TRAIVR
Training of Refugee Offenders by Virtual Reality

IO6. User Manual for the Probation Officers

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I. Introduction

The TRAIVR (Training of Refugee Offenders by Virtual Reality) project is co-financed by the European Commission under the "ERASMUS + KA2 - Cooperation for innovation and the exchange of good practices."The project is a collaborative initiative that brings together a dynamic partnership comprising both public and private institutions actively engaged in the criminal justice sector, as well as stakeholders from academia and the field of technologies. The strategic partnership is comprised of multi-cultural and cross-sectoral agencies that are eager to work for the effective rehabilitation of vulnerable groups and to develop accessible, innovative and integrated approaches in the field of adult education in probation settings:

Project partner	Country	Logo
Baskent University	Turkey	
Ankara Probation Directorate	Turkey	
IPS_Innovative Prison Systems	Portugal	
Becure	Germany	
Europen Strategies Consulting	Romania	

The **language barrier** presents the significant challenge for professionals working with refugee offenders. Refugees who are under judiciary supervision because of their criminal act of substance use, needs to be treated and join rehabilitation studies in order to complete their sentences under probation. However there are many refugee offenders in the system speaking different native languages, making it impossible to communicate with them. The professionals-probation officers including the experts (psychologists, social workers, sociologists and teachers) not knowing these languages have to conduct successful rehabilitation studies for these groups to reintegrate into society. It turns into a double blind procedure bacuse of the language barrier, make it difficult for professionals to fight against recidivism of the group.

Therefore an innovative methodology was needed to implement rehabilitation studies without/ minimum use of language. Virtual Reality, made it possible to provide the refugee offenders with rehabilitation with minimum use of language or the use of symbolic language. That is the main motive behind why the TRAIVR partnership developed a VR programme to **improve the coping skills of substance-using refugees under probation.** TRAIVR aims to ensure that refugees who may not have proficiency in the language of instruction can still benefit from the rehabilitation programmes. In this way, the needs of vulnerable individuals, refugee offenders, especially those using substance to tackle their problems are being effectively addressed under probation system. This priority in addressing the rehabilitation needs without use of language, also serves for social inclusion. The improved skills of the subjects not only supports them in being away from criminal behavior but also adapt to the society they live in.

1.1 Purpose of the Manual

The manual was prepared using the intellectual outputs developed within the scope of the project. Since it is the basic material that will be made available to the personnel who will take part in the implementation of the VR scenarios produced by the TRAIVR project, it is aimed to (1) introduce the process, (2) contain the technical information necessary for the application, (3) explain the options that will be encountered when the scenarios are experienced by refugee probationers, and (4) define how the developed software will be used in the probation process.

The manual serves as a comprehensive guide for practitioners involved in implementing the TRAIVR training program, namely the scenarios, to refugee offenders. It is designed to **facilitate a thorough understanding of the project**, provide insights into the **detailed purpose of scenarios**, and enhance **implementation skills of the practitioners**. The manual encompasses not only technical **details regarding VR hardware** and **software** but also addresses topics such as **scenarios, guiding foreign probationers, and navigating expected changes**.

Throughout the project, two short-term staff training sessions were conducted. The initial training focused on equipping participants who would be involved in the implementation or cascading activities. Over the course of five days, attendees delved into the technical aspects of VR technology, including the expert's control panel, and scenario dynamics. The second short-term staff training targeted probation experts, guiding them in the utilization and adaptation of Virtual Reality tools within their existing rehabilitation processes for refugee

probationers. Participants gained a comprehensive understanding of the methodology for integrating the newly developed VR technology into rehabilitation systems. Consequently, they were prepared to implement the TRAIVR methodology.

Recognising the importance of these events including Training of the Trainers events in keeping the TRAIVR system alive, the outputs of these short-term training activities have been compiled into this manual for cascading the content to new generation staff. This manual, therefore, plays a key role in providing **ongoing on-the-job training for users** during project implementation or post-project phases. Additionally, it serves as a valuable resource in diverse settings, serving as a preventive measure for potential challenges. As the project results including the needs assesment and literature review showed, refugees suffer from adaptation poblems and try to cope with these problems insufficiently. So before they enter into the criminal justice system, it will be better to use the TRAIVR scenarios within the society by different authorities as a preventive strategy.

1.2 Target Audience

This manual is designed for probation officers working with subtance-user refugee probationers. It aims to provide these professionals the opportunity to implement rehabilitation studies without using language. VR scenarios improves their ability to teach stress management, emotion regulation and coping skills to their clients during the probationary period.

II. Project Background

The increasing number of refugees worldwide and their specific needs lead authorities to take on new responsibilities. As the number of refugees and immigrants is increasing, the possibility of unmet physical and psychological needs increases. These vulnerable individuals may try to satisfy their needs by getting into risky behaviors like substance use or committing crimes. To solve the problems related to refugees, the Council of Europe published many recommendations. In 2011, the Council of Europe adopted the Recommendation on Probation about the accessibility of the health system, “Barriers to the accessibility of health services may have to be removed in order to help migrants find their way in the health system.” Also, in the same Recommendation, it is said that “Consideration should be given to all available

methods of reducing language barriers, including translation by telephone and video, face-to-face interpretation, the provision of “intercultural mediators” and helping migrants to learn the language of the host country.”

Professionals in the probation system offer support and training on positive coping strategies to prevent re-offending. However, the system experiences difficulty in handling the refugee offenders because of the language barrier and the lack of access to rehabilitation programs in their language regarding stress management. Due to privacy rules, the probation system cannot use the translation by telephone, video, or other techniques recommended in similar cases.

In recent years, psychologists have been using virtual reality (VR) to treat many psychological disorders like anxiety disorders and develop some skills such as emotion recognition and regulation, communication, and so on. Also, Fromberger et al. (2014) indicated that using virtual reality is beneficial due to the high controllability of social situations and the fact that it has fewer barriers than imagination techniques. Training behavior in high-risk situations without endangering others is a specific advantage of using VR for forensic settings.

2.1 Project Goals

The present project aims to close the language barrier gap and deliver rehabilitation for substance user refugee probationers with no/ minimum use of language by developing a virtual reality program to improve their coping skills (stress management, problem-solving and emotion regulation skills).

The identification of substance use serves as an indicator of insufficient coping skills within this framework. Emphasizing a proactive approach, the primary focus is on instructing and reinforcing coping skills rather than exclusively addressing substance use behaviors. This instructional system enhances adult learning opportunities by overcoming language barriers and upholding confidentiality rules. The method has a preventive power since the same scenario can also be used in everyday settings. In summary, the present project aimed to :

- Alleviate language barrier challenges within the probation system, enabling probation officers to support refugee offenders better.

- Enhance the rehabilitation and support capabilities of probation officers who work with refugee offenders.

- Develop a virtual reality program that focuses on improving problem-solving and emotion regulation skills for probation officers, thereby enhancing their effectiveness in assisting and communicating with their refugee offender clients.

This was achieved by developing a virtual reality program to enhance the coping abilities of the probationers, specifically in problem-solving and emotion regulation skills.

The pilot study was conducted on fifteen substance-user refugee offenders in Turkey and Portugal. The work quality in the current probation systems is improved as a result of the project, and a decrease in the reoffending rates of refugee offenders is expected since the coping skills will be enhanced with the newly developed VR application.

2.2 Project Activities

In order to identify the content of the scenario, a need analysis was conducted. After the the finalization of the literature review, scenario writing stage started. Four scenarios were developed with the contributions of project partners. Scenarios are prepared in line with the needs analysis and literature review mainly focusing on stress management, problem-solving and emotion regulation skills. After the completion of scenario writing, the software company, a project partner, developed the scenarios and transferred them to the virtual reality environment. Following the software development of the scenarios, two separate personnel training sessions were conducted in Germany and Portugal, consisting of one technical and one practical training. The pilot study was conducted on fifteen substance-user refugee offenders in Turkey and Portugal to examine the functionality of scenarios. As part of the dissemination efforts, training on technical and practical skills related to the scenarios has been cascaded to personnel in the project partner countries.

2.2.1 Needs Analysis

The project's aim was to identify the reasons, risks, and needs of foreign offenders to create a basis for virtual reality scenarios. To form successful intervention programs, it was necessary to establish the needs properly. Hence, both refugee probationers and probation officers working with them have been reached to conduct a needs analysis.

For the needs analysis, 100 questionnaires were filled out by the probation staff of the Ankara Probation Office. The questionnaire aimed to capture their perception regarding the profile and the needs of the refugees under probation supervision. Additionally, ten interviews were conducted on the refugee probationers to validate the results received from the questionnaires. It facilitated a deeper exploration of key aspects necessary for developing the virtual scenarios of the TRAIVR project. Interviews lasted 30-40 minutes and were translated into the relevant language. The semi-structured interview allowed the experts to adapt or rephrase the questions as necessary. Please see the Appendix for the forms used before and during the interview for need. The procedure to be followed is explained below.

2.2.1.1 Results of Need Analysis study conducted on the Probation Experts

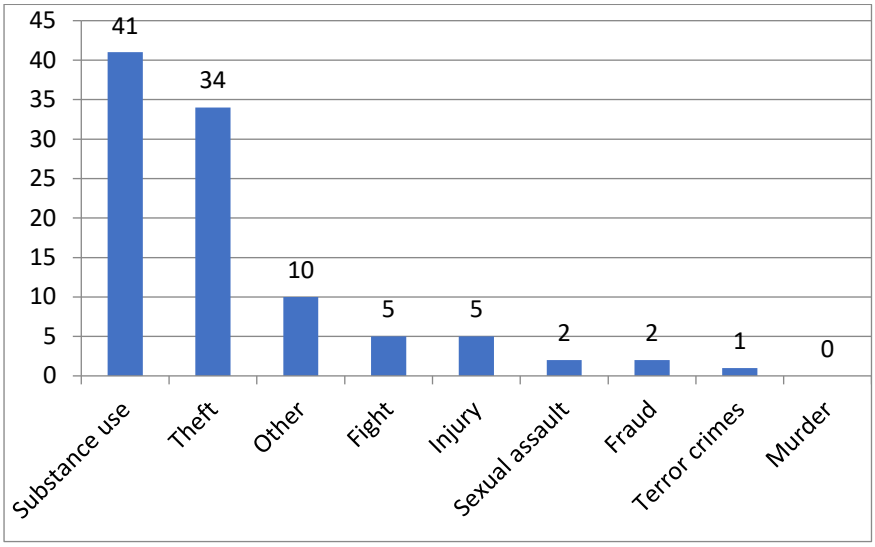
The following section presents the data collected under IO1 - Need Analysis, namely 100 questionnaires applied to probation staff to understand their experiences with the refugee probationers and their perception on their circumstances. Because of the language barrier it was not possible to conduct this broad study directly on refugee probationers. Still interviews were conducted to validate the results of this study with ten refugee probationers who are registered to Ankara Probation Directorate as a second step. At this second step since sample is smaller non-profesional interpreters helped the data gathering. It was a highly demanding process to collect the data both from the professionals and the target group however the goals of the project would not be achieved if one group has been left. So the partnership took all the opportunities to understand their circumstances and provide a solution to the implementation. The language gap between the staff and the refugee probationers was still on the scene while gathering the data, once more highlighting the need to find an alternative solution without using the language in rehabilitation.

The following data analysis is tailored to define the strategies and scenarios for stress management, rehabilitation, and coping skills, and it will be the framework for the scenario-writing stage of the project.

The following part summarizes the results of needs analysis study conducted with the participation of Ankara Probation Directorate:

In the answers given to the first question, 41% of the staff said that foreigners under probation committed substance abuse crimes, 34% said theft, 5% fought, 5% injured, 2% said sexual crime, 2% said fraud. It was observed that 1% thought they committed a terrorist crime and 10% thought they committed other crimes.

Question 1 - What are the crimes frequently committed by refugee offenders under probation?



In the answers to the second question, it is seen that 51% of the staff think that refugee offenders have 3 or 4 children, 25% think they have 1 or 2 children, and 24% think they have 5 or more children.

In the third question, the staff was asked in which areas the foreign offenders and their family members may face adaptation problems at most. The staff marked the language barrier answer for 42 times, the answer to adapting to a foreign culture 35 times, education 35 times, social needs 27 times, legal aid 25 times, social life - prohibition of discrimination 22 times, employment 17 times, employment 17 times, accommodation 10 times. It can be seen that the answer to sexual orientation, issues related to children, and criticism of nationalism and patriotism was marked 9 times, health 9 times, nutrition 7 times, owning property 4 times, and other answers 3 times.

