forensic setting (Bierbooms et al., 2015). The new VR-technology will be developed together with important stakeholders, which is also called ‘participatory development’ (Eysenbach, 2008; van Gemert-Pijnen, Peters, & Ossebaard, 2013b). A proven

tool for a good eHealth development-, implementation- and evaluation process is the CeHRes Roadmap (Figure 1), where 'participatory development' plays a central role. Important stakeholders will be involved from the beginning of the development process (van Gemert-Pijnen et al., 2013a). A stakeholder is a person or a group that has interest or concern in the technology that is being developed (Limburg, 2016). Since the development and implementation of eHealth in the forensic setting are difficult to achieve, more attention must be paid to the alignment of technology with the end-users. Continuous evaluations with end-users during the developmental phase are important to be able to adjust the product or process, which is called an iterative approach. The alternated short development and evaluation cycles with end-users increases the chance that the generated output will also be used in clinical practise (van Gemert-Pijnen et al., 2013a).

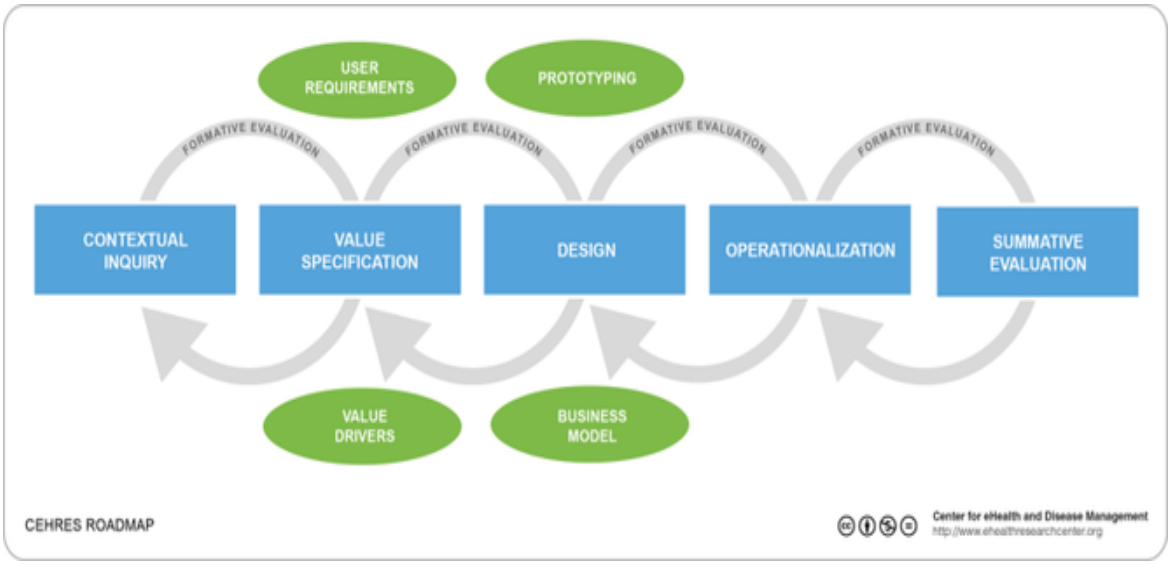

Figure 1. CeHRes Roadmap. Reprinted from: *Center for eHealth Research and Disease Management* by University of Twente, 2012 Retrieved from: http://www.ehealthresearchcenter.org/wiki/index.php/CeHRes_Roadmap

The contextual inquiry is the first step of the development process and forms the basis for a new eHealth technology (Kip, Beerlage- de jong, & Wentzel, in press). The contextual inquiry has multiple goals. Since VR-treatments are new for the forensic setting, it is important to review the current forensic treatment setting and to identify situations where VR-technology can play a role. To do this, it is important to identificated the stakeholders in the current setting and it is important to determine the interests of all identified stakeholders to the project. Not all stakeholders will share the same concerns and priorities to the project, and this might change over time or during the different project stages (Limburg, 2016). Together

with the stakeholders, it can be determined where the use of VR can result in improvements of the current forensic treatment setting. Several methods to perform this are desk research, focus groups, scoping reviews, interviews and (field) observations (Kip, Beerlage-de jong & Wentzel, in press). The collected information in this phase will be the input for all further development phases of the roadmap. After the identification of both needs and wishes of VR-technology as a possible solution for problems within the forensic treatment setting, these results will be used in the second phase, called the value specification. In this phase, the functional requirements of the stakeholders for the VR-technology will be identified. Both contextual inquiry and value specification together provide the functional requirements for the design of the technology (van Gemert-Pijnen et al., 2013a).

1.3 Setting, goal and research question

1.3.1 Setting

The present study took place at Transfore (Figure 2), an organization in the forensic mental healthcare setting that helps patients with (the risk of) unacceptable aggressive- and sexual behaviour. Transfore offers both ambulant and clinical care. Clinical patients are living in a clinical setting of Transfore, while outpatient patients are living at home and visit Transfore for their treatment (Transfore, 2017). In 2016, a multi-disciplinary project team started the project 'VooRuit met VR' with the aim to develop a VR-treatment. Different stakeholders are involved in the project group: (ex-)patients, students and different employees of Transfore like ambulant- and clinical therapists, researchers and the policy maker. The CeHRes Roadmap will be used for this project during the development process.

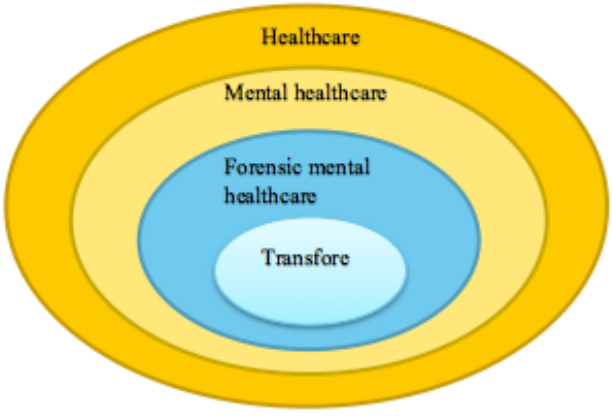

Figure 2. A study within Transfore, a Forensic mental healthcare organization

1.3.2. Goals

The goal of this study is to perform a thorough contextual inquiry, together with the key-stakeholders, to collect information if and where in the current treatment VR will be useful

within Transfore. Based on these findings, possibilities for treatments with VR-technology can be identified. To achieve this goal, first the stakeholders for this project must be identified. An overview is needed about the regular treatments that are provided by Transfore. In addition, aspects for improvement need to be identified in order to determine if VR can be of added value to the current treatment protocol.

1.3.3. Research question

Where in the current treatments of Transfore can Virtual Reality have an added value?

1.3.4. Sub questions

1. What is, according to the literature, the current use of Virtual Reality in the forensic mental healthcare setting?
2. Who are the (key-)stakeholders for the accomplishment of a VR-technology at Transfore?
3. What is the current treatment program at Transfore?
4. Which elements in the current treatment program can benefit from VR in accordance to patients and therapists?

2. Method

2.1 Design

The present study was a qualitative study, in which the current situation of Transfore was described and analysed (contextual study). Several research methods were used to ensure proper insight into the state-of-the-art and current situation, consisting of a literature study, stakeholder identification, desk research and semi-structured interviews. Each sub question contained one or more methods. The research was approved on April 13, 2017 by the Ethics Committee of the faculty of Behavioural Management of Social Sciences of the University of Twente (Boeije, 2014).

2.2 Sub question 1

'What is, according to the literature, the current use of Virtual Reality in the forensic mental healthcare setting?'

2.2.1 Literature study

A literature study was performed to investigate the current use of VR in the forensic mental healthcare. Before starting the search to relevant literature, the researcher created a search strategy (Table 1), with MeSH (Medical Subject Headings) terms. The search was based on the overall research question and the first sub question, focusing on VR-treatments for the forensic mental healthcare setting. Databases that were used were Scopus, Web of Sciences, PubMed and Google Scholar. The search for suitable articles was repeated several times during the present research, due to the quick development of VR within the forensic mental healthcare setting.

Table 1. Search strategy for the literature study

	Words/aspects				
SYNONYM	Virtual Reality	Treatment		Forensic Setting	OR
	←		AND	→	
	VR	Therapy		Forensic	
	VRT	Treatment		Offenders	
	Augmented	Intervention		Crime	

Articles were selected when they fulfilled to the criterion that VR-technology contributed as a study on assessment or treatment of forensic psychiatric patients. All selected articles were thoroughly read, relevant information was marked and a summary was made. Data extraction on all selected articles was performed by means of the goal of the study, the study design, the used technology itself together with the (dis)advantages of the used technology, the target population and the (dis)advantages of the study (Table 2).

2.3 Sub question 2

'Who are the (key-)stakeholders for the accomplishment of a VR-technology at Transfore?'.

2.3.1 Stakeholder identification

A good understanding of who the stakeholders are for this development project 'VooRuit met VR', the first step is the stakeholder identification. Different methods and approaches were used, consisting of desk research, a literature study, expert recommendations and snowball sampling.

First, theory on stakeholder researches was gathered through desk research in order to clarify how to determine stakeholders by their goals, participation and distinguishing characteristics. From the theory on stakeholders, combined with literature about eHealth, several stakeholders in the healthcare setting were identified as generic stakeholders. These stakeholders composed the first stakeholder list. Literature on VR use and implementation in the forensic healthcare settings refined the first stakeholder list by appointing stakeholders who were specifically involved in VR implementations. At last, examination of relevant organisational documentation (website and internal documents of Transfore) was useful to finalise the stakeholder list from the desk research. This information even resulted into the renaming of several stakeholders gathered in literature.

The final version of the stakeholder list through desk research was submitted to experts from the Transfore organization for their expert recommendation. The selection of suitable experts was based on having sufficient overview and knowledge of the practical characteristics in the organization and having insight into the research methodology in the organization. A policy maker and PhD student, both working at the Transfore organization, were selected to perform the expert recommendation over the current stakeholder list based on completeness.

Finally, snowball sampling was used to refine the list of stakeholders by asking stakeholders themselves if the stakeholder list was incomplete (Limburg, 2016). The list was submitted to the project group, representing several stakeholders. Two similar meetings with

the project group about possible and additional stakeholders resulted in the final and complete stakeholder list in the context of this research.

After the stakeholder identification the stakeholder list was qualitatively grouped on similarities and equal interests and characteristics based on the researcher's gathered knowledge in the desk research. The stakeholders were presented in the stakeholder mapping to gain a good overview of stakeholders in the project. The stakeholder mapping was than reviewed again by the project group. One meeting was scheduled, in which the stakeholder list was iteratively judged and refined by the members of the project group. By this qualitative judgement, the key-stakeholders were identified based on their impact and involvement in this stage of the project 'VooRuit met VR'.

2.4 Sub question 3

'What is the current treatment program at Transfore?'