Question 3 - In which areas do refugee offenders and their family members have adaptation problems? You can mark more than one.

Other	3
Owning property	4
Nutrition	7
Health	9
Criticisms againist their nationalism and patriotism	10
Situations related to children	10
Sexual orientation	10
Accomodation	17
Employment	17
Social life -nondiscrimination	22
Legal	25
Social needs	27
Education	35
Adapting to a freign culture	35
Language barrier	42

In question 4, when the staff asked to express their thoughts on which adaptation problems may be related to the crime they committed, the personnel answered in the following way: adapting to a foreign culture 38 times, education 27 times, legal 26 times, social needs 24 times, employment 20 times, social life - prohibition of discrimination 16 times, 13 times. It was observed that they marked language barrier 10 times, situations related to children 8 times, sexual orientation 7 times, criticism of their nationalism and patriotism 7 times, not owning property 6 times, nutrition 6 times, health 3 times and other answers 2 times.

Question 4 - What adaptation problems might be related to their crimes?

Other	2
Health	3
Nutrition	6
Owning property	6
Criticisms against their nationalism and patriotism	7
Sexual orientation	7
Situations related to children	8
Accomodation	10
Language barrier	13
Social life -nondiscrimination	16
Employment	20
Social needs	24
Legal	26
Education	27
Adapting to a freign culture	38

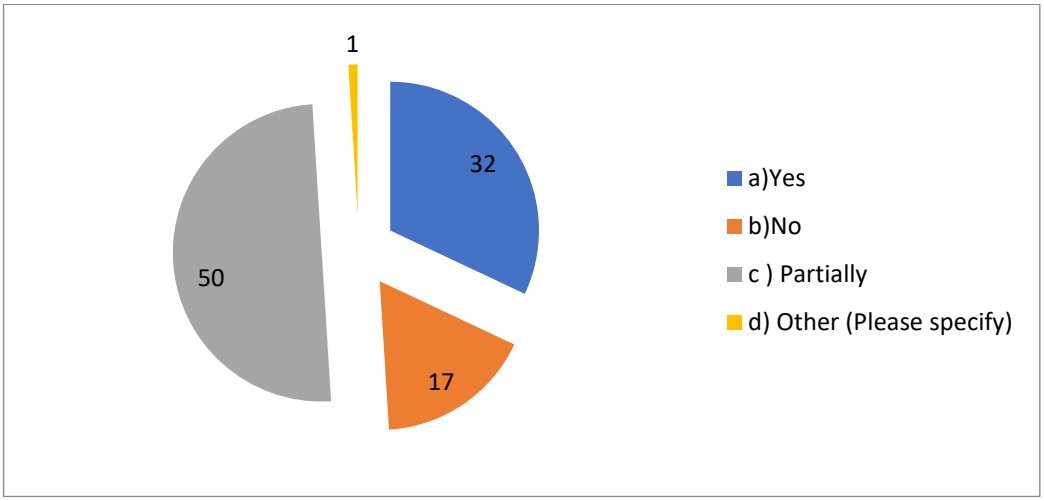
Looking at the answers to question 6, it was seen that 23% of the personnel thought that foreign offenders know where to apply for accessing the social resources, 20% did not know where to apply to access social resources, and 56% thought they partially knew. 1% of the staff marked the other answer.

Question 6 - Do they know the resources to apply for accessing the social resources?

Yes	23
No	20
Partially	56
other	1

Looking at the answers to question 7, it is seen that 32% of the staff think that foreign offenders can easily access these resources, 17% think that they cannot easily access these resources, and 50% of the staff think that foreign offenders can partially access these resources.

Question 7 - Can they easily access these resources?



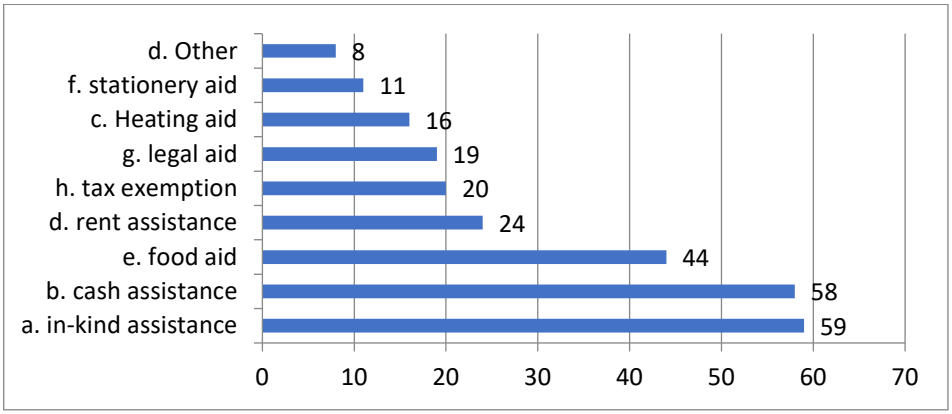
In question 8 asked the staff, situations experienced by foreign offenders negatively affected their adaptation processes. Staff mentioned the language barrier 68 times, reluctance to accept a culture 54 times, lack of regular income 43 times, society's perspective on refugees 38 times, post-war emotional problems 31 times, basic needs not being met 20 times, criticism of nationalism and patriotism 16 times. It was observed that the answers to the situation related to children were marked 10 times, and the answers to the inadequacy of courses aimed at providing employment were marked 7 times.

Questions 8 - Which of the following situations negatively affect the adaptation process experienced by refugee offenders?

Inadequacy of courses aimed at providing them employment	7
Situations related to children	10
Criticisms againist their nationalism and patriotism	16
Inability to meet basic needs	20
Emotional problems after the war	31
The societys perspective on refugees	38
Lack of regular income	43
Reluctance to accept a new culture	54
Language barrier	68

In question 9, when asked what resources are available for foreign offenders in society, the staff answered 59 times in-kind aid, 58 times cash aid, 44 times food aid, 24 times rental aid, 20 times tax exemption, 19 times legal aid, 16 times heating aid. They marked stationery aid for 11 times and 'other' 8 times.

Question 9 - What are the resources available in the community for them?



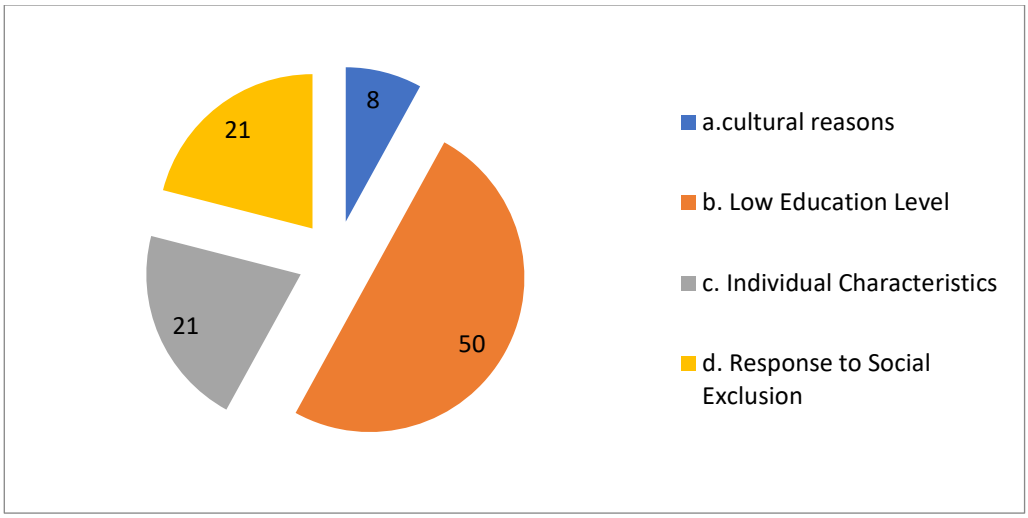
In the 10th question, cultural differences that influence refugees' tendency to commit crime was asked to the staff. In response to the question, 22% of the staff say that cultural differences have no effect, 21% say living in a large family, 20% say differences in religion and belief, 19% say language barrier, 10% say having too many children, 8% say polygamy. It was seen that he answered. No one marked the answer for the different food culture option.

Question 10 - Are there cultural differences that affect the tendency of refugees to crime?

Different food culture	0
Polygamy	8
Having so many children	10
Language barrier	19
Religion-belief differences	20
Living in extended family	21
Cultural difference has no effect	22

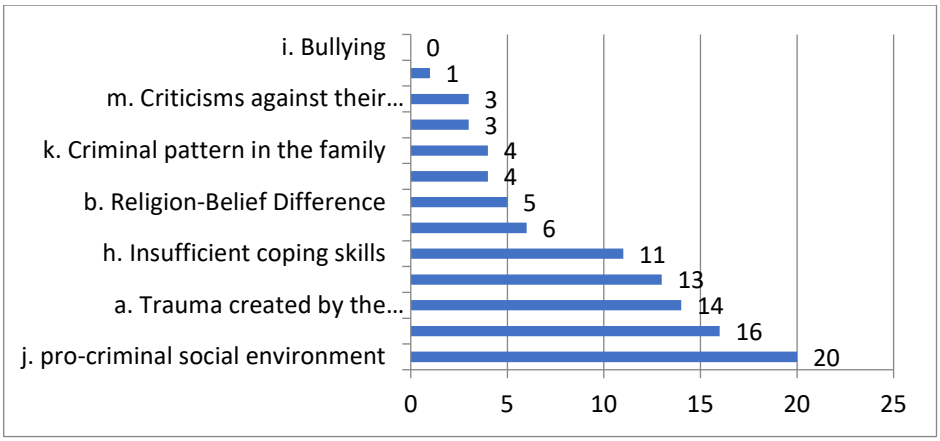
In Question 11, when the staff were asked what could explain the behavior of foreigners resorting to violence to defend themselves, 50% of the staff answered low education level, 21% said individual characteristics, 21% responded to social exclusion, and 8% answered cultural reasons.

Question 11 - How can the behavior of foreign offenders resorting to violence to defend themselves be explained?



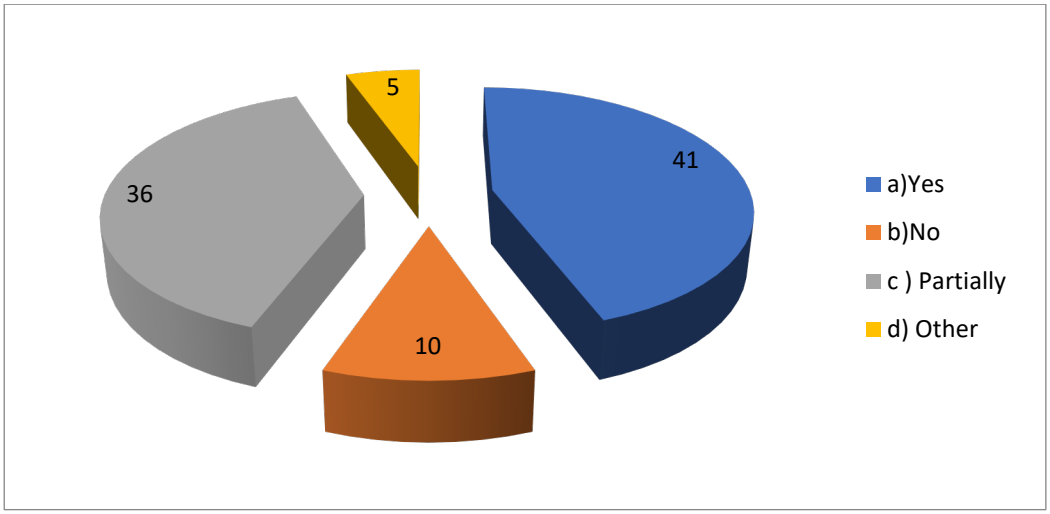
In question 12, the personnel were asked about the reasons why foreign offenders commit crimes. 20% of the personnel think about the pro-criminal social environment, 16% about their personality traits, 14% about the trauma caused by the phenomenon of migration, 13% about lack of life skills, 11% about inadequate coping skills, 6% about social exclusion, % 5 of them were about religion-belief differences, 4% of them were about ghettoization, 4% of them were about criminal behavior in the family, 3% were of racial difference, 3% were criticisms about nationalism and patriotism, and 1% were about situations related to children and crimes of foreign offenders.

Question 12 - Which of the following is one of the reasons for refugee offenders to commit crime?



Looking at the answers to question 13, 41% of the staff think that the definitions of freedom differ, 36% think they differ partially, and 10% think they do not differ. 5% of the staff selected the other option.

Question 13 - Do freedom definitions differ?



In question 14, when the personnel was asked the reason why foreign offenders committed drug abuse crimes; 32% believe that the sanctions they face in Turkey are not deterrent, 24% believe that drug use is a normalized situation in their country, 22% believe that the pro-criminal social environment exists, and 18% think that the crime of drug use is considered more innocent than other crimes. It has been understood that 2% of them think that the penalties for drug use crimes are very severe in their country and 2% think that the risk of being caught is worth for being caught as the reason for committing drug use crimes.

Question 14 - Why do refugee offenders commit the crime of drug use?

-Seen as a situation worth the risk of being caught	2
-The penalties for drug use offenses in their country being too severe	2
-The crime of drug use is considered mor innocent than other crimes	18
-Pro-criminal social environment	22
-Recognition of drug use as a normalized situation in their country	24
-The sanctions they face in Turkey are not a deterrent	32

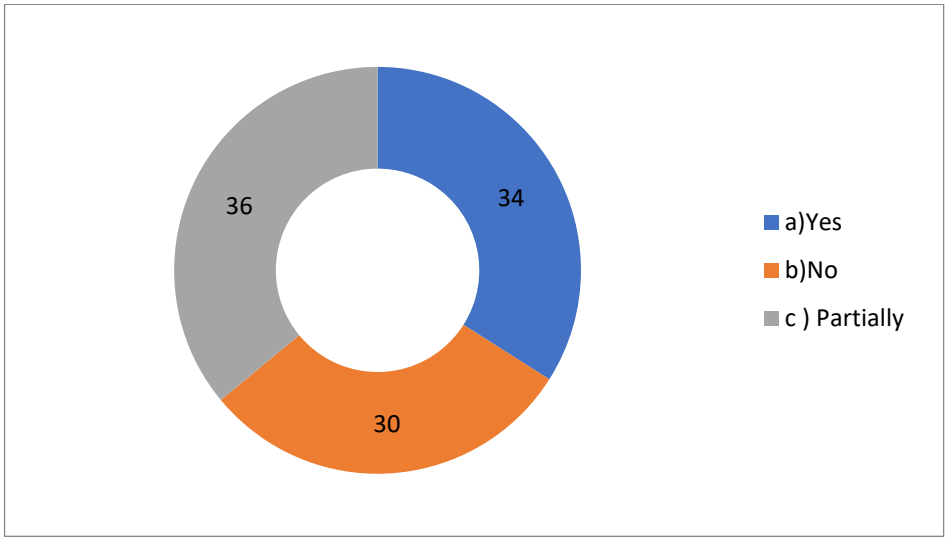
In Question 15, when the staff were asked about the reasons that disrupt the social harmony of immigrants and push them to crime, the staff responded with the following questions: lack of life skills 57 times, social exclusion 38 times, labeling 30 times, loss of social values 25 times, communication difficulties 17 times, humiliation 17 times, and other reasons 2 times.

Question 15 - What are/are the reasons that disrupt the social cohesion of immigrants and push them to crime?

Other	2
Humiliation	17
Communication difficulties	17
Loss of social values	25
Labelling	30
Social exclusion	38
Lack of life skills	57

When we look at the answers to Question 17, 34% of the personnel stated that they thought that unregistered work was related to the crime they committed, 30% said that it was not related, and 36% thought that it was partially related.

Question 17 - Is the unregistered employment related to the crime they commit?



In the 18th question, the personnel were asked about the situations that foreign offenders are likely to experience and 30% of the personnel expressed a feeling of alienation, 17% a feeling of hopelessness, 15% a feeling of anger, 14% a feeling of humiliation, 8% a feeling of emptiness, 8% skepticism (confronting the unknown), 5% guilt.

Question 18 - Which of the following situations are/are likely to be experienced by refugee offenders?

Guilt (against left overs and values)	5
Skepticism(facing the unknown)	8
Feeling of emptiness	8
Feeling of humiliation	14
Anger	15
Despair	17
Sense of alienation	30

In Question 19, when they were asked what kind of future they thought foreign offenders were planning, 39% of the personnel said they had no future plans, 20% said they had fatalistic future plans, 15% said they had hopeless future plans, 14% said they had unrealistic future plans. 9% stated that they have business-oriented future plans. 3% selected the other option.

Question 19 - What kind of future are they planning?

Other	3
Have business-based future plans	9
Have unrealistic future plans	14
They have hopeeless future plans	15
Has a fatalistic future plan	20
No future plans	39

Looking at the answers given to question 20 about the difficulties experienced by foreign offenders caused them to commit crimes again, 63% of staff answered economic difficulties, 35% answered social adaptation difficulties, 33% answered cultural adaptation problems, and 1% answered other.

Question 20-In which areas do the difficulties they experience cause them to commit crimes again?

Economic difficulties	63
Social adjustment difficulties	35
Cultural adaptation problems	33
Other	1

In Question 21, when the personnel were asked about the issues that they thought would be most challenging for foreign offenders, it was observed that 65% of them marked

communication, 20% marked compliance with probation rules, 12% marked receiving rehabilitation support, and 3% marked other.

Question 21 - What are the subjects that you think will be the most challenging for refugee offenders?

Communication	65
Obeying probation rules	20
Getting rehabilitation support	12
Other	3

In Question 22, when the staff were asked what they thought would be the most difficult thing while working with them; 85% answered communication, 9% said providing rehabilitation support, 3% said dealing with prejudices, and 3% answered other.

Question 22 - In which subject do you think you will have the most difficulty while working with them?

Other	3
Dealing with prejudices	3
Providing rehabilitation support	9
Communication	85

Looking at the answers to question 24, it is seen that 70% of the personnel think that the current practices do not meet the needs of foreign offenders, 15% think they do, and 15% think they partially meet them.

Question 24 - Do you think that current practices meet the needs of foreign offenders?

Yes	15
No	70
Partially	15

Question 25 asks staff: Do you think current practices meet your needs when working with them? 67% of the staff answered no, 25% answered partially and 8% answered yes.

Question 25 - Do you think existing applications meet your needs when working with them?

Yes	8
No	67
Partially	25

In question 26, when staff is asked about the clues foreign probationers perceive from the society regarding exclusion or marginalization, 28% of the staff said rude behavior, 28% said the person's expectation even if there is no sign of this, 25% said that people in their social circle often get them in trouble with the police/law. It was observed that %.19 of them responded as “explicit attacks”.

Question 26 - What are the clues they perceive from the society regarding exclusion or marginalization?

Explicit attacks	19
People in their social circle often getting in to trouble with the police/law	25
Although there is no indication of this, the expectation of the person	28
Rude behavior	28

2.2.1.2 The Interviews with the Refugee Probationers

In order to verify the findings obtained from the questionnaires, interviews with 10 refugees were conducted to reach clearer conclusions. These results guided the preparation of TRAIVR scenarios.

2.2.1.2.1 Demografic Information

The data study highlights several important factors pertaining to probationary refugee offenders in Ankara. Theft and drug abuse are frequent crimes perpetrated by refugees, which may indicate the socioeconomic difficulties. A considerable proportion of refugees have four or more children, emphasizing the need for support and resources as well as the possibility of additional financial and social strains.

An analysis of the nationalities of refugee probationers registered to the Ankara Probation Directorate showed a heterogeneous group. The refugee probationers mainly clustered in 3 groups; 55 people from Syria, 44 Iraqi and 12 Afghan probationers. There are refugee offenders from other countries like Russia. Arabic speakers make up most of the probationers' linguistic profiles.

2.2.1.2.2 Informed Consent and Interview Protocol

Informed consent form was asked to be filled in by the refugee offenders before the needs analysis interview with refugee offenders. The form was explained with the help of non-

professional interpreters so the participant was informed about the purpose of the interview, the confidentiality of the interview, the voluntary nature of the interview, and the conditions to be taken into consideration when answering the questions. Consent is obtained as they agree to participate in the interview and sign the form. Please see the related Appendix for The Informed Consent Form.

After getting the informed consent, interviews were conducted with refugee offenders by asking them open-ended questions. The Interview protocol containing information that needs to be verbally provided to participants before asking open-ended questions are presented in the Appendix.

2.2.1.2.3 Results of the Interviews

The most significant challenges that refugees experience seem to be related to adjusting to a new culture, overcoming language hurdles, and gaining access to education. The language barrier is the most serious of these three barriers. Since most of them are not able to speak the language of the country they live in, refugees are primarily engaged in illicit labor and have limited access to information regarding job opportunities. Most of them are unaware of the social benefits, they rely on the assistance of their friends and family.

The findings showed that, the refugees used drugs because of they can not cope with the problems they face in their social lives (which caused them to experience stress), within their families, and a lack of educational opportunities as a result of linguistic obstacles. They also shared the negative effects of racism they perceive and isolation feelings they suffer as the causes of their illicit activities. When asked about the importance of group influence in engaging in illicit activities, the majority of respondents responded that they do not feel that peer pressure is a problem. Furthermore, some refugees choose to downplay their troubles, which may be a result of pressure to appear resilient or to keep their problems quiet. There are several possible reasons for this denial, such as fear, shame, and the need to protect oneself.

The data gathered indicates a significant correlation between crime and cultural integration, suggesting that cultural integration plays a crucial role in lowering the incidence of offenders. Concerns about employment and the law are significant as crime rates correlate with economic stability and legal knowledge. A person's economic and educational standing also influences how susceptible refugees are to illegal activity. Their experiences are similar in that they face

difficulties finding work and financial difficulties while having different educational backgrounds and social classes.

It is critical to understand that persistent stress and financial hardship can foster an environment of vulnerability that could increase criminal activity as a coping or survival strategy.

2.2.2 Literature Review

The goal of this project is to create virtual reality software that will help substance-using refugee probations learn better coping mechanisms and facilitate their rehabilitation by bridging the language barrier by minimizing the verbal messages and using symbolic language in the VR scenarios. The literature analysis lead to a proposal how to teach new skills to refugee offenders with VR technology.

While there has been a study on the use of virtual reality technology for drug use rehabilitation in the 2000s, no literature review pertaining to the keywords used in the research was found, and no studies on the application of virtual reality to the rehabilitation of drug addict refugees have been discovered. Furthermore, new studies on the application of virtual reality as a therapy aid for substance abuse have demonstrated that, when done correctly, virtual reality can be successful.

Research indicates that alcohol addiction can be treated with virtual reality. Alcohol cravings may rise when individuals in a virtual reality simulation are exposed to alcohol cues (Bordnick et al., 2008). Virtual reality alcohol exposure therapy, on the other hand, can help people acquire coping mechanisms for alcohol and lessen anxiety and cravings (Ghiţă et al., 2021). However, combining traditional therapies with virtual reality exposure therapy in outpatient treatment groups proves more advantageous than following a standard treatment plan (Hernández-Serrano et al., 2020). The elements of the virtual reality environment must mirror those of real life for treatment to be effective. For instance, ambient noises that blend in with the scene, like lightning, add to the realism of virtual reality (Skeva et al., 2021).

To imitate peer pressure for cue exposure therapy, designs that will ascertain the degree to which participants will engage with the environment are being researched (Junker et al., 2021). Although VR cue exposure experiments produce encouraging results, Ghiţă and Gutiérrez-Maldonado (2018) pointed out that these studies have limitations because no research has

looked at the long-term impacts of VR use. Still, studies show that virtual reality therapies hold promise since they may effectively replicate the cues associated with compulsive behaviors displayed by patients (Lebiecka et al., 2021).

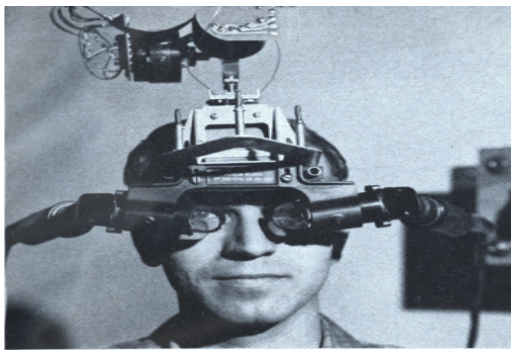
III. Virtual Reality (VR) Technology: Technical Informations

Virtual Reality (VR) is a cutting-edge technology that creates three-dimensional, immersive environments through computer-generated simulations. Users can interact with and experience these settings as if they were physically there. They can be entirely artificial or a combination of digital and real-world features.

The origins of virtual reality can be found in the 1950s when cinematographer Morton Heilig created the Sensorama. This gadget combined surround sound, stereoscopic 3D, and sensory effects to produce an immersive moviegoing experience.