2.4.1 Desk research & interviews

To develop eHealth technology for the forensic mental healthcare, getting a good understanding of what the current treatment program and organization of Transfore is a first important step. Therefore, desk research, consisting of internal documentation and health programs from Transfore, provided important information about the current treatments and their setting.

The use of protocols within healthcare were commonly described as insufficient (Leentjens & Burgers, 2008). Since this is an important part of the current treatment program and current working procedures, questions were asked during the semi-structured interviews to gain knowledge and insight into the protocol use by therapists in the current treatment settings. This is a crucial step in the development of the VR-treatment, because new protocols will accompany the VR-treatment.

2.5 Sub question 4

'Which elements in the current treatment program can benefit from VR in accordance to patients and therapists?'

2.5.1 Semi-structured interviews

To answer sub question 4, interviews with the key-stakeholders were performed. First, participants were selected, where after the interview and analysis of the interview took place.

2.5.1.1 Selection procedure participants

The participants of the interviews consisted of the key-stakeholders, consisting of both therapists and patients. The selection procedure of the participants was done by stratified and convenience sampling: participants were selected from all different treatment locations of Transfore. Another distinction in the selection of participants was made between the clinical and outpatient settings. All therapists and patients who fulfilled the predefined selection criteria were allowed to participate for the interviews.

Therapists that were eligible for participation must be employed at Transfore and may not be a member of the project group 'VooRuit met VR'. The team managers of Transfore made a qualitative selection of therapists that were eligible for participation, based on the research purpose explained by the researcher during a face-to-face meeting. All potential therapists were contacted by e-mail by the researcher for participation. All positive reactions ended up in the interview selection.

The researcher asked both interviewed therapist and members of the project group to select patients for participation. They were provided with the in- and exclusion criteria for the patients, determined by the researcher. The first inclusion criteria was that patients had to act like a stakeholder, where only room was available to provide non-personal responses and examples to meet their privacy protection. The second inclusion criterion was that patients could only be selected when the probability of increased stress due to participation was out of the question. Therapists judged and gave permission on both criterions above. The most important exclusion criterion according to the therapists was a lack of mental stability of the patient, because the security for both patients and researcher is very important. With mentally disordered patients, the understanding of the research goal cannot be ensured. This could lead to exclusion of participation as well. In addition, patients that joined the project group 'VooRuit met VR' were seen as biased respondents and were therefore excluded from participation in the present study. The interviewed therapists and the members of the projectgroup provided a selection list of patients with contact details, who were potential candidates for participation. Therapists already informed the patients about the research goals. When patients felt interested they gave permission and provided their e-mail address to the therapists and researcher. All potential patients were contacted by e-mail by the researcher for participation. A positive response by the patients ended up in the interview selection.

The result of the selection procedure was that 8 therapists and 3 patients were representing the interview field research. The therapists consisted of 'outpatient therapists'

(n=4) and ‘clinical therapists’ (n=4). The patients consisted of ‘outpatients patients’ (n=2) and ‘clinical patients’ (n=1).

2.5.1.2 Procedure of the interview

All positive responses of the potential participants, consisting of both therapists and patients, were answered by e-mail by the researcher. In addition, an interview information letter (appendix 1) and flyer (appendix 2) were sent to them. The interview information letter explained the research goals and gave formal information about the interview procedure (explanation of what participants can expect, attendees who are joining the interview and the use of voice recording). The flyer provided information about the scenario-based questions, as a preparation for the interview.

The appointments for the interviews were always scheduled at a Transfore location. The interview was forehand scheduled between 45 and 60 minutes. In practise these interviews were performed between the 20 and 50 minutes. Before starting the interview, the researcher repeated shortly the goals of the research and the purpose of the interview questions, after which the participant was given the opportunity to respond or ask questions. After answering those questions, the researcher provided the ‘informed consent’ form (Appendix 3), which needed to be signed by both participant and researcher. Before starting the interview with the patients, the researcher emphasised again that the patient was identified as a stakeholder. During the interview the participant was given the opportunity to interrupt or stop the session at any moment. All participants were thanked for their time and effort, and the researcher gave a small present to them.

2.5.1.3 Instruments

All interviews that were performed focussed on collecting the majority of relevant information provided by the respondents. In this research, semi-structured interviews were used, which allowed the researcher to ask open questions. In this way the respondents enjoyed freedom to provide both direct answers and contextual information on questions asked by the researcher. The researchers’ main interest focussed on opportunities to improve the current treatment setting, which were identified by the respondents. In order to enable the participants to focus on those opportunities, a variant of a scenario-based method was used. This method is suitable in studies where information about the research topic is limited (Tideman, 2008). A scenario-based method is commonly used during the first stages of the development process (Carroll, 2000). Usually, the method consists of providing existing scenarios to respondents in order to improve the respondents’ imagination and explanation about those scenarios

(Tideman, 2008). However, during this research the scenario-based method was used in the opposite direction. The participants of the interviews were asked to provide scenarios of the current treatments by themselves, in order to remain as close as possible to the actual setting.

The interviews were structured in two interview schemes, each with specific customizations for therapists and patients (Appendix 4-5). In these schemes, questions were developed based on the results from the desk research, information and documents from the project group and theory on scenario-based interviews. The interview schemes were judged by the project group and iteratively adjusted based on their feedback. Thereafter, two pilot interviews were performed with members of the project group, consisting of one therapist and one (ex) patient, for integral testing of the actual interviews. Both schemes started with a general introduction, including several questions about the respondent, followed by three parts for the therapists and two (out of three) parts for the patients:

- Current treatment program (only therapists): The current treatment programs were outlined by the researcher, where questions were asked to provide insight in differentiations between outpatient and clinical settings based on strengths and weaknesses of treatment programs. Another part in this section was the use of protocols during treatments. Additional information about protocols was asked on a generalizable level of total use of protocols within Transfore.
- Scenario-based part without any influence on scenarios by the researcher (therapists & patients): The researcher only asked open questions about common knowledge on treatment processes in order to enable the respondent to imagine opportunities for possible improvements in the current treatment processes. Limited interferences from the researcher should enhance the collection of complete input based on actual treatments scenarios. These could lead to fictive and non-fictive examples. The researcher did ask as much as possible so that a complete scenario arises. For the patients, the scenarios contain non-existing examples due to imposed privacy rules. The researcher interfered the respondents when undesired answers tended to be provided.
- Scenario-based part with categories (therapists & patients): During the inspiration sessions in 2016, several categories with VR examples for the forensic setting have been identified. The three categories ‘skills’, ‘insight’ and ‘treatment of disorders’ were used as examples of situations where VR-technology can be applied in forensic treatments. Questions were asked whether participants were able to visualise the given

example and to make a judgement if VR-technology can be applied for this specific example in clinical practise. The participant was creating another new scenario.

2.5.1.4 Analysis

After performing all interviews, the results of the interviews were transcribed verbatim. The transcripted data were analysed by means of inductive coding with open, axial and selective coding (Boeije, 2014). First, the transcript was read thoroughly by the researcher, to become familiar with the data. To determine an initial coding scheme, two researchers coded the transcripts of the first three interviews. All fragments, which were relevant with regard to the research question, were marked. All fragments with the same characteristics received a name, which was the main code. The main codes were formulated in an abstract way, in order to reach a level of data saturation at the end of the interviews (Boeije, 2014). All examples of the main codes were mentioned as a subcode. Thereafter, the remaining transcripts were coded. Adjustments were made to the coding schemes when new codes had to be added, or existing codes had to be merged. This iterative process was further discussed with the co-researchers and adapted when necessary. The final main codes were: 'psychiatric disorders', 'skills training', 'eliciting states' and 'creating insight'. It was counted how many sub codes were mentioned within the interviews, reflected as 'N'.

3. Results

3.1 Literature study

To answer the first sub question '*What is the current use of Virtual Reality in the mental healthcare setting?'*, a literature study was performed on articles that reported the use of VR specifically in a forensic treatment setting. For an overview, see table 2.

Table 2. *Overview of studies on VR-treatment in forensic mental healthcare setting: study characteristics, technology, advantages and disadvantages.*

Study	Study	Technology, goal and target group	Advantages/Disadvantage
1. Fromberg. P, Jordan. K, Muller. J.L. (2014)	**Goal**: Advantages and characteristics of VR for forensic mental healthcare setting. **Design**: Literature study **Effectiveness:** Not assessed	**Technology**: Virtual Reality **Target group**: Forensic psychiatric patients **Goal of technology**: VR should improve the quality of forensic treatments.	**Advantages**: Secure care environment; Widely used; personalised treatment **Disadvantages:** Misuse of the technology; too little evidence.
2. Benbouriche. M, Nolet. K, Trottier. D (2014)	**Goal**: Showing that Virtual Reality has an especially high potential for forensic psychiatry. **Design**: Literature study **Effectiveness:** Not assessed	**Technology**: Virtual Reality – 3D computer-generated stimuli – brain computer interfaces **Target group**: Violent offenders & sexual offenders. **Goal**: To assess deviant sexual preferences and to train empathy.	**Advantages**: Care in secured settings; Low accessibility of the treatment for patients; Ecological validity **Disadvantages**: Misuse of technology; Lack of evidence in general
3. Renaud. P, Rouleau. J.L, Proulx. J, Trottier. D, Mathieu. G, Bradford. J..P, Bouchard. S (2014)	**Goal**: Comparing standard auditory modality with VR modality to generate sexual arousal profiles. **Design**: Cross-sectional study – quantitative **Effectiveness:** Not assessed	**Technology**: Virtual reality with 3D virtual characters: PPG **Target group**: Sex offenders, paedophilia **Goal**: Assessing sexual profiles of paedophilia	**Advantages**: More ethical, realistic, Ecological validity **Disadvantages**: No representative sample
4. Wijk. L, Edelbring. S, Svensson. A, Karlgren. K, Kristiansson. M, Fors. U (2009)	**Goal**: Develop and pilot testing of a simulation system to be used as a tool to study MDOs and possibly also to play a part in their rehabilitation. **Design**: Cross-sectional study: quantitative and	**Technology**: Computer-based simulation system: Reaction on display (ROD) **Target group**: Mentally disorders offenders (MDO): clinical and outpatients. **Goal**: ROD should be a useful tool to identify dynamic risk factors and learn more about the target group.	**Advantages**: co-creation: patients and therapists opinion; pilot-testing/ iterative process: visualisation for patients; well received by patients and therapists. **Disadvantage:** Effectiveness for practise is not yet proven.

	qualitative **Effectiveness:** Not assessed		
5. Sygel. K, Kristiansson. M, Furberg. R, Fors. U (2016)	**Goal**: To investigate how male offenders (IPV) use and react the interactive computer simulation system. **Design**: Cross-sectional study: quantitative and qualitative **Effectiveness:** Not assessed	**Technology**: Computer simulation system (Reaction on Display): a film of an IPV scenario **Target group**: Intimate Partner Violence **Goal**: To identify emotional disturbances in forensic psychiatric patients.	**Advantages**: Visually observed, patients involved **Disadvantages**: small study, 40-60% of the patients experienced negative feelings of ROD
6. Cardenas-Lopez. G, de la Rosa. A, Duro. R, Duran. X (2014).	**Goal**: Identify treatments to reduce symptoms of ASD/PTSD **Design**: experimental design **Effectiveness:** Effective	**Technology**: Virtual scenarios for virtual reality exposure **Target group**: Patients with Acute Stress Disorder (ASD) and patients with Posttraumatic Stress Disorder (PTSD); both with crime violence. **Goal**: Determine the efficacy of VR in the treatment for PTSD and ASD patients.	**Advantages**: Comfortable instrument; low accessibility **Disadvantages**: Just the opinions of the patients: small study

All included studies were summarised based on the type of study, the used technology and the advantages and disadvantages of the used VR-technology. The included studies could be categorised in several study designs, including literature studies (N=2), cross-sectional studies (N=3) and experimental design studies (N=1). Each study had a different goal. The literature studies used scientific literature to explain the current situation of VR in the forensic mental healthcare setting (Benbouriche et al., 2014; Fromberger et al., 2014). Two out of three cross-sectional studies performed a pilot study where the goal was to test the VR-technology (Sygel, Kristiansson, Furberg, & Fors, 2014; Wijk et al., 2009). The other cross-sectional study compared two different kinds of technologies, where VR was compared with regular auditory stimulus (Renaud et al., 2014). The experimental design study examined the effectiveness of a VR-treatment for ASD and PTSD offenders. This study showed that the effectiveness of VR as treatment was achieved (Cárdenas-López, de la Rosa, Durón, & Durán, 2014).