In the 1960s, Ivan Sutherland's "Sword of Damocles" introduced the first head-mounted display. The 1980s brought the first commercial VR products, but it was the 1990s when VR gained popularity in gaming and military training. However, a "VR Winter" in the late 1990s saw a decline in interest. The 2010s witnessed a resurgence with the introduction of consumer-friendly VR headsets like the Oculus Rift. Today, VR finds applications in gaming, education, healthcare, and more, and it continues to evolve with ongoing research and advancements.

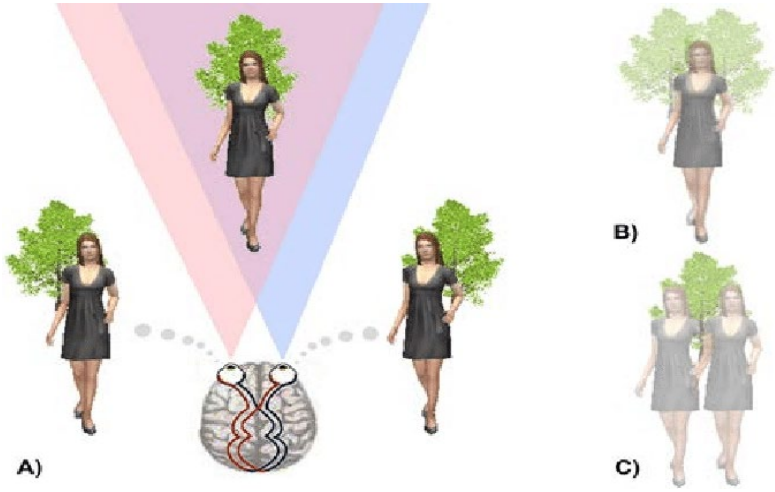
"VR Winter" describes a time in the late 1990s when there was a sharp drop in interest in and investment in virtual reality (VR). Economic factors, exorbitant expenses, a dearth of exciting material, unreal expectations, and technology limits were the causes of this decrease. VR technology encountered difficulties during this period, and some businesses suffered or went out of business. However, this period was followed by a resurgence of interest and investment in VR technology in the early 2010s, leading to the development of more advanced and accessible VR systems.

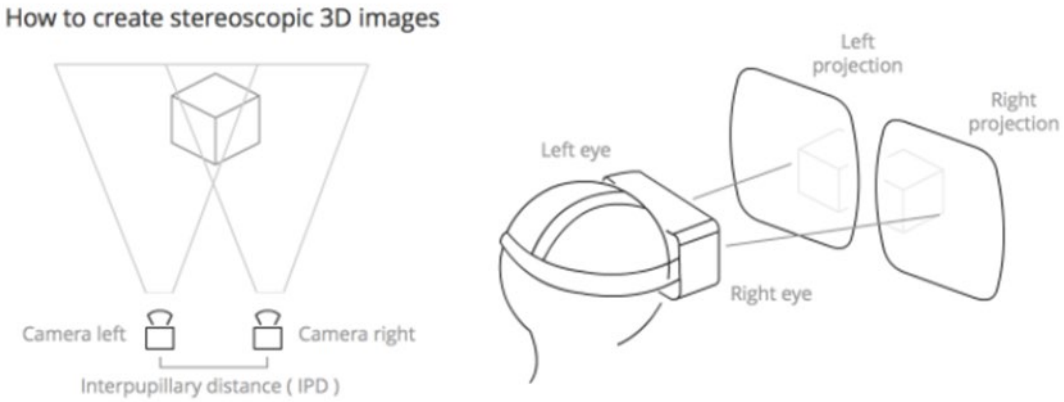


3.1 Stereoscopic Vision

Stereoscopic vision is the ability of humans and some animals to perceive depth in their visual field, creating a three-dimensional (3D) effect. This depth perception is achieved because our eyes are slightly apart, and each eye sees a slightly different perspective of the same scene.

In virtual reality, the use of stereoscopic vision is critical to creating depth and immersion. By presenting a slightly different image to each eye, VR simulates the natural parallax effect, enhancing the feeling of depth and presence in a virtual environment.





3.2 Different Forms of VR

Fully Immersive VR: Offers a complete sensory experience, often utilizing HMDs, motion tracking, and haptic feedback.

Augmented Reality (AR): Overlays digital elements onto the real world, enhancing the user's perception of the physical environment.

Mixed Reality (MR): Merges elements of both AR and VR, blending the virtual and real worlds seamlessly.

VR Hardware

VR Headsets: Oculus Rift, HTC Vive, PlayStation VR, etc. Motion

Controllers: Devices such as Oculus Touch and Valve Index Controllers, enabling users to interact with the virtual environment.

Tracking Systems: External sensors or inside-out tracking methods that monitor the user's movements and position within the virtual space.

3.3 VR Applications

VR's versatile applications span various industries and experiences like Education and Training, Gaming and Entertainment, Healthcare and Therapy, Design Visualization and Architectural, Military and Defense, Virtual Tourism, Remote Work, Retail, and Marketing.

VR has had a considerable effect on the gaming and entertainment industries. It offers unparalleled immersion, allowing players to enter virtual worlds, interact with characters and entities, and participate in thrilling adventures.

VR has found applications in education and training. It enables students to explore historical sites, delve into complex scientific concepts, and participate in lifelike simulations, making learning engaging and interactive.

In healthcare, VR is used for a range of applications, including pain management, exposure therapy for phobias and PTSD, and physical rehabilitation. It provides a controlled and immersive environment for therapeutic purposes.

Architects and designers use VR to create 3D models and walkthroughs of their projects. This technology allows clients and stakeholders to experience architectural designs before construction, making it an invaluable tool for the construction and real estate industries.

The military has been an early adopter of VR for training simulations. VR is used for everything from flight training to battlefield scenarios, helping soldiers and personnel prepare for real-world situations.

Virtual reality enables users to "travel" to far-off places, historic landmarks, and even fictional worlds. VR allows people to explore destinations they might never have the chance to visit physically.

In summary, the journey of virtual reality is a testament to persistent innovation. It has evolved from early concepts into a transformative technology with diverse applications across numerous domains. As VR adapts and expands, its future appears promising, offering a vast and exciting potential to reshape how we learn, play, work, and interact with our world. This dynamic technology demands our attention and exploration as it paves the way for a new era of human experiences.

3.4 Technologies

Hardware

The list of hardwares needed for the implementation are:

Virtual Reality Headset

For the TRAIVR applications HTC Vive is preferred because of its common use and consistent control API. It is suited for faster and easy development of the projects. HTC Vive is connected to the PC and battery life is better compared to other brands.

HTC Vive has 2 VR controllers and 2-3 tracking stations. The tracking stations are cameras around the playground tracking the headset and controllers movement.

Computer

The HTC Vive is connected to a computer and using its processing and graphical power to run the games. Recommended system requirements for HTC Vive are:

Component	Recomended System Requirements by Vive	Minimum System Requirements	Recomended For the Project
Processor	Intel Core i5-4590 or better	Intel Core i5-4590 or better	Intel Core i5 or i7 10th generation or better
GPU	NVIDIA GeForce GTX 1060 or better	NVIDIA GeForce GTX 970 or better	NVIDIA GeForce GTX 1650 or better
Memory	4 GB RAM or more	4 GB RAM or more	8 GB RAM or more
Video output	HDMI 1.4, DisplayPort 1.2 or newer	HDMI 1.4, DisplayPort 1.2 or newer	HDMI 1.4, DisplayPort 1.2 or newer

3.5 Controller Interaction Basics

In TRAIVR, the controllers facilitate interactions within the virtual rehabilitation environment. Users will rely on the controllers to navigate, manipulate objects, and interact with the application's features. Here are the fundamental principles of controller interaction:

Trigger Buttons: The trigger buttons, primarily located on both controllers, are the primary means of interacting with objects and elements in the VR environment. Users can press the trigger buttons to grasp, pick up, or manipulate objects. This intuitive interaction method enhances the immersion and engagement of users during rehabilitation scenarios.

Teleportation: The left-hand analog stick or similar input method allows users to teleport within the VR environment. By selecting their desired destination with the left controller, users can instantly move to different locations, promoting seamless navigation and exploration.

Rotation Control: The right-hand analog stick or equivalent input device lets users rotate their view without physically turning their heads. This functionality is handy for surveying the surroundings and getting a better perspective on the rehabilitation scenario.

Button Interactions: For option interactions, users can point to the suitable controller at the desired option or feature. This precise pointing method makes it easy for users to find various elements within the application.

By mastering these controller interactions, users can effectively engage with TRAIVR's rehabilitation scenarios, making the VR experience intuitive, immersive, and user-friendly.

3.6 Using and Adapting VR tools in the Current Rehabilition Process

Virtual reality programs are based on the fact that people can learn and practice some psychological skills; participants (patients, offenders, etc.) can learn the skill by seeing and imitating appropriate behavior within a virtual reality medium. Furthermore, behavior training in high-risk situations without endangering others is a particular advantage of using virtual reality for forensic settings. Virtual reality has found to improve emotion regulation skills in risky situations (Hadley et al., 2018).

3.6.1 Cultural Differences & Similarities in Probation Systems

The Probation system was initially developed as an alternative custodial measure to prison with the aim of integrating offenders into society (Altın et al., 2022). Although the systems mostly have similar applications, there are also differences in probation practices of the European countries. Some European countries prioritize public protection, risk assessment, and the effective implementation of penalties (England and Wales, Estonia, and the Netherlands), while others, such as the Czech Republic, focus on alternative methods of dealing with offenders, community sentences, and reducing recidivism (Van Kalmthout & Durnescu, 2011). Probation practices in Catalonia are not limited to risk assessment and similar processes but also include one-on-one interviews, including home visits when necessary (Barberan et al., 2012). Probation staff in Croatia mostly use cognitive behavioral therapy-based intervention methods in the process, similar to Turkey (Altın et al., 2022; Simpraga et al., 2014).

In order to help offenders to change their negative behaviors and start a new life that is acceptable to both them and society, probation services encompass a wide range of activities and applications. These tasks include individual and group studies aiming to improve their life skills, re-organize their lives, solve their financial issues, referring clients to other organizations for vocational education and employment. Psycho-educational activities are one of the probation services' primary responsibilities. Different countries deliver these studies in at different stages (Van Kalmthout & Durnescu, 2011). For example providing support and aid starts at the detention phase in England and Wales and the Netherlands. Early assistance or intervention is provided in police custody in Czech Republic, Finland, Germany, Malta, and the Netherlands. Inmates are supported under "reward warrants" in Portugal. In some countries including England and Wales, Austria, Ireland, and Luxembourg, the probation service offers inmates support, direction, and help following their release. Nevertheless, in the Netherlands, Finland, Italy, Malta, Norway, and Scotland conventional local social services handle this duty instead of the probation service. Despite their differences, these systems are based on the motto of guiding criminals to socially acceptable behavior.

3.6.2 Management of the Probation Period with VR

Refugee offenders, whose number has increased in recent years, often face challenges in actively participating in individual or group sessions due to language barriers. As they struggle to understand the language of the country they reside in, probation staff find it difficult to effectively engage in rehabilitation efforts with refugee offenders. The probation system typically involves individual interviews/therapies, group activities, and seminars to raise awareness of offenses and develop positive coping mechanisms. Unfortunately, the language barrier hinders communication between probation officers and refugee offenders, limiting access to necessary training activities. This obstacle prolongs the rehabilitation process and heightens the risk of re-offending among refugee offenders.

In recent years, there has been a significant shift in the criminal justice landscape due to the incorporation of advanced technologies. VR has the potential to play a pivotal role in skill-building and rehabilitation within probation programs. These immersive technologies offer unique opportunities to teach and reinforce essential life skills among probationers, ushering in a new era of probation practices. However, integrating VR into probation systems comes with its challenges.

IV. Creation of a VR Software Programme for Refugee Offenders

4.1 Why Should Probation Officers Use VR Tecnology?

Similar to other probationers, refugee probationers are required to participate in psycho-educational programs aimed at promoting positive behaviors. However, probation practices face challenges when dealing with refugee offenders due to language barriers, as staff members may not speak the same language, and probationers often only communicate in their native tongue. Moreover, interpretation services may not be feasible due to privacy and cost concerns.

To overcome these obstacles, VR technology presents an effective solution by offering enhanced rehabilitation opportunities with minimal verbal communication and maximum symbolic language. Interactive VR allows participants to actively engage in the learning process and practice acquired skills before applying them in real-life situations. This approach enables refugee probationers to benefit from rehabilitation programs more effectively, despite language barriers.