With regard to the used technology, the type of technology, the target group and the goal of the technology were explained. Two different types of technology were used in the studies. VR and computer based simulation systems. In four studies the goal of the technology

is important to express that technology is used to create realistic situations where patients can learn new behaviour (N=4) (Cárdenas-López et al., 2014; Fromberger et al., 2014; Sygel et al., 2014; Wijk et al., 2009). The technology of the remaining two studies was used for assessment and treatment of sexual offensive patients. The stimulus that is related to offensive behaviour can be presented by VR. (Benbouriche et al., 2014; Renaud et al., 2014). In all included studies, the target group were forensic psychiatric patients.

The advantages and disadvantages could be related to the method of the study and/or the used technology. Most studies were pilot studies with small sample sizes, which makes generalization of the results difficult. Five studies involved patients (Benbouriche et al., 2014; Cárdenas-López et al., 2014; Fromberger et al., 2014; Renaud et al., 2014; Sygel et al., 2014), while one study involved both patients and therapists (Wijk et al., 2009). The success of VR-technology is also dependent on the type of patient, where VR-treatments for sexual offensive patients are being doubted. These patients could use the images produced with VR-technology as pleasure instead of helpful treatment (Benbouriche et al., 2014; Renaud et al., 2014). Advantages of VR-technology are explained as personalised treatments tailored to individual levels and immersive capabilities to create realistic virtual treatment environments. Both these aspects can be more easily achieved, since the security of society is no longer an issue as the treatment can take place inside the treatment room (Benbouriche et al., 2014; Cárdenas-López et al., 2014; Fromberger et al., 2014; Wijk et al., 2009).

3.2 The stakeholders

The answers on sub question two '*Who are the (key-)stakeholders for the accomplishment of a VR-technology at Transfore?'* was initially performed through desk research. During several iterative meetings with the project group and conversations with employees, the results of the stakeholder identification were mapped to a figure, shown as Figure 3. The typifying of stakeholders was determined by the direct or indirect involvement of applying VR-treatments in practise. Therefore, the key-stakeholders for the contextual inquiry were the patients and therapists, since they are the end-users of the to-be-developed instrument. The key-stakeholders were identified in accordance with the project group. Inside the Transfore organisation, they are the most important stakeholders in this phase of the project, because they have the information about the current treatment situation. The different stakeholders were grouped to several categories in the mapping, to show the results more clearly. These categories were based on their shared characteristics:

- **End-users**: The end-users of the still to be developed VR-treatment, the Patients and therapists of Transfore
- **Decision makers (Process)**: Stakeholders who are responsible for the policies with regard to the embedding of treatments within the organisation. For this project, these were the team managers, the management of Transfore and the treatment coordinators.
- **Decision makers (content)**: Stakeholders who are responsible for the substantive development of new treatments. For this project, these were the project team and the financiers.
- **Developers**: Internal (people of the organisation of Transfore) and external technical developers for the product or maintenance of the product. For this project, these were the ICT-employees of Transfore, but also VR developers and mental health organisations who already work with VR.
- **Knowledge**: People or organisations that have knowledge on VR-technology and the development process. For this project, these were students of Universities or High schools and the University of Twente.
- **Healthcare financiers**: Organisations that finance the treatment of patients.
- **Forensic and regular mental healthcare partners**: Associated healthcare institutions that work closely together to provide qualitative treatments to patients. Those are regular mental healthcare organisations but also other forensic mental healthcare organisations.
- **Social system**: The social environment of the patients, like family and the society.

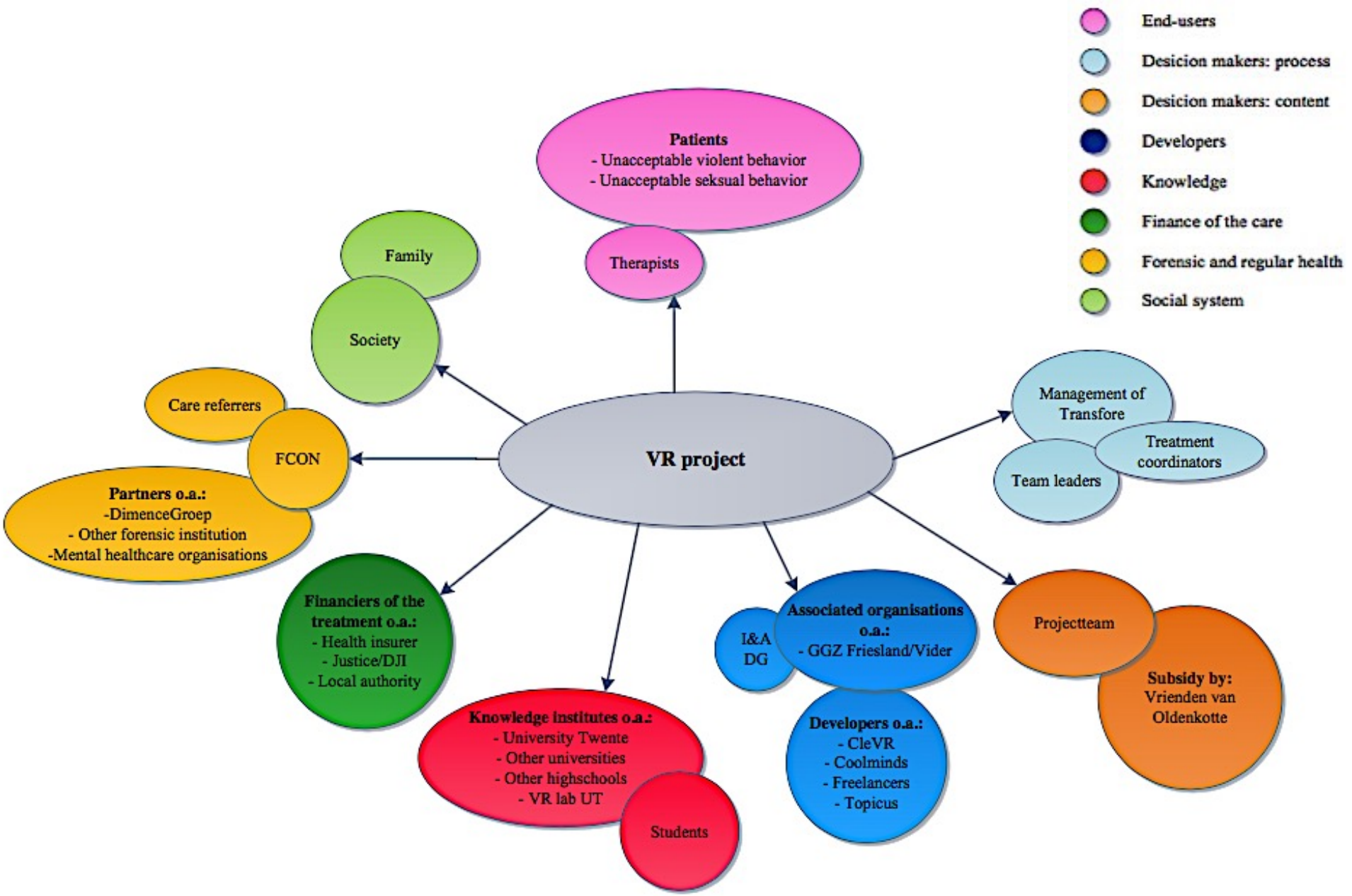

Figure 3. Stakeholdermapping for the VR project within the contextual inquiry research at Transfore.

3.3 Current treatment at Transfore

Sub question 3 '*What is the current treatment proposition at Transfore?'* is answered through desk research and the first part of the interviews. The aim of Transfore is to treat patients with (risk of) unacceptable behaviour. These people are (risk of) offenders with a psychiatric disorder, where a distinction can be made between patients with aggressive or sexual unacceptable behaviour. Transfore is treating clinical patients, outpatients and patients at home (Figure 4). The freedom of patients and the treatment climate varies between the different settings. In the forensic mental healthcare, the security levels vary from 1-4. Transfore only offers treatments within security level 1-3. Transfore is not offering treatments in level 4, which is (in Dutch) the TBS-clinic (Dienst Justitiële Inrichting, 2014). The TBS-clinic is the most secured environment within the forensic healthcare. The following treatments are given at Transfore:

- **FPK** (Forensic Psychiatric clinic). This is a clinical setting of Transfore with security level 3. Patients have a long-term stay in a secure closed setting with very limited freedoms. Internet and other technologies are limited available in this setting (Dienst Justitiële Inrichting, 2014).
- **FPA** (Forensic Psychiatric department). This is a clinical unit to treat patients, with security level 2. Within reasonable periods (6 to 12 weeks) patients will get permission to change from treatments in a closed environments to more open environments (Dienst Justitiële Inrichting, 2014).
- **FBW** (Forensic Accompanied Living). A clinical setting where patients are treated with the aim to rehabilitate to society, with security level 1. Patients do not longer live in a closed environment, but receive 24 hours nursed care and have the obligation to be accessible all day. Assistance and care is always present, but on distance (Dienst Justitiële Inrichting, 2014).
- **De Tender**. Within the outdoor clinical department, patients are only bounded to treatment during therapists' appointments. These patients are living at home and visit Transfore to follow their treatment.
- **ForFact**: The ambulant setting where therapists visit the patients at a home setting for accompaniment.

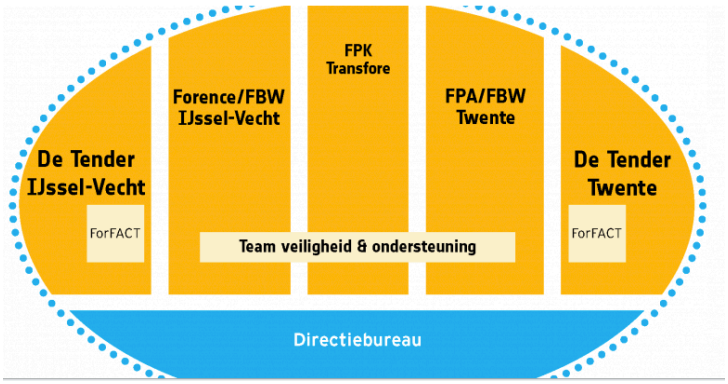

Figure 4. The organisational chart of Transfore: From board of directors to treatments. Reprinted from *Transfore maakt de samenleving veiliger*, by Transfore, 2016 retrieved from: https://www.transfore.nl/transfore-maakt-de-samenleving-veiliger. Copyright 2016 by Transfore.

In the treatments of Transfore there is a difference between the clinical and outpatient setting and patients with a sexual and violent unacceptable behaviour. For these two types of patients, two different healthcare programs are available (Verschuur & Hendrinks, 2012, 2014). In the outpatient setting, both healthcare programs are used as treatment. In the clinical setting, treatments are not bound to presubscribed programs and the rehabilitation of patients plays a central role. Therefore, the clinical and outpatient setting are not comparable to each other, for which a different treatment approach is needed. This is an important aspect concerning the development of VR, because of the different goals of the two settings.

Transfore is also offering eMental health (EMH). This is an eHealth therapy, which can also be part of the treatment. Therapists estimate which patient is suitable for EMH and which module fits best. Another organisation, Minddistrict, offers different modules in three categories: modules for specific forensic patients, modules for specific psychiatric disorders and generic modules. EMH as a treatment for patients within Transfore is only used in a blended form, so the online module must be offered in combination with face-to-face appointments with the therapists. These EMH treatments can be offered in both the clinical and outpatient setting (Verschuur & Hendrinks, 2012).

During the interviews with the therapists, the use of protocols was also discussed. More information about the current use of protocols within Transfore will be of great value to develop and implement a VR-protocol for the VR-treatment in future. The use of protocols within healthcare were commonly described as insufficient (Leentjens & Burgers, 2008). All interviewed therapists were familiar with the used healthcare programs and protocols within Transfore. However, protocols were not always used in the way their usage is formulated. An

outpatients therapists explained that certain parts of the treatment protocols are difficult to apply to forensic patients: *'Het is een protocol officieel, maar dat is dus lastig met deze forensische doelgroep, het wordt wel steeds meer van ons gevraagd, maar het blijft maatwerk. Dus dan is een protocol lastig om precies te gebruiken, het kan een hulpmiddel zijn, maar het kan je dan ook tegenstaan'*. Participant 1 mentioned that protocols could be used as useful tools, but that they are not leading in the treatment:*' De behandeling wordt gestuurd door het probleem en niet door een protocol. Ik vind eerlijk gezegd dat protocollen in de forensische psychiatrie, ze kunnen inspirerend werken, maar kunnen niet echt een leidraad zijn'*. One (clinical) patient agreed with this argumentation: *'Het moet allemaal individueel, de een is totaal anders dan de ander'*. Nevertheless, the interviews provided information that the uses of medical protocols were followed up strictly. Participant 2 mentioned: *'Protocollen die hier gebruikt worden zijn vooral voor controle drugsgebruik, drankcontroles'*. This was confirmed by participant 6*: 'Ik gebruik alleen protocollen als het echt moet, bij wettelijke dingen'*.

Transfore offers different treatments in different settings, varying from clinical to outpatient care. Treatment mainly takes place in an outpatient setting. The clinical and ambulatory care focuses more on guiding resocialization than treatment. In addition, the use of protocols during treatment and counselling is a point of attention.

3.4 The added value of VR-technology in the forensic treatment programs

Sub question 4 '*Which elements in the current treatment program can benefit from VR in accordance to patients and therapists?* was answered by 11 semi-structured, scenario-based interviews. Main codes and sub codes arose by inductive analysis, shown in table 3. The main codes were VR opportunities in the forensic mental healthcare setting and were the result of treatment improvements mentioned by the interviewed participants. In this chapter, each sub code is explained and substantiated with quotes from the interviews.

Table 3. *An overview of treatment opportunities with VR and their definitions.*

Treatment opportunities	Definition	N*
1. Psychiatric disorder	Treatment of psychiatric disorders defined by DSM-5: Diagnostic and Statistical Manual of Mental Disorders	
- Paraphilia	Treatment of patients with deviant sexual preferences	3/11
- Anxiety- and stress-related disorders	Treatment of patients which have the diagnose of anxiety- and stress related disorders	8/11
2. Skills training	Learning skills/activities for rehabilitation	
- Daily living skills	Training daily living skills, which are important for resocialization, for patients with a long closed treatment route.	5/11
- Social skills	Skills for interaction and communication with others	7/11
- Assertiveness skills	Skills to being able to stand up for your own rights in a calm and positive way.	9/11
- Emotional regulation	Coping skills to deal with emotions and adequately express and control them	5/11
3. Eliciting states	To bring patients in a certain mental state	
- Eliciting specific emotions	Evoking subjective emotional responses	2/11
- Relaxation	Being both psychically and mentally relaxed	7/11
- Motivation	The wish to perform activities	2/11
4. Creating insight	To create insight and understanding in own or others behaviour or illness	
- Insight in own behaviour (patients)	To create insight for the patients about their own behaviour	7/11
- Insight in disease (therapist, family, organisations)	To give other people, who are not familiar with the forensic treatment, insight in the disease of their patients or family	6/11
- Insight in current society	To give insight in the society anno 2017 for patients with a long closed treatment route.	2/11

*N= how many interviewee mentioned

3.4.1 Psychiatric disorder

This main code consists of aspects of improvement with regard to the assessment and/or treatment of psychiatric disorders by forensic patients, including sexual dysfunctions, anxiety and stress related disorders.

Paraphilia

Paraphilia means that persons have sexual behaviours or fantasies that deviate from the normal standard. When paraphilia results into problems or violation, it will be classified as a sexual psychiatric disorder (Goethals & Cosyns, 2014). Transfore treats patients with sexual disorders, including paedophilia and sexual activities with under-aged persons. Therapists indicated that the sexual interest from patients was hard to determine. In the current situation, therapists are using instruments and methods like verbal anamneses. However, verbal communication seems highly dependent of a patient's response. Participant 5 reported: *'Vaststellen of iemand seksueel actief is, nu werken we met zelfrapportage en dat maakt het lastig'* and participant 3 mentioned: *'Ik ben op zoek naar iets meetbaars als ze bijvoorbeeld kinderen zien, nu zeggen ze van: 'ja dat heb ik nu niet meer'. Maar moet ik dat dan zomaar geloven?* The existing assessment instrument (PPG) makes the sexual activity measurable, but has an ethical issue. The use of the current available visual stimulation materials is from real-life sampling. Furthermore, one of the therapists mentioned that the use of PPG techniques is not easy to use. Participant 5 mentioned: *'Het omdoen van dat ding vergt ook veel techniek, daar moet je echt wel gespecialiseerd in zijn'*. Therefore, the therapists are looking for an improved treatment or assessment instrument for patients with sexual disorders.

Anxiety- and stress- related disorders

Different diseases are covered by anxiety- and stress related disorders among which PTSS, phobia and obsessive related disorders are the most common ones (van Balkom, Gabriels, & van den Heuvel, 2015). Often these diseases are treated with exposure therapy. However, the results of the interviews showed that there is need for an instrument that treats patients step-by-step. This can be applied for anxiety disorders like agoraphobia. One participant mentioned that this therapy is difficult for patients who were not exposed to the real world in years. Providing a treatment where stimuli can be added in small steps in a safe environment through VR could be considered the solution. Participant 2 mentioned: *'Als ze dan oefenen met hun angsten en het wordt hun teveel dat ze er als het ware ook weer uit kunnen stappen'*. Participant 5 indicated that patients have to practise by themselves. Now only the therapists discuss the progress of the patient outside the treatment room before and after he performed an exercise. This makes it difficult to give feedback to the patient, because the therapist is not present during the exercise and thereby dependent on the patient's story. An example is a patient with PTSS, who is scared to travel by train and therefore limited in his or her social live and rehabilitation process. Participant 5 mentioned: *'Een patiënt durft door een trauma*

de trein niet meer in. Dit beperkt wel zijn vrijheid. Dan zou het fijn zijn als ik een middel had om dat te trainen. Ik kan hem niet meesleuren de trein in om te oefenen'. In conclusion, the current treatments for anxiety and stress-related disorders based on exposure therapy in the real world can be improved.

3.4.2 Skills training

The main code 'skills training' consist of skills with regard to both treatment and resocialization that are important for patients. Participants mentioned that improvements are possible with regard to the (re)learning of these skills.

Daily life skills

Daily life skills are activities like personally hygiene, housekeeping, shopping, financing skills and meal preparation (Stabel, 2013). These skills are important within rehabilitations. Therefore, training daily life skills is an important part of the rehabilitation of the forensic patient. Patients with a long, closed clinical treatment route do not have many freedoms before starting the treatment at Transfore. Additionally the current society is quickly changing, which means that patients have to learn different daily skills all over again like cooking, shopping, travelling by public transport and performing finances. The improving digital world complicates this process. Participant 2 mentioned: *'Iemand die al 10 jaar vast heeft gezeten die kent buiten helemaal niet meer en die kent dus ook niet de hele digitale wereld. Die gaat nog naar de bank en wil daar nog papieren invullen, terwijl dat helemaal niet meer bestaat'*. Clinical therapists mostly mention these treatment difficulties.

Social skills

Social skills are skills such as communication skills, presentation skills, listening to other people, building a network (Riggio, 1986) and in this specific context 'communication about the forensic setting'. Both clinical and outpatient respondents reported the practise and training of socials skills as a rather difficult process. One example explained that patients did have 'no break anymore' in certain situations. Participant 3 mentioned: *'Wat spreek je dan af met diegene, hoe vaak zien we elkaar? Ook dat gaat van kwaad tot erger, vanaf nu heb ik je gezien dus dan moet ik je elke dag zien'*. It is difficult to teach these patients the right behaviour in these specific situations. Now, they are using role-plays, but these are often not visually enough for the forensic patients. Further, it is difficult for patients to learn how to communicate about their forensic background, which can be very important during job applications. Particpant 6 mentioned it is difficult to practise: *'Hoe verkoop ik mezelf? Het*

woord 'delict' valt dan en dan schamen ze zich, ik probeer dat te oefenen in een rollenspel, maar dat moet soms wel 5 tot 6 keer'. Participant 8 mentioned that social skills must be trained in a group of patients, but the use of role-playing was limited applied: *'We merken dat mensen dat heel spannend vinden, of bang zijn om uitgelachen te worden'*. So, it is important to train social skills with the forensic patients, however it is difficult to practise since the right tools to copy the real world are not available.