Using virtual reality (VR) in law enforcement offers several long-term benefits. Firstly, it helps reduce the recidivism rate among refugees, leading them to lead crime-free lives. This, in turn, lowers rehabilitation and post-release costs. Secondly, VR enables quick training for individuals with decreased attention spans due to substance use. Additionally, it provides visual training materials for groups struggling to follow verbal instructions. Thirdly, VR allows young offenders to learn through realistic experiences rather than traditional advice-based methods. Finally, it eases the burden on probation systems by reducing the need for extensive personnel and facilities.

4.2 Development of TRAIVR Scenarios

VR has been considered a pivotal tool in enhancing problem-solving and decision-making skills due to its immersive and realistic environmental simulations. Shin (2018) draws attention to user intentionality and cognitive processing about VR experiences, suggesting that users formulate empathetic and embodied experiences through their perceptions, needs, and empathic traits. This implies that a user-centric approach should be adopted when developing VR applications for problem-solving and decision-making.

VR also extends its impact into the realm of rehabilitation, notably in addressing substance abuse, mental health, and criminal behavior. Trahan et al. (2019) offer an overview of VR exposure therapy (VRET) for substance dependence, with significant potential, especially when converged with cognitive-behavioral therapy (CBT) interventions. Ticknor and Tillinghast (2011) encapsulate the broad applicability of VR in the criminal justice system, implying that it could be a resource-efficient approach to tackle the myriad of needs arising in criminal justice by providing a safe and controlled environment for research, training, and rehabilitation.

The project aimed to reach refugee inmates by developing a tool to address their rehabilitation needs getting rid of language barrier. The target audience of the project are refugee probationers who are under probation for their substance use behaviour. In order to deal with recidivism of this group, they need desist from crime by learning positive life skills of stress management, coping and emotion regulation. Although the project mainly target the probationer group, the problems touched are common among the refugees and the needs are shared. Therefore the project not only wanted to focus on improving the skills of the refugee probationers, but also a tool to be generalized in non-criminal groups was also aimed. This is because the project aimed to reach the maximum number of people and benefit a wide range of individuals as a preventive strategy.

Virtual reality environment is a controlled, secure, and sensitive setting allowing the refugees under probation to experience social skills and test emotional regulation through various scenarios. It is a powerful tool that allows individuals to experiment, make mistakes, and enhance their social skills. Additionally, when focusing on individuals who use drugs, virtual reality provides an environment where they can respond more healthily when real-life problems are depicted in scenarios. It also offers an experience where they can explore the reasons leading to substance use and learn to cope with them. Thus, the likelihood of being able to say

no in real-life situations increases. If we focus on refugees, many of them have lower social skills and may feel lonely and excluded so they may struggle to control their emotions. However, VR allows them to test this in a risk-free environment.

4.2.1 TRAIVR Scenario Writing

Comprehensive literature research was conducted prior to the creation of the scenarios, and input was gathered from professionals working with refugees. Special attention was given to several points during the scenario preparation process. In order to develop an effective tool for refugees, minimal text was utilized, with no spoken text included, and great care was taken to minimize the use of straightforward instructions in their language.

Furthermore, the scenarios were crafted with consideration of the challenges refugees face in society. For instance, awareness of the resources available to them may be lacking due to their introverted nature, potentially hindering their integration into society. One scenario addressed this issue by simulating a situation in an official institution where asking for help was necessary. Another scenario aimed to empower them to resist peer pressure and reject harmful offers without succumbing to group mentality in adverse situations. By providing them with experience in refusing detrimental offers, the goal was to facilitate quicker rejection of such offers in real-life settings. Given their cultural background and lack of integration into society, content was developed to break this barrier and foster a sense of identity and belonging. This involved teaching coping skills and emotional control, emphasizing the acceptance of negative emotions while managing them to prevent negative behavior in society. Real-life situations that may provoke anger in society were incorporated into the scenarios to allow participants to experience appropriate behavior in challenging situations.

Lastly, the inclusion of relaxation methods in the scenarios was deemed essential, as these are known to be highly effective coping mechanisms. By learning and practicing these relaxation techniques in the virtual reality environment, participants can better manage stress in their daily lives.

Developing the storyline stage is crucial when creating VR experiences due to the significant investment of money and resources required. It is essential to visually outline every aspect of a perfect scenario, including the setting (e.g., a beach) and atmospheric conditions (e.g., windy). This level of detail is critical for crafting a cohesive storyline.

Research by Lee et al. (2011) showed that exposure to a forest setting, as opposed to an urban one, significantly increased positive emotions and decreased negative ones. Immersion in nature has been proven to reduce stress and lower psychological stress levels (Beil & Hanes, 2013; Ewert et al., 2016).

To accurately translate the scenario into the virtual reality environment, the technical team must ensure maximum detail in the guidelines. Additionally, scenario writing should focus on making scenarios sustainable and adaptable to different target groups.

- Using game elements
- Providing interaction (Interactive)
- Making decisions
- Overcoming language barriers
- Preserving cultural identity

Ensuring the target group's active engagement, enjoyment, attention, and interactivity within the scenario is crucial. Minimal text was used due to language barriers and to accommodate diverse cultural identities, fostering a sense of belonging. Environments within the game, like parks and cafes, were chosen to mirror daily settings, promoting relatability. Gamification techniques, such as incorporating introductory games like the park scenario, encourage participants to view tasks as games, enhancing motivation. This approach introduces stress-inducing situations followed by relaxation games to ease tension.

The second scenario unfolds in a cafe, focusing on empowering participants to assertively decline negative offers, thereby resisting peer pressure.

At the bus stop in the third scenario, ethical and moral abilities are developed, exploring personal needs and societal relationships. Participants receive feedback based on their choices, aiding ethical development.

The fourth scenario simulates negative encounters at an official institution, aiming to cultivate emotional control and coping strategies. It reinforces skills learned in the first scenario, creating a seamless progression.

Target Group and Customization:

- Substance-using refugee offenders

- Parameters remain consistent regardless of player characteristics.
- Language barriers of refugees were considered during scenario design.
- Clear indications on scenario progression (e.g., arrows, gestures) were provided, ensuring accessibility.

V. Implementation of TRAIVR Scenarios

5.1 TRAIVR Implementation Procedure

5.1.1 Scene Overview

Multiple scenarios within the TRAIVR Project have been meticulously crafted to provide users with a seamless and engaging experience. Each scenario serves a unique purpose in aiding refugee offenders in their journey to rehabilitation.

5.1.1.1 Main Menu

The "Main Menu" scene is the entry point to the TRAIVR VR application. It offers a user-friendly interface designed to navigate through different program options and access the rehabilitation content.

The "Main Menu" scene is characterized by the following key elements:

- **Start Button:** Clicking on the "Start" button initiates the rehabilitation journey, redirecting users to the “ID screen” and "Level Select" screen, where they can choose from various rehabilitation scenerios.

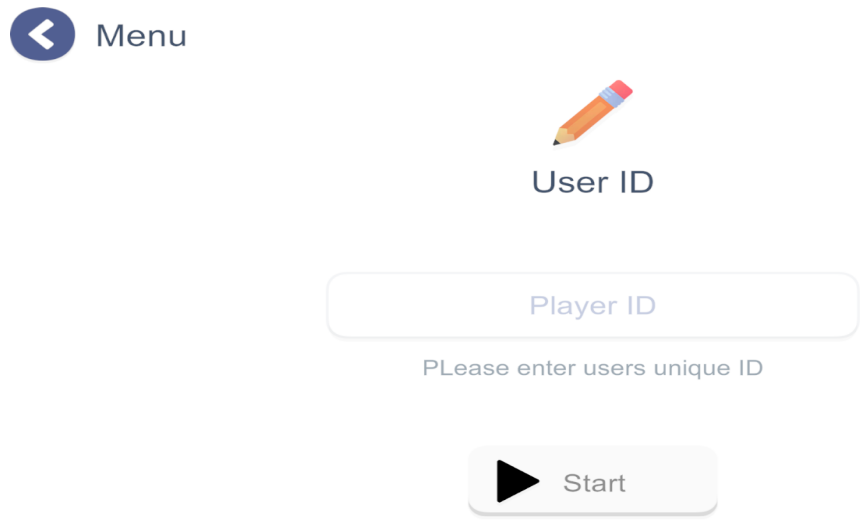
- **Reports Button:** The "Reports" button provides access to the reports menu, which houses vital information and feedback on the user's progress. It also includes two additional buttons for further navigation.

- **Settings Button:** Clicking on "Options" opens the options panel, allowing users to configure various settings to enhance their experience.

- **Exit Button:** The "Exit" button offers a straightforward exit from the TRAIVR application.

The "Main Menu" scene is a central hub designed for intuitive navigation and an inclusive experience. It empowers users to explore and engage with TRAIVR's rehabilitation resources effectively.

5.1.1.2 ID Screen



The "ID Screen" is a pivotal component of TRAIVR, appearing as a crucial checkpoint just before users can access features like the "Level Select" and their personal reports within the "Reports Panel." Its primary function is to collect and verify a unique identification code from the user before granting access to specific areas of the VR application.

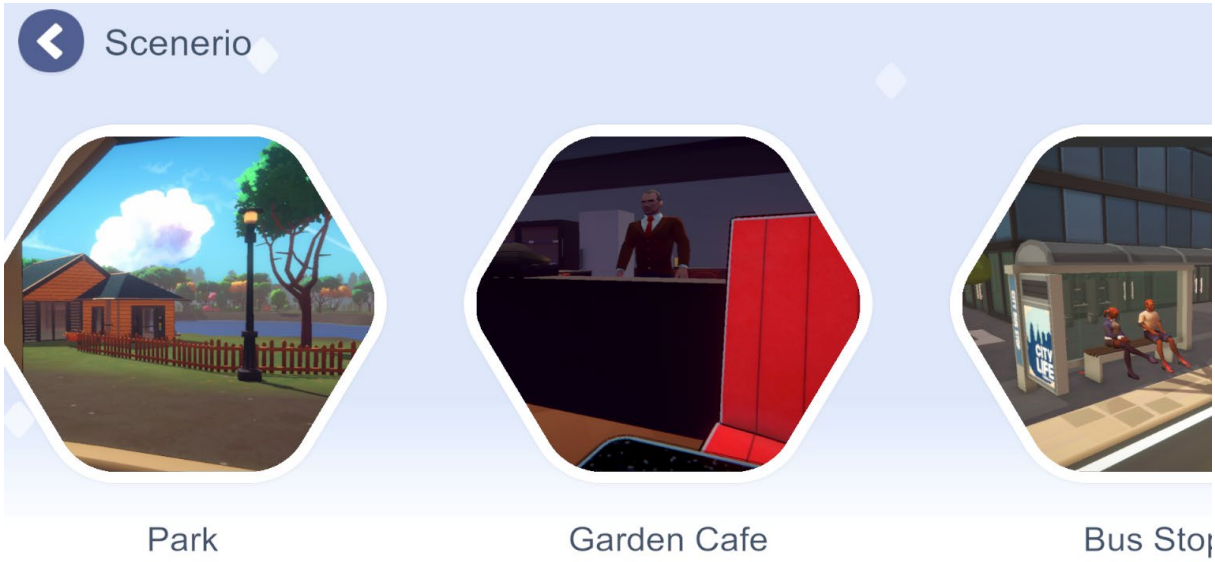
The main purposes of the "ID Screen" are as follows:

- **User Authentication:** By requiring a unique ID, the application ensures that users are who they claim to be, providing a level of personalization.

- **Progress Tracking:** The collected ID helps the application link users to their individual rehabilitation data and progress, making it possible to provide personalized reports and tailor the rehabilitation modules.

Users are prompted to enter their unique ID through the interface.