Assertiveness skills

Assertiveness skills are skills to defend for your personal rights, wishes and needs (Macaden, 2005). Many forensic patients have to learn to be assertive, especially when it is about drugs- and alcohol use. Many patients are tempted to get in touch with addictive substances when they are trying to participate in the real world. Since the treatment takes place in the treatment room, it is difficult to train this with the patients. As soon as they leave their own safe environment the chance of recidivism is present, as was indicated by participant 5: *'Hij moet dan naar een dagactiviteitencentrum fietsen en dan kwam hij dealers tegen die gingen hem dan dingen laten zien en dan was hij direct verkocht'*. For therapists, it is difficult to deal with these incidents, because they are not present at those moments. Therapists can only influence and discuss these incidents during the treatment sessions (before and after incidents). Participant 2 mentioned: *'De behandelaren in de kliniek kunnen pas helpen als ze retour zijn, dan is het meer repareren wat al kapot gemaakt is'*. This illustrates there is need for an instrument in which this assertiveness skill can be practised and recidivism in the use of addictive substances can be prevented.

Emotional regulation

The patient's ability to deal effective with emotional situations is defined as emotional regulation (Rolston & Lloyd-Richardson, 2016). There are different strategies to manage difficult situations, however, many forensic patients have difficulty to control or express their emotions. Therefore, much attention is paid to aggression and stress regulation in the current therapies, which can be accomplished by for example role-plays between therapists and patients. However, from the interviews it became clear that role-plays are under used. The current treatment is often limited to verbal interaction between the therapists and patients including homework, where patients need to practise exercises in the real world. Participant 7 agreed this: *'Soms zijn de zaken wat abstract. Je bent dan in gesprek met een patiënt en vertelt wat ze moeten of kunnen doen. Maar je moet toch afwachten of ze dit ook echt gaan*

doen, achteraf wordt er vaak anders gereageerd'. Participant 5 confirmed this: *'Ik kan moeilijk zelf met hem uit gaan, maar als hij in de stad loopt waar misschien wel gure mensen rondlopen moet hij daar mee leren omgaan. Dat hij zichzelf kan reguleren van emoties, zodat hij niet constant onder spanning staat'*. Therefore patients do not have many opportunities to practise these kind of situations in which regulation of emotions plays a central role.

3.4.3 Eliciting states

For some treatments, it is important to bring patients in a certain mental state. This with the goal to make the treatment more effective.

Eliciting specific emotions

Eliciting specific emotions mean to evoke subjective emotions by patients (Rolston & Lloyd-Richardson, 2016). For some patients it is difficult to connect with their emotions, such as happiness, fear, anger and sadness, which result in conflicting situations during treatment. According to participant 1, eye movement desensitization and reprocessing (EMDR) cannot be applied to all patients. Especially patients that do not have certain sense of emotions cannot participate in this treatment. Participant 2 suggested that the level of attention to submerging unattainable emotions must be further elaborated: *'Dat er een beperking zit in je emoties of impulsen, en dat dat leidt tot delictgedrag. Ik denk dat wij meer aandacht moeten hebben voor de onderliggende laag'*. The chance of a successful treatment may depend on the fact if the patient is able to connect with their emotions.

Relaxation

Relaxation means to establish a state of relaxation and to be in balance (Appelo, 1999). Many patients are easily stressed, which has a negative effect on the treatment. Therefore, it is important to reduce the stress level of patients during treatments. In the current treatments, many breathing- and relaxation exercises are used. However, these are not considered to always be effective for certain patients. Participant 10 mentioned: *'Ik heb ademhalingsoefeningen geleerd, in het begin dacht ik echt van: dat zal allemaal wel. Nu helpt het wel, maar ik weet dat veel andere patiënten dit niet zo ervaren'*. Participant 2 confirmed that such exercises do not have the desired effect, because patients are rather medication oriented. Participant 6 indicated that treatments or activities can also be more effective when patients are in a more relaxed condition: *'Waar ik vaak tegenaan loop, dat ze het heel vaak bij een ontspannend toestand wel kunnen, maar als de druk wat oploopt ze snel doorschieten naar angst'*. However, it is difficult to create a relaxing condition, since patients are not

motivated enough to perform breathing and relaxation exercises. In patients with depressive feelings, therapists would like to have more tools to show the 'positive side' of the real world. Therefore, it is difficult to get the forensic patient in a relaxed condition for an effective treatment.

Motivation

Motivation means the wish to perform activities (van Binsbergen, 2003). In psychiatry, patients need to be motivated to follow their treatment. However, the compulsive nature of most forensic treatments is commonly seen as the cause of less motivated patients, resulting in ineffective treatment or rehabilitation routes. It costs a lot of effort, patience and persuasiveness to keep patients motivated during the treatment process. The specific difficulty with forensic patients is that, due to the long treatment process, the clinical environment becomes their only safe environment. Participant 3 mentioned: *'Om de patiënten weer te motiveren tot datgene wat normaal is in de maatschappij, dat gaat dus van ADL tot en met werken, tot en met naar de stad gaan, het leven weer op poten krijgen. Dat is altijd zo moeilijk voor iedereen hier'*. Thus, it is difficult to get patients motivated both for their treatment and rehabilitation.

3.4.4 Creating insight

This last main code contains examples of improvement in which the realisation of insight plays an important role within the treatment**.** Insight means the understanding how something works (Robben, De Hert, & Peuskens, 2002).

Insight in own behavior (patients)

Insight in own behavior or disease means the realisation how other people think about you. In addition, the realisation or the insight that you are ill and need to be treated (Robben et al., 2002). Creating insight in a patient's own behaviour or diseases could make a treatment more effective. For example, giving insight in the patients eating pattern or in their own awareness of diseases. One of the respondents tried to provide insight to show how another patient experienced the patients' behaviour. This was indicated to be rather difficult, because no visualisation could be produced. Regardless if it is deemed to work with all patients, visual presentations are creating more direct understanding. Participant 6 mentioned: *'Mensen met minder snapvermogen, waarbij verbale spiegelingen minder aankomen. Een live situatie zou meer impact kunnen hebben, wat hun gedrag doet met andere mensen'* Participant 10 confirmed that creating insight to patients would be beneficial for more effective treatments:

'Het lijkt me erg interessant om mezelf te zien zeg maar, voor mij zal dat heel leerzaam zijn. Dat ik dat in mijn opneem en denk: oei…dat is wel heel confronterend'. Creating insight in patients could result in more effective treatments, although this is very difficult at the moment since verbal information is very hard to understand for the forensic patient.

Insight in disease (therapists, family, organizations)

Insight in disease by others, like therapists, family or other organizations, is the understanding how a disease or the feelings of the patients work. It is very important to give third parties insight in the behaviour or diseases of the patients. However, at the moment this information is often not shared with them. Therapists and patients in the outpatient setting suggested that family support should be more involved during treatment sessions. Participant 2 reported: *'We hebben wel aandacht voor familiebegeleiding, maar dat zou nog wel beter kunnen. Daar kan meer winst behaald worden, want het is juist zo belangrijk, zij ondersteunen de patiënt*. Furthermore, both patients and therapists indicated that providing insight to therapists, family and other organizations would be a supplementation to the knowledge on patients' diseases.

Insight in current society

Showing how the current society looks like is an important part within the treatment of forensic patients. Many forensic patients did not participate in society for a long time and therefore have no knowledge about the current changing society. At the time when more freedom is given to them, they sometimes have no realistic goals. Insight into the new situations in society is one of the difficult subjects in the clinical environment. Clinical therapists indicated that patients have difficulty to adopt the current society when they have not been exposed to it for a long time. Respondents reported lack of self-confidence as the main reason for this difficult learning process. Participant 3 mentioned: *'Mensen die graag een rijbewijs willen halen, wat kom ik dan tegen op straat? Kan ik dat aan? Dat snelle verkeer?'* However, the lack of self-confidence is caused by the lack of exposure.

3.4.5 Negative effects of VR

A number of participants came up with some important issues with regard to the use of VR. Two therapists indicated that the use of stimulus material with sex offenders could be disputed. Therapists 8 indicated: *'Patiënten vinden het vaak vervelend om op zo'n manier geconfronteerd te worden, ze extra te triggeren. Zodra ze doorhebben dat wij ze willen testen, dat is echt contra bij veel patiënten. Als je het hebt over motiveren… en mee willen doen'*. So

if the patient is triggered in their delict behaviour on purpose, it could end up negative and it works demotivated.

A number of therapists are afraid that patients will misuse the VR-environment and will use it for pleasure. Participant 2 mentioned: *'Dat een patiënt ziet dat iemand in elkaar geslagen wordt, met achterliggende idee dat zij daar een ongenoegen van krijgen. Alleen zijn er ook enkele patiënten bij die ernaar kijken en er juist van genieten'*.

Finally, two therapists reported their doubts about VR in the home setting. Participant 7 mentioned: '*VR bril mee naar huis geven zonder behandelaar zou ik niet doen, het gaat toch vaak over moeilijke dingen. Dan heb je geen zicht op reacties, hoe heftig het is, of wat ze ermee doen, hoe ze er mee omgaan. Het kan echt wel zijn dat mensen dan van slag zijn als ze dat ervaren'*.

4. Discussion

In the present study, the goal was to perform a thorough contextual inquiry to collect information on if and where in the current treatment VR will be useful within Transfore. Elements of improvements in the current treatment were identified. The research question was*: 'Where in the current treatments of Transfore could Virtual Reality have an added value?'* The results of this study showed different treatment opportunities where VR could have added value. There is a need for a personalised, immersive treatment, where treatment takes place in the treatment room and the patient can be treated in the secure environment. In this section, the main findings of the study will be discussed.

Based on the literature study (sub question 1) the central key-stakeholder within the forensic mental healthcare pointed out to be the patient, while the project team strongly indicated both patient and therapist are the key-stakeholders (subquestion 2). The used CeHRes Roadmap showed that a more successful development process will be realised when all important stakeholders are actively involved directly from the start (van Gemert-Pijnen et al., 2013a). This ensures continuously focus on the wishes and needs of the stakeholder throughout the project. In addition, the eHealth monitor (2016) also indicated that the use of eHealth by healthcare employees is difficult. Therapists still show resistance to apply eHealth in clinical practise. Besides that they are not always aware of the opportunities of eHealth, they also have the feeling that eHealth applications do not always fit with their own way of working (Krijgsman et al., 2016). This finding emphasises the importance to involve therapists into the development of eHealth services, to take into account their wishes and needs. Especially only a limited number of effect studies on VR-treatment in the forensic setting are conducted, where co-creation with patients and therapists should be one of the most important steps to take into account in future developments. Developing technology for the forensic healthcare with all end-users means not only patient involvement, but also the involvement of therapist because the VR-technology must align the needs and wishes of the end-user.

Another important finding from the interviews (sub question 4) was the need for a personalised treatment for the forensic patient. A 'one-size-fits-all' approach does not work for this forensic target group (Birgden, 2004), who are often characterised by a complex and instable character. In addition, forensic patient have limited insight into their own health status and are less motivated to follow a treatment (Bierbooms et al., 2015). A comparison between individual patients is difficult, because of patients' instable and complex character. Therefore, individualised treatment programs are very important. This finding was supported

by the literature, where the need for a personalised treatment for forensic patients was also reported. The study of From Berger et al. (2014) described that VR could be one of the solutions to realise this personalisation in tailored treatments. Tailoring is defined by Kreuter as: *'Tailoring is determining the most effective strategy to meet the person's need based on gathering and assessing personal data related to health outcomes or several determinants'* (Kreuter et al, 2010). Tailoring will provide involvement of patients and will have a positive impact on adherence (Kreuter, Farrell, Olevitch, & Brennan, 2013). This will further enhance the treatment motivation and triggers stimuli for individual patients (Fromberger et al., 2014; Gorini, Gaggioli, Vigna, & Riva, 2008). A personalised VR-treatment ensures that the forensic patient can practise on his own problem and issues and can learn new acceptable behaviour. Therefore, the advantage of VR lies in the modularity: use smaller sets of standardised parts of the VR-treatment and apply just the required parts for each individual patient.

An individualised treatment is important for the forensic setting, but does need a specific protocol for VR-treatments. Therefore, a basic VR-protocol is needed in which the therapist can make adjustments to the individual needs of the forensic patients, to make the treatment more personalised. However, the results of the desk research and interviews (sub question 3 & 4) showed that existing protocols were not always used in the way the protocol usage is formulated. Participants of the interviews mentioned that protocols could be used as a useful tool, but that they are not always leading in forensic treatments. The forensic patients need individualised care, where the current protocols in current treatment programs are not suitable. Inconsistent use of current protocols can be a barrier for the development and implementation of the VR-technology within Transfore. This is in correspondence with a study of Leentjes & Burger, where the adherence of therapists to use protocols in the psychiatry is unpromising (Leentjens & Burgers, 2008). For the development of a new VR-treatment, Transfore must develop a VR-protocol or guideline. Therefore, it is important to know that not all therapist are adherent to the use of existing protocols. Bekkema advises to develop the protocols together with the end-users to increase the adherence (Bekkema, 2010). Important is to develop a basic protocol. Possibilities for deviation and adjustment the VR-protocol are necessary to deliver quality of care to each individual forensic patient.

The results of the interviews also pointed out that the need to treatment for resocialization after long clinical hospitalization is high. This has high impact on the forensic healthcare, because most of the patients are participating in mandatory and closed treatment settings. This means that many patients have not participated in society for a long time.

Besides that, results of the literate study and interviews showed the importance of creating a safe intermediate step (Fromberger et al., 2014). An immersiveness VR-treatment offers the opportunity to create realistic exercise- and experience situations, which cannot be achieved in the regular treatment (North & North, 2016). This immersive nature provides a real-life experience, which is emotionally better than regular (non virtual) imaginable exposure (Riva, 2009). The experience realised by VR is equal (or close enough) to the real world, but the effects will only affect the treatment room and not the society (Fromberger et al., 2014; Gorini et al., 2008). This is also a good opportunity to treat patients who stay in a setting with a higher security level. In addition, VR offers the possibility that both patient and therapist are present in the simulated environment, which offers the possibility to adjust and reflect directly on certain situations and patient behaviours (Fromberger et al., 2014). Therapists indicated that reflection in the current treatment situation (without VR) could only be performed after the exposure, which is focussed on verbal discussion and feedback. Therefore, the therapist is not participating when a patient is permitted to go outside the clinic for the first time. Verbal reflection in general is hard to understand for forensic patients, since they experience difficulties with verbal communication (Wijk et al., 2009). An immersive treatment environment creates a realistic and safe treatment, especially where forensic patients facing resocialization from the closed setting to the society.

Finally, the ethical aspects of applying a VR-technology to forensic treatments must be taken into account. The interviews showed that some participants have their doubts about the assessment and treatment of sexual offenders with a VR instrument. If the patient is triggered in their offensive behaviour on purpose, it could end up negative and this will demotivate patients. This demotivation is not desirable, because forensic patients show limited treatment motivation in general (Bierbooms et al., 2015). Furthermore, the literature study showed that forensic patients could misuse the VR-environment (Benbouriche et al., 2014; Fromberger et al., 2014). They could use the environment as pleasure instead of treatment. Some participants confirmed this finding during the interviews. On the other hand, the literature showed that the use of virtual characters by using VR for the assessment of sex offenders is more ethical than the use of the current stimulus material, like real videos (Renaud et al., 2014). This means that for the development of a VR-treatment, attention must be paid to the ethical aspects especially for a VR-treatment of sexual offenders.

4.1 Strengths & limitations

The development process, in which the CeHRes Roadmap centralises participatory development, is one of the strengths of the present research. From the start of the development process, all stakeholders had to be identified for their involvement towards the VR-technology. The end-users, consisting of both therapists and patients, were identified as the key-stakeholders and where interviewed in the current project. Unfortunately, for the interviews less patients (n=3) than therapists (n=8) were included. The recruitment of suitable patients was very difficult. Therapists were careful in asking patients for participation. In addition, one of the included patients did not show up. Therefore, the input of patients was less than originally planned. In this study, only the current key-stakeholders were interviewed. Besides therapists and patients, no other stakeholders are currently involved. Limburg reported that during each phase of development, (other) stakeholders can be more or less important (Limburg, 2016). Therefore, the stakeholders need to be evaluated during every phase of the roadmap during this project to be sure that all key-stakeholders are still involved.

A limitation of this research is the selection procedure of the participants. Therapists were asked to participate to the research by the team managers. This was done through qualitative judgement, where no in- or exclusion criteria were set up. This may have resulted in possible biased participation selections, where therapists were selected based on their enthusiastic view with regard to eHealth.

In this study, a variation of scenario-based methods was used during the interviews. This can be seen as a strength of the present study, because this method seemed useful in the early phases of a development process, where the identification of the needs and wishes of the stakeholders plays a central role (Carroll, 2000; Tideman, 2008). However, also some comments are reported about this method, because of the difficulty for participants to create their own scenario during the interviews. The regular method described in literature is scenario-based with pre-planned scenarios, on which the participant is asked to give their opinion (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 2004). The interview used in this study consisted of two parts. In the first part, the participant was asked to create a scenario about treatment situations that can be improved, without giving any example. Since no examples were given, the used scenario-based method could have been more abstract compared with the regular method. Probably, this was the reason that some of the answers from the participants were not a scenario on treatment improvements. Sometimes answers and improvements were mentioned about the work process instead of the treatments. Two out of three patients did not mention any improvements in the current treatments. The current

method seemed easier for participants who indicated that they prepared themselves for the interview, because their answers more looked like a scenario for improvement of the current treatments. In addition, this method seemed more difficult for patients than therapists, although only three patients participated to the interviews. In the second part of the interview, the participants were given some examples of VR situations with regard to the forensic setting. In this part, participants were better able to create complete scenarios, because certain guidance was given. Especially the therapists and patients, who had difficulty in the first part, now answered more extensive and completely scenario-based. Finally, it is very important that for using scenario-based interviews the researcher needs to be prepared very thoroughly in the theory behind it. The performance of pilot interviews can be of great value to train the skills of the researcher, which applies especially regarding the querying so that an entire scenario is formed and the answers do not end too soon.

Another limitation in this study was the analysis of the interviews. The first three transcripts were analysed by both researcher and co-researcher, while the other interviews were only analysed by the researcher. The influence of the researcher could have been minimised when all interviews were analysed and discussed by two researchers, to reach interrater reliability (Boeije, 2014).

The number of interviews with therapists contributed to data saturation. After all interviews were performed, no new sub codes were necessary during analysis. One remark is that both the interviews and analysis took place at the same time. Therefore, the researcher could have influenced the interview questions by coding during the interviews (Boeije, 2014). After analysing the first interviews, already some initial codes were appointed. There is a chance that the interviewer unintentionally seduced the participant to say something about the existing codes.

4.2 Recommendations

The results of this study show that there is a need for a personalised VR-treatment with an immersive character, where therapists can adjust the VR-treatment to the individual needs of the forensic patients. Therefore, the first recommendation is to develop a basic VR-protocol, with possibilities for deviation, adjustment or change, to realise that personalised treatment.

However, the therapists were not adherent to the use of the current protocols. For this reason the second recommendation is to develop a basic VR-protocol together with the therapists. To increase the adherence and acceptation of the new VR-protocol, co-creation with the stakeholders is needed. It is recommended to involve the stakeholders at the

beginning of the development process of the VR-protocol and to perform a pilot testing with the VR-protocols.

This study proved that it is very difficult to recruit patients for participation to interviews. In the study proposal, the plan was to include as many patients as therapists. Therefore, the third recommendation is to have more attention to include patients in the following phases of the project, because they are together with the therapists the end-users. Another crucial aspect is to reassess the influence of other stakeholders in further phases of the roadmap and the project. It could be that other stakeholders, like financiers or developers, are more important in the next phases of the project. Accordingly, it must be ensured that during every phase of the project the right stakeholders are involved.

The fourth recommendation arises from the used scenario-based method in this study. For future research it is recommended to use this method with a better preparation assignment, because it seemed that this method was more useful for participants who prepared themselves. In addition, it seemed that this method was less useful for patients. Perhaps they have limited imaginations, were mentally disordered or were afraid to mention treatment improvements. For future research it is important to include participants who are capable to do a preparation assignment, when using this method.

A final recommendation is to keep the ethical aspects in mind. This study shows that not all therapists had confidence in a VR-treatment for sexual offenders, because patients with sexual disorders could misuse the VR-treatment. The literature study confirmed this. In the case a VR-treatment will be developed for this population, therapists definitely need to be asked if they are able to work with this VR-treatment.

4.3 Conclusion

The results of this study showed different treatment opportunities where VR could have added value. According to both therapists and patients, there is need for a personalised treatment, where therapists can adjust the VR-treatment to the individual needs of the forensic patient. The forensic patient is characterised by a complex character and less treatment motivation, so the treatment must connect with the characteristics of the patients. This includes the development of a basic VR-protocol, with possibilities for deviation and adjustment of the protocol to ensure the quality of care to each individual forensic patient. In addition, there is a need for a realistic and immersive treatment, for which VR could be a good solution. Within the treatment room, simulation of the real environment is deemed more effective with VR-technology, because VR-environments seem to be equally realistic than the real world. This

even enhances the forensic requirement for a secured environment, without endangering society.