Level/Scenerio Select



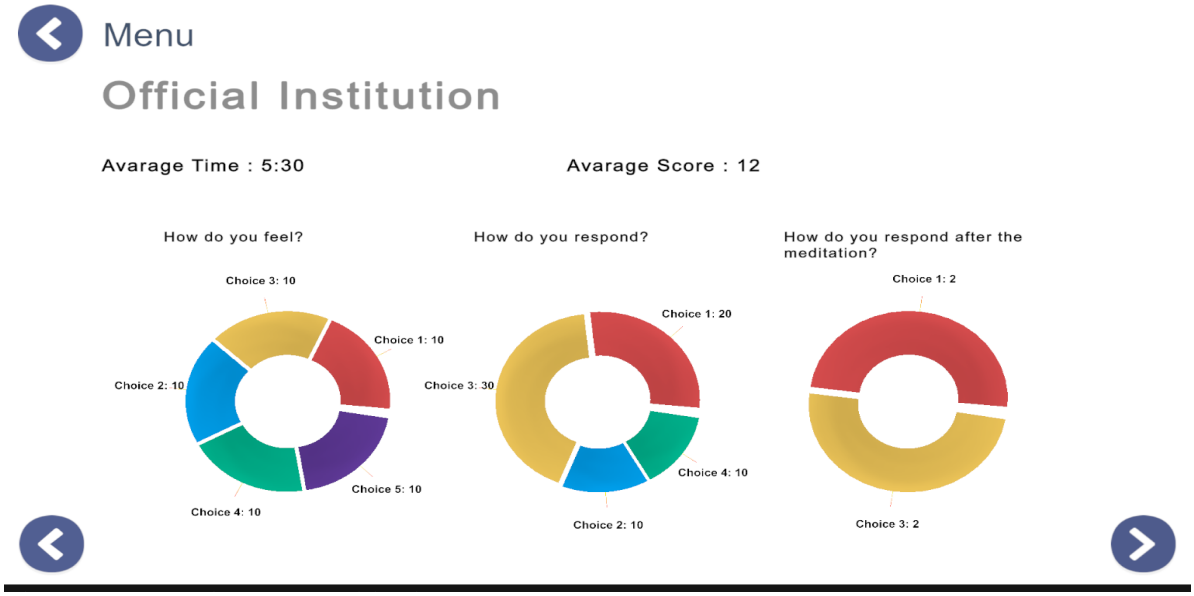
The "Level Select" scene is where users embark on their rehabilitation journey. It allows them to choose from various rehabilitation scenario, each tailored to address specific challenges.

Users can slide between 4 scenarios and click on them or press back button on top left to go previous menu.

5.1.1.3 Reports Menu

The "Reports Menu" is a crucial component of TRAIVR, providing valuable insights and feedback to users as they progress through the rehabilitation program. Here's what you'll find in the "Reports Menu" scene:

Reports Menu - General Reports



"General Reports" offer comprehensive insights into user performance and participation across various scenarios and modules within TRAIVR.

We see general details for each scene such as average time, score and choice statistics. User can navigate between scenerios from left and right arrow buttons below the screen.

Reports Menu - Choice Statistics

In addition to "General Reports," the "Reports Menu" offers the "User Statistics" feature, providing users with a more personalized data. In this scene users can see unprocessed data for the player.

5.1.1.4 Settings Menu

The "Options Panel" is designed to enhance the user experience by allowing customization of various settings. Here's what the "Options Panel" scene offers:

- **Music Volume:** Users can adjust the volume of background music to a level that suits their preferences. Whether they prefer a soothing background melody or a more immersive soundscape, this setting allows them to fine-tune their auditory experience.

- **Sound FX Volume:** The "Sound FX Volume" setting allows users to control the volume of in-game sound effects. This customization empowers users to enhance their virtual reality environment, making it more engaging and interactive.

- **Probitioner Language:** The "Probationer Language" setting influences the language used in the general PC user interface, including menus and reports. Users can choose their preferred language, ensuring that they can easily navigate and understand the application's non-VR elements. Professionals responsible for managing the TRAIVR sessions will have to select the language option according to the nationality of the probationer. Arabic, Persian, Kazakh, Kırghız, Pestu languages are available in the software serving the use of refugee offenders. Although symbolic language domainates the scenarios, for refugee offenders to follow the instructions or warnings shown on the screen have to be in the language they speak.

Language menu allows the responsible professional to manage and customize the virtual reality experience for optimal outcomes.

- **User Language:** This setting impacts the language used during VR interactions, including questions and feedback. Users can select their desired language to facilitate effective communication and engagement during the rehabilitation process.

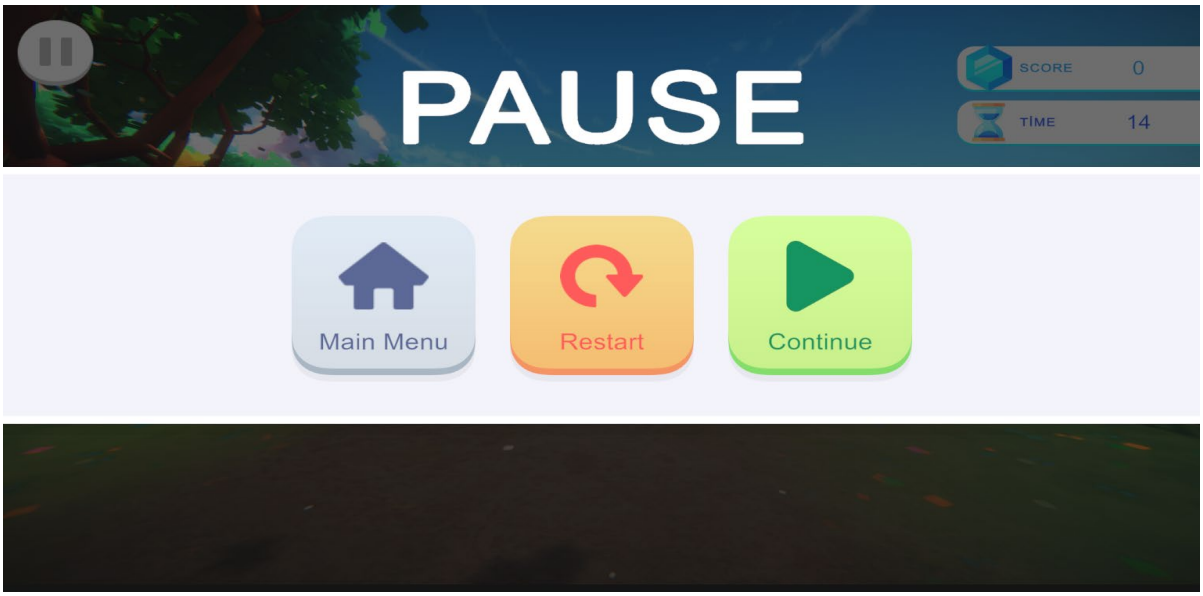
5.1.1.5 Game Menu

The "In-Game Menu" consists of the following key components:

1. Pause Button (Top Left): The pause button is conveniently located at the top left corner of the screen. Users can tap or select it to pause the ongoing scenario or rehabilitation module. Pausing allows users to take a break, review instructions, or make adjustments as needed.

2. Score and Time (Top Right): The top right corner of the screen displays information. Users can monitor progress through the "Score" and "Time" indicators. "Score" reflects the points earned during the scenario, while "Time" keeps track of the time elapsed in the rehabilitation session.

Game Menu - Pause Panel



The "Pause Panel" comprises three important buttons, each serving a specific purpose:

1. Main Menu: The "Main Menu" button redirects users to the central hub of the TRAIVR application, allowing them to access various features, including scenario selection and reports. This option is ideal for users who wish to exit the current scenario and explore other aspects of the application.

2. Restart: The "Restart" button enables users to restart the current scenario from the beginning. This feature is helpful for users who want a fresh start in the rehabilitation module or need to retry the scenario to improve their performance.

3. Continue: The "Continue" button resumes the paused scenario from the point where it was stopped, allowing users to pick up where they left off. This feature ensures a seamless and uninterrupted rehabilitation experience.

5.1.2 Virtual Reality Scenarios

Detailed explanations of TRAIVR scenarios are provided below to ensure that personnel responsible for implementation understand the process thoroughly. This understanding is crucial for them to anticipate the actions of foreign refugee offenders during the process. Throughout the TRAIVR application, responsible personnel will be able to observe the refugee offender's experience in the virtual reality environment on their laptop screens and intervene as necessary.

In order to facilitate this process, scenarios are presented step by step, along with the available options and their corresponding outcomes. Screenshots are included to enhance clarity, with an example presented in English for reference. Typically, responsible personnel will navigate through the application using the language appropriate for the nationality of the refugee probationer, ensuring that instructions appear in a language the probationer can understand.

Arabic, Persian, Kazakh, Kırghız, Pestu languages are available in the software serving the use of refugee offenders. Although symbolic language domainates the scenarios, for refugee offenders to follow the instructions or warnings shown on the screen have to be in the language they speak. Language menu allows the responsible professional to manage and customize the virtual reality experience for optimal outcomes.

While efforts were made to minimize written instructions and rely on symbolic language, it was necessary to provide a limited amount of written guidance due to potential limitations in the education levels of probationers. This ensures that instructions are accessible and understandable to all participants.

5.1.2.1 First VR Scenario – Stress Management

Purpose and Scope

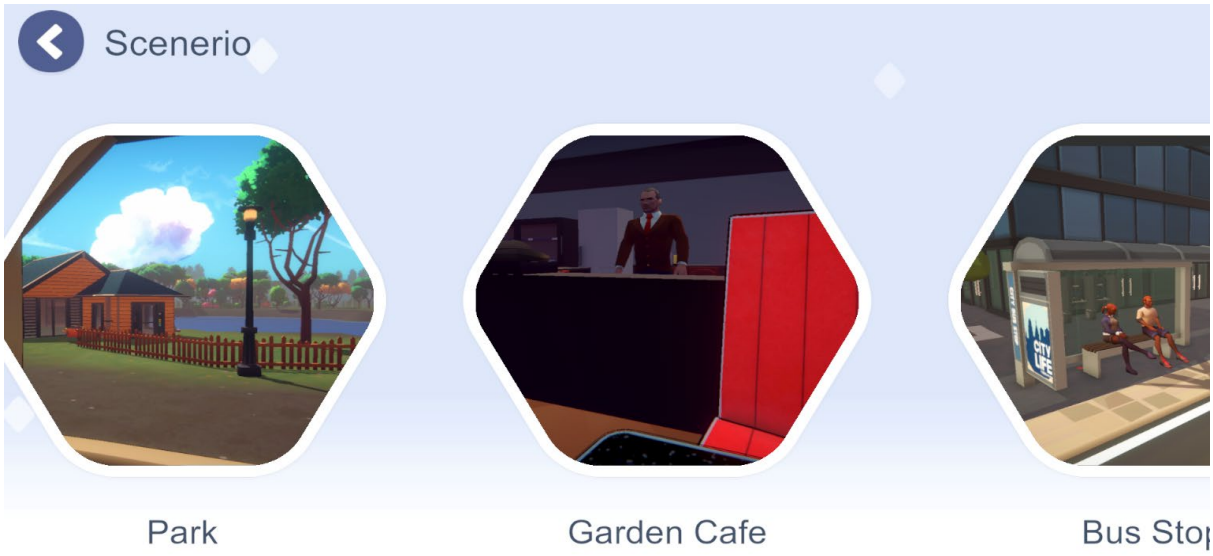
Stress management & conflict resolution strategies.

Breathing and body-awareness learning techniques.

Game Concept

Setting: Park

The game is logged in after entering the user ID by following the steps explained in the TRAIVR Implementation Procedure section.



According to the application sequence, first, the park scenario button is selected. Then, to start the game, the player selects the ring on the screen using the controllers, holds down the trigger button for a few seconds, and the game begins.

The video starts with a game. The game consists of the player being challenged to find stars around, pick them up and put them in a bucket (which is in the right hand of the player).

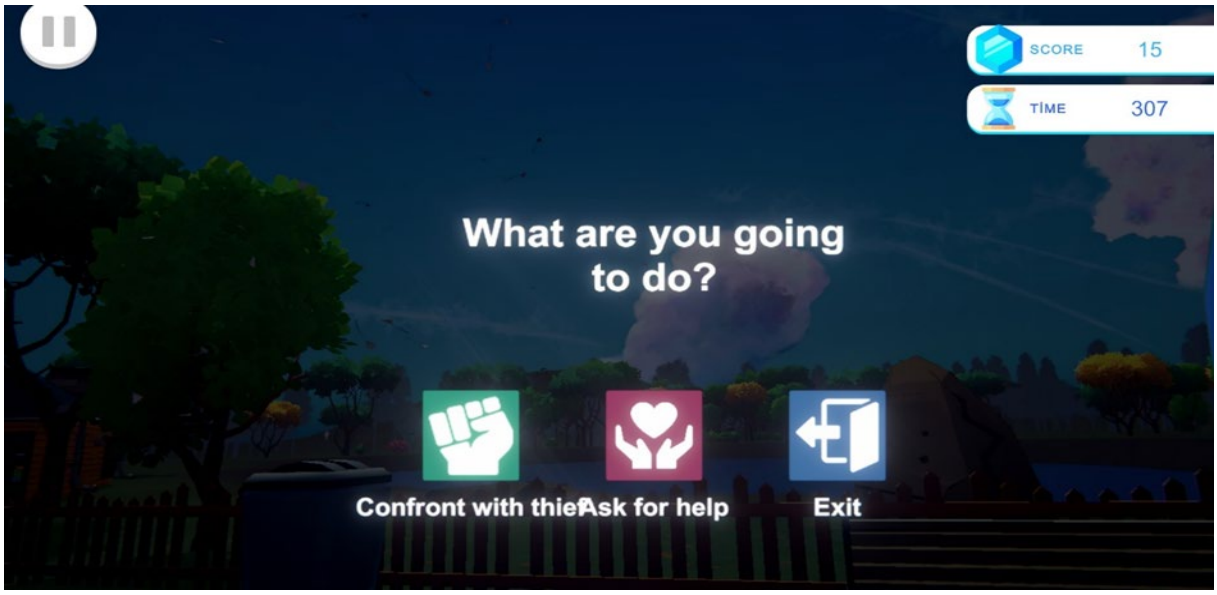
In the game, firstly, the bucket needs to be picked up with the right hand. For this, the player needs to extend his/her hand with the controller in the avatar's left hand as close as possible to the area where the bucket is located.