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1. Informatiebrief participanten

Beste heer/mevrouw,

Inleiding

Mijn naam is Kirby Weerink, masterstudent gezondheidswetenschappen en lid van de projectgroep 'VooRuit met VR'. U bent gevraagd deel te nemen aan mijn onderzoek, wat onderdeel is van het project 'VooRuit met VR'. De doelstelling is om een Virtual Reality-toepassing te ontwikkelen voor Transfore. Dit doen we niet achter ons bureau maar samen met patiënten en behandelaars. Dit onderzoek levert een bijdrage aan de eerste fase van dit project.

Voordat u de beslissing neemt om wel of niet deel te nemen aan dit onderzoek vraag ik u onderstaande informatie goed door te lezen. Ik hoop van harte dat u deel wilt nemen.

Doelstelling onderzoek

Virtual Reality (VR)- toepassingen worden in toenemende mate ingezet in de GGZ en blijken ook effectief te zijn. Ondanks alle mogelijke voordelen wordt er nog weinig gebruik gemaakt van VR in de forensische GGZ. Daarom willen we in dit project een VR toepassing ontwikkelen op een manier die aandacht besteed aan de wensen en behoeften van patiënten en behandelaren zodat we iets ontwikkelen waar ook daadwerkelijk vraag naar is. Het doel van mijn onderzoek is om te kijken naar punten in de huidige behandeling waar Virtual Reality een toegevoegde waarde kan hebben volgens de patiënten en behandelaren. De vraag is dus waar VR de behandeling nog beter kan maken.

Wat betekent deelname voor u?

Om op bovengenoemde vragen een antwoord te krijgen wil ik graag gebruik maken van uw ervaring en expertise door middel van een interview. Het gesprek zal maximaal 60 minuten duren en zal plaatsvinden binnen een ruimte van een van de locaties van Transfore, op basis van wat u het beste uitkomt. Het is de bedoeling dat u tijdens het interview scenario's/verhalen creëert van behandelsituaties om een beeld te krijgen van de huidige behandelingen. In het introductiefilmpje die u bij deze brief ontvangt wordt dit nader uitgelegd.

Het interview zal als geluidsopname worden opgenomen en voorafgaand zal ik u vragen om het toestemmingsformulier te ondertekenen. U bent in aller tijde in staat om u terug te trekken uit dit onderzoek zonder daarvoor een reden op te geven. Ook tijdens het interview kan u aangeven te willen stoppen. Het onderzoek is goedgekeurd door de Universiteit van Twente en de Dimence Groep.

Na het interview wordt de geluidsopname volledig uitgetypt. Mocht u deze uitwerking willen ontvangen is dat mogelijk. Indien u op- of aanmerkingen hebt kunt u ten aller tijde contact opnemen met de onderzoeker. De resultaten van het interview zullen anoniem verwerkt worden.

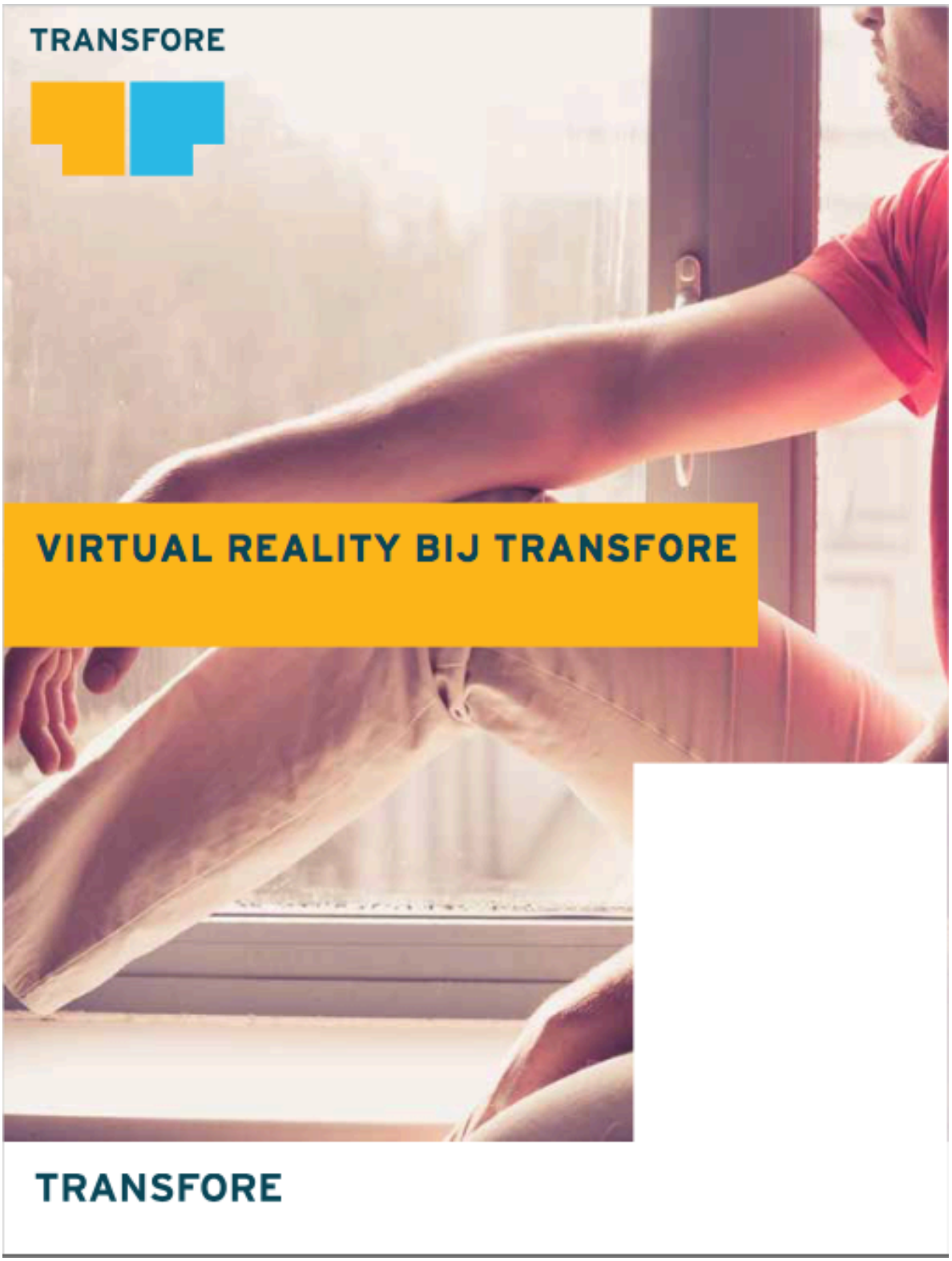
Resultaten onderzoek

Mocht u de resultaten, die worden verwerkt in een scriptie, willen ontvangen is dat mogelijk.

Mocht u nog vragen hebben over het onderzoek mag u altijd contact opnemen door middel van e-mail of telefonisch.

Met vriendelijke groet,
Kirby Weerink

2. Informatiefolder interviews



WAT WILLEN WIJ WETEN?

- Waarvoor zou een virtual reality (VR) toepassing ontwikkeld kunnen worden?
- Waar liggen uw wensen en behoeftes met betrekking tot verbetering van de behandeling?
- Wat zou er beter kunnen in het huidige behandelaanbod?

WAT VRAGEN WE VAN JULLIE?

- Denk voor het interview na over waar de huidige zorg binnen Transfore verbeterd kan worden.
- Tijdens het interview vragen wij u deze verbeterpunten te illustreren door middel van een (fictief) voorbeeld.

PRAKTISCH

- Alle informatie wordt anoniem verwerkt
- Op een locatie van Transfore
- Maximaal 60 minuten

NICO BOLKESTEINLAAN 1
7416 SE DEVENTER
0570 639 891
INFO@TRANSFORE.NL
WWW.TRANSFORE.NL

FORE

3. Informed Consent

Toestemmingsverklaringsformulier

Titel van het onderzoek: The use of VR as a (part of a) treatment within the stichting Transfore

Verantwoordelijk onderzoeker: Hanneke Kip, Nienke Beerlage - de Jong

Ik bevestig dat ik voldoende ben geïnformeerd over dit onderzoek, en ik begrijp de informatie. Ik heb voldoende tijd gehad om over mijn deelname na te denken en ben in de gelegenheid geweest om vragen te stellen. Deze vragen zijn naar tevredenheid beantwoord.

Ik weet dat mijn deelname geheel vrijwillig is en dat ik mijn toestemming op ieder moment kan intrekken zonder dat ik daarvoor een reden hoef op te geven.

Ik geef toestemming om de gegevens te verwerken voor de doeleinden zoals beschreven in de informatiebrief en dat het interview opgenomen wordt op een voice-recorder.

Ik geef toestemming voor deelname aan bovengenoemd onderzoek.

Naam participant:	Handtekening:	Datum:
Naam onderzoeker:	Handtekening:	Datum:

4. Interviewschema behandelaren

Start interview

Ten eerste dank ik u dat u wilt deelnemen aan mijn onderzoek. Dit interview zal ongeveer maximaal 60 minuten gaan duren en wordt via een geluidsrecorder opgenomen. Heeft u de informatiebrief en het introductiefilmpje gezien en heeft u daar nog vragen over? Ik zal het doel nog mondeling toelichten.

Introductie + doel

Virtual Reality (VR) wordt steeds meer toegepast in de reguliere GGZ, met succes. Er is echter nog weinig onderzoek gedaan naar VR in de Forensische GGZ. Transfore is een onderzoek gestart om VR te ontwikkelen en te implementeren binnen Transfore. We willen bij Transfore niet zomaar iets gaan inzetten zonder dat we dat goed kunnen onderbouwen. Nu ligt er dus de vraag: waar willen we VR voor ontwikkelen? Het moet iets toevoegen aan de huidige situatie. Daarvoor hebben wij jullie nodig, we ontwikkelen iets voor behandelaren en patiënten en willen jullie daarom zo vroeg mogelijk bij dit project betrekken. Anders is er de kans dat er iets ontwikkeld gaat worden waar jullie helemaal niet mee kunnen of willen werken. Het doel is dus om iets te ontwikkelen samen met de eindgebruikers.

Het interview zal uit 2 delen bestaan: Het eerste deel gaat er over om de huidige zorg in kaart te brengen, dus ik wil met u kijken hoe het huidige behandelaanbod en/of behandelingen er uit zien. Dit kunnen aspecten zijn die al goed gaan maar nog beter kunnen, maar ook dingen die vaak niet lekker lopen en vatbaar zijn voor verbetering. Het doel van dit interview is dat ik als onderzoeker een goed beeld heb hoe die verbeterpunten eruit zouden kunnen zien. Ik wil u vragen deze verbeterpunten te illustreren met voorbeelden/verhalen over situaties vanuit de praktijk. Het is de bedoeling dat u dus een behandelsituatie uit de praktijk beschrijft wat minder goed loopt of wat beter kan. Het gaat wel om behandelingen (de inhoud) en niet om praktische of organisatorische zaken.