To move from one place to another within the game, the player must use the controller in the left hand to select the destination and teleport there. To teleport, the player marks the destination with the left thumb on the controller in his/her left hand. When the controller is held up to the screen, a teleportation indicator with a ring at its end appears on the screen.

In the top-right side of the video, the player sees a score counter that indicates the points (1 star = 1 point). Next to it, a clock is displayed, in which the player can see the remaining time for the game to end.

When 15 seconds are left for the game to end, an avatar approaches the player and steals the bag with the stars.

After this obstacle, the player is confronted with the following decision-making (with 3 different options):



The player must select one of the three options by marking it with the controller. To mark the selection, the player holds the controller up to the screen and chooses the preferred button using the trigger button, and it is necessary to hold it down for a few seconds to complete the process.

The player should ideally choose “Ask for help”. If the "Ask for help" option is selected, relaxation exercises begin. In the relaxation exercise, there is one trainer and two avatars following their movements. The avatars mimic the movements of the trainer, and the player must also mimic the same movements. In this section, the trainer also plays an active role, and he/she need to press the "Play" button on the computer to initiate each movement. The staff responsible decides how many times the movements will be repeated and when to move on to the second part of the exercise. When the first part of the exercise is completed, the "Next" button is pressed to proceed to the second part. Once the second part has been repeated as desired, the trainer presses the "Finish" button to complete the game.

Ideally, the responsible staff should make the player repeat the movements for at least 2 rounds.

If the "Confront with thief" option is selected, the player confronts the thief and ultimately falls to the ground after being punched by the thief. A message appears on the screen regarding the player's situation.

If the "Exit" option is selected, the player exits the game directly.

The aim of this scenario is to develop the probationer's ability to make the right decision in the face of a stressful situation, to conflict resolution strategies and and to learn breathing and body-awareness techniques.

5.1.2.2 Second VR Scenario – Refusal Skills, Setting Boundaries, Self-esteem

Purpose and Scope

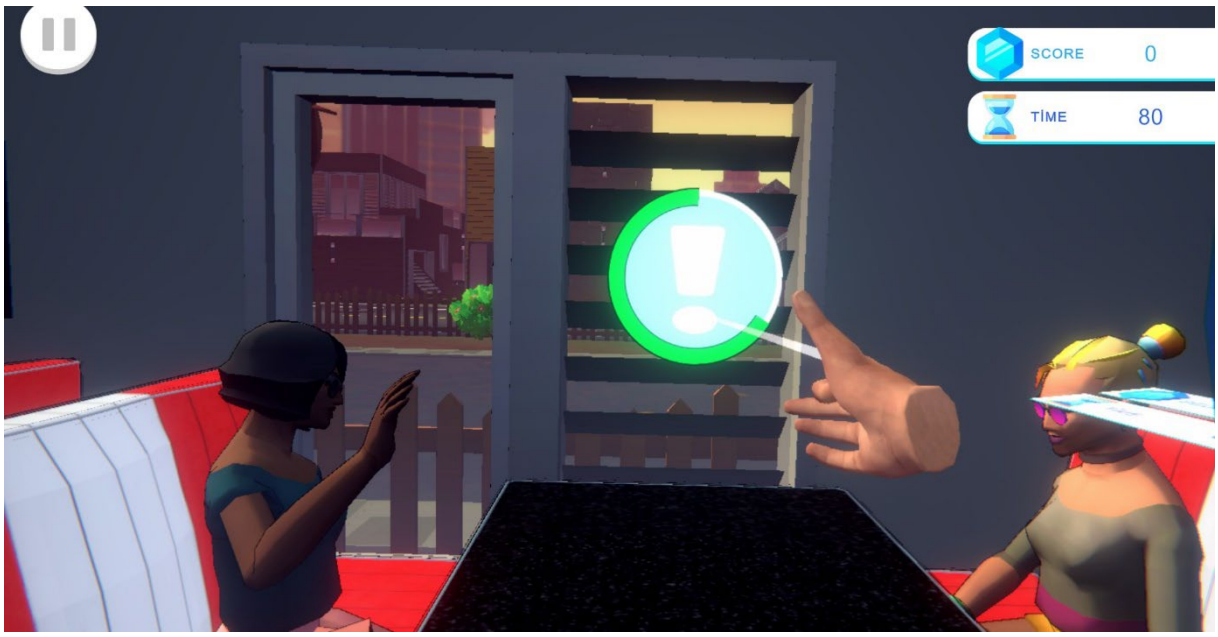
To develop refusal skills (related to drug use), learn to set boundaries, and increase self-esteem.

Game Concept

Setting: Garden Cafe / Kiosk

As the player is in a cafe, he/she is a waiter/waitress and must bring the orders to the costumers. The player's primary goal is to take the orders from customers and deliver them accurately and promptly.

In the game, a blue circle with an exclamation mark appears on the table of those who want to give an order. The player extends the controller towards the exclamation mark and holds down the trigger for a few seconds to take the order.



After taking the order, the order is delivered to the boss in the kitchen section. To deliver the order, the brown exclamation mark appearing on the counter must be selected. To move from one place to another within the game, the player uses the controller in the left hand to select the destination and teleports there.

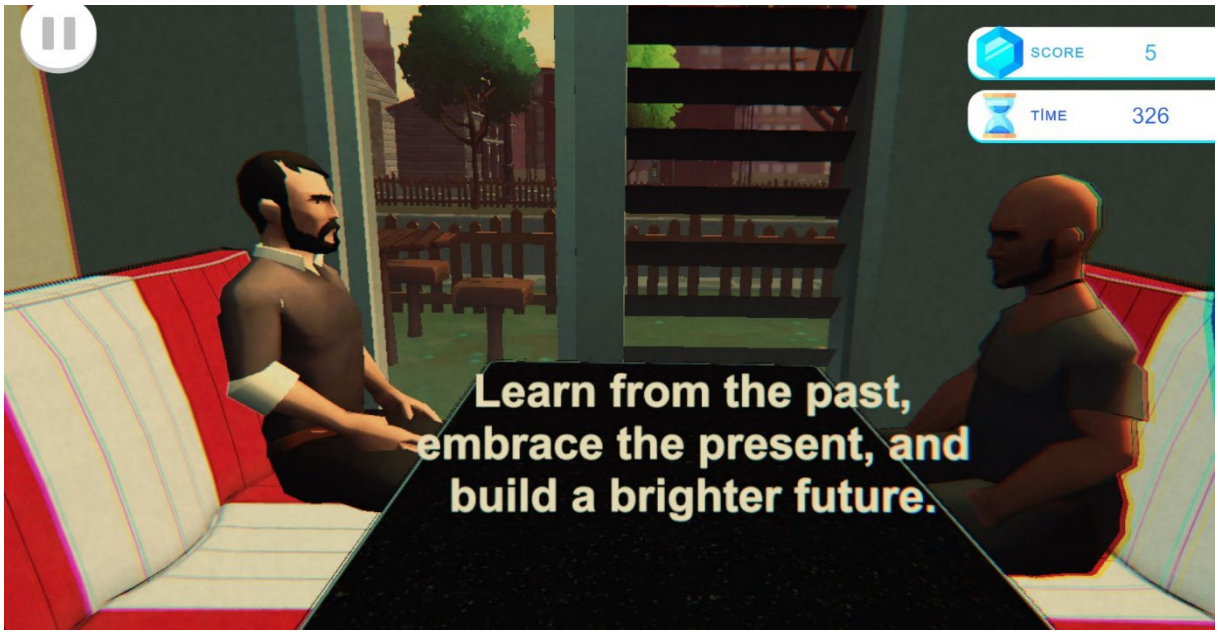
After the boss prepares the order, the player approaches the counter, presses the trigger with the controller in their right hand, and takes the plate.

A yellow exclamation mark appears on the table where the order was placed. The player approaches the table and places the plate on it.

Thus, the player completes his/her first order and receives his/her first score. The game continues in this manner with the taking of orders.

As the player continues to take orders, after the fifth order, the player is offered drugs by two customers at a table where he/she took an order. Different from the other customers, one of these two customers offers the player a drug pill, while the other gestures with their head encouraging the player to take the pill due to peer pressure. The player must make a decision here. Two options appear on the screen: "Take" or "Don't take." The player needs to choose one of these options.

If the player chooses to take it, a warning message appears on the screen as a cautionary alert, and the game continues.



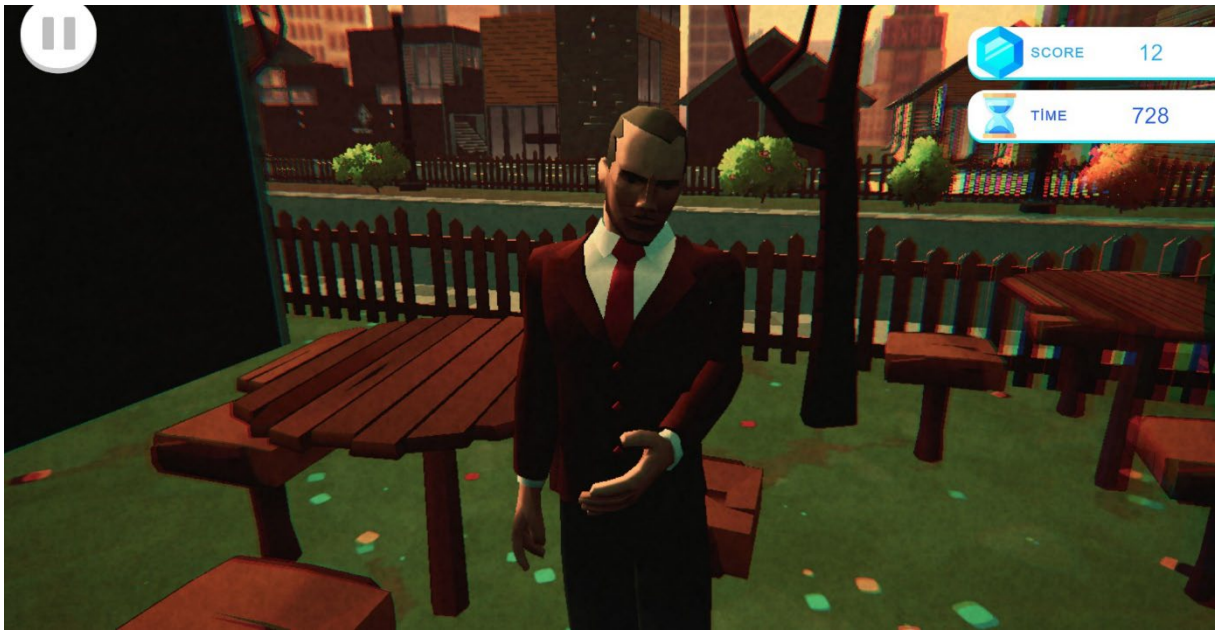
After taking the substance, the environment in the game becomes slightly darker, the music changes, and movements slow down. The player feels the difference in the athmosphere.

If the player chooses not to take it, the game continues from where it's left off, unchanged.

Regardless of whether the player accepts or declines the offers, after the ninth order, the customers who offered the substance present the offer again.

If the player accepts, a message appears on the screen to warn the player. The number of people in the cafe decreases significantly as customers become uncomfortable and leave. The game continues in this manner.