Bij het tweede deel zullen we ingaan op situaties waar VR-toepassingen zouden kunnen helpen, zonder in te gaan hoe de VR-toepassingen eruit zou moeten zien. Ik zal u drie categorieën voorleggen, deze categorieën bevatten voorbeelden van VR-toepassingen die tot stand gekomen zijn door behandelaren en patiënten tijdens de inspiratiesessies in het najaar van 2016. Deze inspiratiesessies zijn gehouden door projectleden van het onderzoeksteam 'VooRuit met VR'. Het is de bedoeling dat u bij elke categorie wederom een voorbeeld van een behandelsituatie geeft.

Tekenen toestemmingsformulier

Heeft u op dit moment nog vragen? Dan lopen we nu het toestemmingsformulier door en dan kan na ondertekening het interview beginnen.

Introductie vragen

Onderzoeker noteert geslacht van participant.

- Wat is uw geboortejaar?
- Wat is uw functie binnen Transfore?
- Hoe lang bent u al werkzaam binnen Transfore en/of met de doelgroep FGGZ?

Deel 1.		
Topic	**Sub topics**	**Vragen**
Huidige behandeling	- Doelgroep - Groeps-/individueel - Protocollen/zorgprogramma - Sterke punten - Minder sterke punten	- Wat is uw expertise/functie? Welke doelgroepen ziet u? Welke type behandelingen? Maakt u gebruik van protocollen? **Deel 2.** - Ik wil dus nu met u opzoek naar punten in de behandelingen die goed gaan maar nog beter kunnen, of vatbaar zijn voor verbetering. Dit kan vanuit uw eigen ervaring maar u mag ook voorbeelden noemen van collega's. Zou u een voorbeeld kunnen geven van een

		punt/aspect/element van de behandeling die beter zou kunnen? Zou u daar een concreet voorbeeld bij kunnen geven? Dit mag fictief zijn. Kunt u aangeven waar u of uw collega's eventueel nog in ondersteund wilt worden t.a.v. de huidige behandelingen? Kun u daar voorbeelden van noemen? → Doorvragen: wie, wat, hoe, waarom?

Deel 3. *Interviewer rijkt de drie categorieën op papier aan.*
Introductie: Vorig najaar zijn er inspiratiesessies georganiseerd voor behandelaren en patiënten, daar is gevraagd naar hun ideeën over de inzet van VR. Op basis van deze sessies hebben we drie categorieën gemaakt waarin al deze ideeën passen. Ik wil nu aan u vragen om deze categorieën rustig door te nemen. Per categorie zou ik u graag weer een scenario laten creëren.

Het is niet de bedoeling dat ze met VR-ideeën komen, maar waar de VR-toepassing in het behandelaanbod zou passen.

Scenario's	Categorieën

	- **Vaardigheden**
	  - Generieke; sociaal, assertief, ontspanning
	  - Gerelateerd aan delictgedrag; 'nee' zeggen, coping vaardigheden
	- **Inzicht**
	  - Perspectiefwisseling
	  - Triggers bij zeden – zien van kinderen op internet
	  - Hoe reageert iemand op aanraking drugs
	- **Behandeling van stoornis**
	  - Angst; fobie
	  - Psychose; hoe ziet een beginnende psychose eruit
	  - Depressie; ontspanning
	  - Autisme; omgang met anderen

Vaardigheden	Veel deelnemers gaven aan dat VR gebruikt kan worden om een breed scala aan vaardigheden te trainen. Ziet u daar mogelijkheden voor binnen de behandeling? Zo ja, kan u een voorbeeld noemen van een situatie waarin zo'n toepassing van VR iets toe zou kunnen voegen? Wilt u proberen de situatie zo specifiek mogelijk te beschrijven.
Inzicht	Er waren daarnaast ideeën om meer inzicht te creëren bij de patiënten, door bijvoorbeeld de patiënten naar hun eigen gedrag te laten kijken door middel van VR. Een ander idee was om juist naasten van patiënten inzicht te geven in de stoornis van de patiënt. Ziet u hier mogelijkheden in?
Behandeling van stoornis	Tot slot waren er ideeën om VR in te zetten voor de behandeling van stoornissen zoals, angst, psychoses, depressie of mensen met autisme. Ziet u hier mogelijkheden in? En kan u dan een voorbeeld geven van een behandelsituatie waarin u dat zou kunnen gebruiken.
Afsluiting	
We hebben het nu gehad over waar behandelaren ondersteund zouden moeten en kunnen worden door middel van VR. Als afsluitende vraag: Heeft u zelf nog leuke ideeën omtrent VR in de FGGZ?	

Afsluiting
Participant wordt bedankt en er is wederom gelegenheid om eventuele vragen te stellen. De onderzoeker vraagt of de participant nogmaals benaderd mag worden voor vervolgonderzoek en of ze het transcript en resultaten van het onderzoek (scriptie) willen ontvangen. Daarnaast krijgen de participanten een kleinigheidje.

5. Interviewschema patiënten

Start interview

Ten eerste dank ik u dat u wilt deelnemen aan mijn onderzoek. Dit interview zal ongeveer maximaal 60 minuten gaan duren en wordt via een geluidsrecorder opgenomen. Heeft u de informatiebrief en het introductiefilmpje gezien en heeft u daar nog vragen over? Ik zal het doel nog mondeling toelichten.

Introductie + doel

Virtual Reality (VR) wordt steeds meer succesvol toegepast in de reguliere geestelijke gezondheidszorg. Er is alleen nog weinig onderzoek gedaan naar VR in de forensische zorg. Transfore is een onderzoek gestart om VR te ontwikkelen en te in te zetten binnen Transfore. We willen bij Transfore niet zomaar iets gaan inzetten zonder dat we dat goed kunnen onderbouwen. Nu ligt er dus de vraag: waar willen we VR voor ontwikkelen? Het moet iets toevoegen aan de huidige situatie. Daarvoor hebben wij jullie nodig, we ontwikkelen iets voor behandelaren en patiënten en willen jullie daarom zo vroeg mogelijk bij dit project betrekken. Anders is er de kans dat er iets ontwikkeld gaat worden waar jullie helemaal niet mee kunnen of willen werken.

Het interview zal uit 2 delen bestaan: Het eerste deel gaat er over om de huidige zorg in kaart te brengen. Ik wil tijdens dit interview samen met u zoeken naar punten in behandelingen die nog beter kunnen. Het is niet de bedoeling dat u over uw eigen behandeling gaat vertellen, omdat we in dit onderzoek opzoek zijn naar de geheel forensische psychiatrie en niet individuele situaties. Het doel van dit interview is dat ik als onderzoeker een goed beeld heb hoe die verbeterpunten eruit zouden kunnen zien. Mijn vraag aan u is dus of u situaties kan schetsen over punten in behandelingen die beter zouden kunnen.

Bij het tweede deel zullen we ingaan op situaties waar VR-toepassingen zouden kunnen helpen, zonder in te gaan hoe de VR-toepassingen eruit zou moeten zien. Ik zal u drie categorieën voorleggen, deze categorieën bevatten voorbeelden van VR-toepassingen die vorig jaar tot stand zijn gekomen door behandelaren en patiënten. Het is de bedoeling dat u bij elke categorie wederom een voorbeeld van een behandelsituatie geeft.

Tekenen toestemmingsformulier

Heeft u op dit moment nog vragen? Dan lopen we nu het toestemmingsformulier door en dan kan na ondertekening het interview beginnen.

Introductie vragen

Onderzoeker noteert geslacht van participant.

- Wat is uw geboortejaar?
- Hoe lang bent u al in behandeling?

Deel 1.		
Topic	**Sub topics**	**Vragen**
Huidige behandeling	- Groeps-/individueel - Sterke punten - Minder sterke punten	1. Ik wil dus nu met u opzoek naar punten in de behandelingen die goed gaan maar nog beter kunnen. Het is dan de bedoeling dat u middels een verhaal verteld hoe zo'n situatie eruit ziet. Zou u een voorbeeld kunnen geven van een punt/aspect/element van een behandeling die beter zou kunnen? Zou u daar een concreet voorbeeld bij kunnen geven? Dit mag fictief zijn.
Deel 2. *Interviewer rijkt de drie categorieën op papier aan.* **Introductie:** Vorig najaar zijn er inspiratiesessies georganiseerd voor behandelaren en patiënten, daar is gevraagd naar hun ideeën over de inzet van VR. Op basis van deze sessies hebben we drie categorieën gemaakt waarin al deze ideeën passen. Ik wil nu aan u vragen om deze categorieën rustig door te nemen. Per categorie zou ik graag weer u een scenario laten creëren.		

Het is niet de bedoeling dat ze met VR-ideeën komen, maar waar de VR-toepassing in het behandelaanbod zou passen.	
Scenario's	Categorieën - **Vaardigheden** - Ontspanning, dagelijkse handelingen aanleren, sociale vaardigheden - Gerelateerd aan delictgedrag; 'nee' zeggen, coping vaardigheden - **Inzicht** - Perspectiefwisseling - Reacties bij zeden – zien van kinderen op internet - Hoe reageert iemand op aanraking drugs - **Behandeling van stoornis** - Angst; fobie - Psychose; hoe ziet een beginnende psychose eruit - Depressie; ontspanning - Autisme; omgang met anderen
Vaardigheden	Veel deelnemers gaven aan dat VR gebruikt kan worden om een breed scala aan vaardigheden te trainen. Ziet u daar mogelijkheden voor binnen de behandeling? Zo ja, kan u een voorbeeld noemen van een situatie waarin zo'n toepassing van VR iets toe zou kunnen voegen? Wilt u proberen de situatie zo specifiek mogelijk te beschrijven.
Inzicht	Er waren daarnaast ideeën om meer inzicht te creëren bij de patiënten, door bijvoorbeeld de patiënten naar hun eigen gedrag te laten kijken door middel van VR. Een ander idee was om juist naasten van patiënten inzicht te geven in de stoornis van de patiënt. Ziet u hier mogelijkheden in?
Behandeling van stoornis	Tot slot waren er ideeën om VR in te zetten voor de behandeling van stoornissen zoals, angst, psychoses, depressie of mensen met autisme. Ziet u hier mogelijkheden in? En kan u dan een voorbeeld geven van een behandelsituatie waarin u dat zou kunnen gebruiken.
Afsluiting	
We hebben nu gehad over waar behandelaren ondersteund zouden moeten en kunnen worden door middel van VR. Als afsluitende vraag: Heeft u zelf nog leuke ideeën omtrent VR in de FGGZ?	

Afsluiting
Participant wordt bedankt en er is wederom gelegenheid om eventuele vragen te stellen. De onderzoeker vraagt of de participant nogmaals benaderd mag worden voor vervolgonderzoek en of ze het transcript en resultaten van het onderzoek (scriptie) willen ontvangen. Daarnaast krijgen de participanten een kleinigheidje.