If the player declines, the game continues as before. Finally, after the 12th order, the game continues in the cafe's garden. The two customers who previously offered the substance offer it again to the waiter in the garden. The player faces two options again: If the waiter has been rejecting substance offers from the beginning, a congratulatory message appears on the screen to affirm their behavior. If the player accepted any substance offers before or accepts the final one despite rejecting previous ones, the game ends with a video where the boss scolds and fires the player for his/her behavior.



The objective of this scenario is to promote refusal skills, teach how to set boundaries, and increasing self-esteem, which is also enhanced by the acceptance and respect shown by the avatars when an assertive approach is employed.

5.1.2.3 Third VR Scenario – Development of Moral and Ethical Reasoning Skills

Purpose and Scope

Development of moral and ethical reasoning skills

Game Concept

Setting: Bus station.

The whole scenario will consist of a continuum game, in which the player will be confronted with encounters to stimulate moral and ethical reasoning.

The game begins on the screen with a message informing the player of his/her mission. The player initiates the game with the help of the controller.

The coffee cups are hidden in different parts of the virtual environment. Players can use their 360-degree vision to thoroughly explore the surroundings and carefully search for the listed items. They receive 1 point per object that is found.

To add a supplementary component of challenge and an intended sense of restricted time, there is a timer with the count-down, always visible to the player.

Throughout the object hunt gameplay the player encounters individuals in need (elderly, pregnant women, and a male avatar) who require assistance.

As the player continues to race against time collecting cups, they encounter an elderly man struggling to carry his bag. He asks the player for help in carrying his bag to the bus stop.

A request for help appears on the screen. If the player chooses to help, they must approach the bag, use the controller to pick it up and carry it to the designated area at the bus stop. The clock is still ticking, and this implies sacrificing some time or adjusting their gameplay strategy to accommodate the assistance provided. If the player helps, he/she will lose some time. The player is left with a dilemma.

Regardless of the choice the player makes, the game continues. No positive or negative feedback is given in this game to avoid influencing their other choices.

As the player explores the virtual bus stop and looks for the hidden cups, appears a pregnant woman who looks tired and in need of assistance.

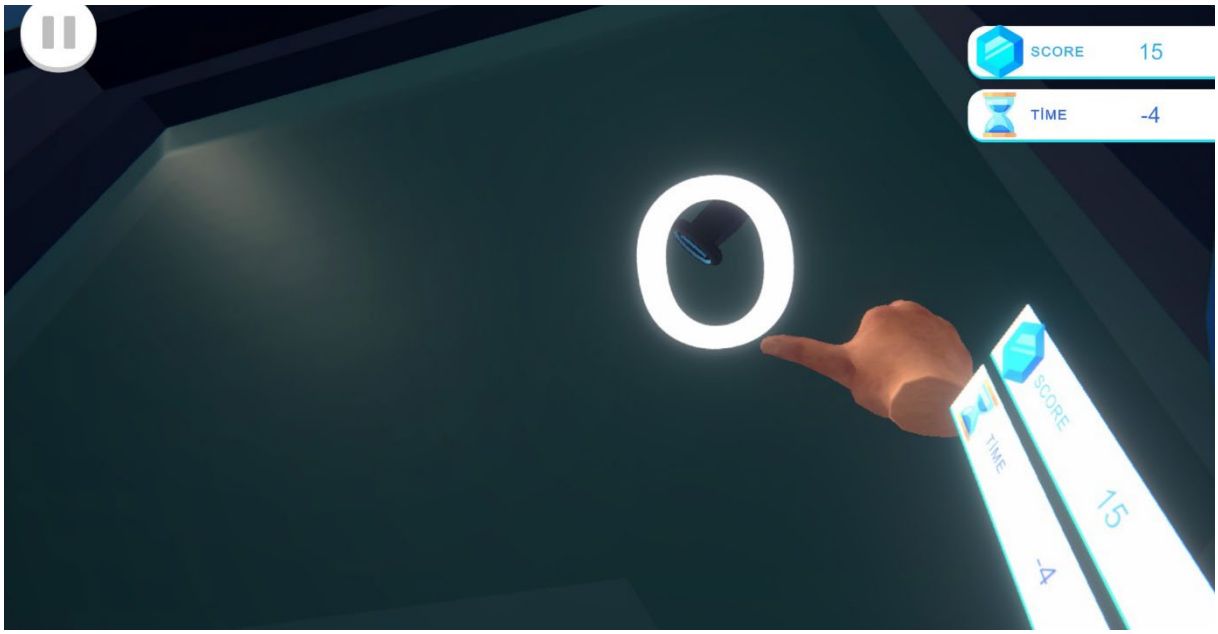
The player selects one of the two options that appear on the screen regarding whether to help or not. If the player choose to accept the help, he/she needs to use the controller to mark the spot where the pregnant woman will sit at the bus stop.

The game resumes regardless of the decision. No feedback is provided so far, and no reward is given yet, in order to not impact the following choices.

Even if the player chooses not to help or makes no mark, they still continue the game.

While the player continues collecting coffee cups, a young male avatar appears who has lost his watch. He asks the player for help in finding his lost watch.

If the player chooses to help the young man, he/she must search the area for the lost watch and use the controller to reach out and pick up the watch.



If the player declines to help, he/she continues with the task of collecting coffee cups. By presenting an apparently less vulnerable individual, the game urges the player to delve deeper into identifying the diverse needs and experiences of others. It tests their ability to recognize vulnerability beyond superficial characteristics and encourages them to empathize with those who may not outwardly appear as traditionally fragile.

If the player chooses to help at least two avatars during the game, regardless of their coffee cup score, a brief message supporting the behavior of helping others appears at the end of the game.

If the player chooses to help only one avatar, a supportive message acknowledges his/her behavior but reminds him/her that the other two avatars also need assistance.

If the player consistently refuses to help each time, at the end of the game, a message appears on the screen reminding the player that helping those in need is more important than scoring points, aiming to raise awareness.

The Object Hunt game mode provides an immersive and interactive experience, urging players to employ their observational, focus and concentration skills.

When approached by the vulnerable people that come up throughout the game, the player is forced to consider their objectives, employing awareness skills and foster their adaptability skills, in which their moral and ethical reasoning are present. This generates on the player an intentional conflict between personal progress and moral obligations, encouraging players to consider the ethical implications of their decisions.

By weighing their individual goals against the needs of others in need, the player is encouraged to make thoughtful decisions that display their values and sense of compassion. This gameplay experience nurtures personal growth and the development of key moral and ethical competencies.

5.1.2.4 Fourth VR Scenario – Emotion Regulation

Purpose and Scope

Emotional Regulation and Coping Mechanisms

Game Concept

Setting: Official Institution

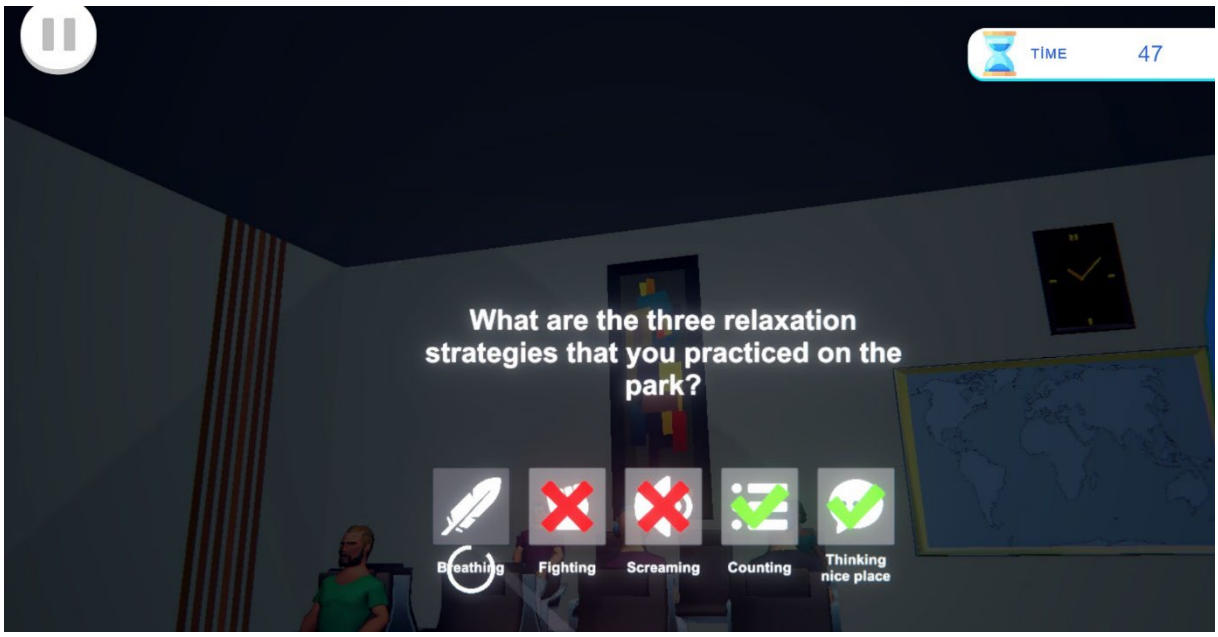
The game takes place in a official institution and the player will apply for an ID. When the game starts, a message appears on the screen stating the task the player must do: "Queue to get your ID." The player starts the game by selecting the ring with the controller and holding the trigger for a few seconds.

When the game starts, the player goes to a queue, which only have a few (1 or 2) avatars waiting. However, when the player goes to the queue, the security avatar points to another queue, which has much more avatars waiting, indicating the player must go there.

This is intended to elicit the levels of impatience/frustration of the player.

The following question appears on the screen: ‘What are the three relaxation strategies that you practiced on the park?’ Options:

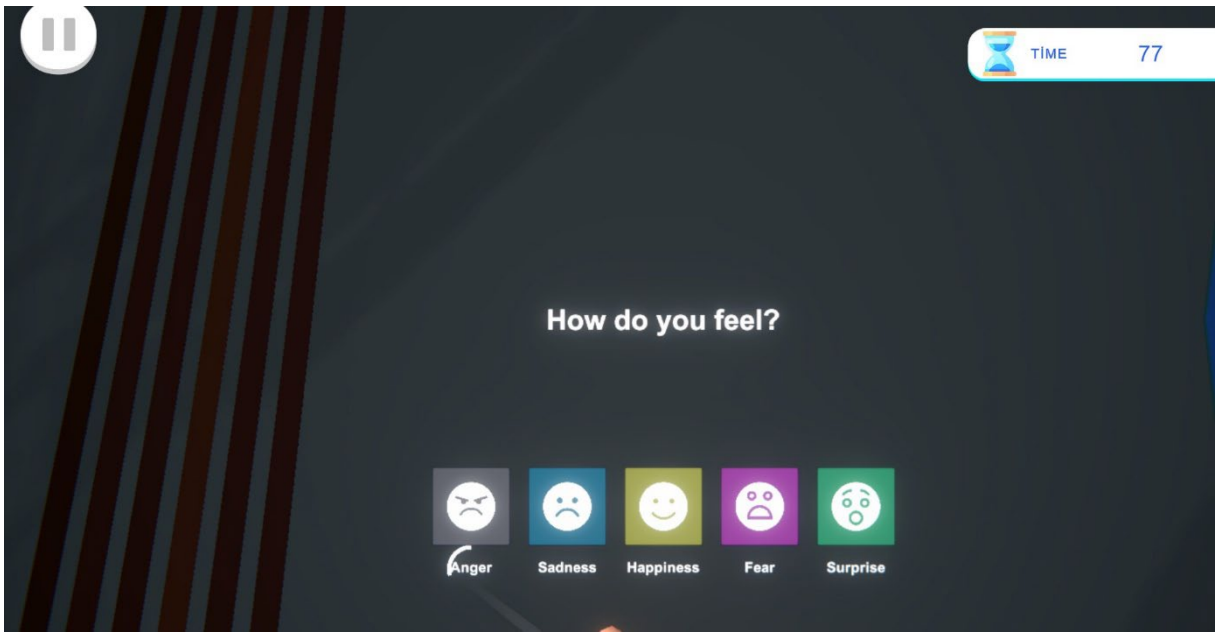
1. Breathing
2. Thinking about a nice place
3. Counting downwards
4. Screaming outload
5. Hitting somebody



When the player chooses three correct options, he/she returns to the game and move to the next queue with the help of the controller.

While the player is in the queue, after a while, an avatar comes and disturbingly gets in front of the player. Later, the avatar turns to the player and adopts a threatening posture.

At this stage, a message appears on the screen for the player to choose the emotion he/she is feeling. (In this section, whether the player can correctly describe his/her emotions is measured.)



After the player makes his choice, a new message appears. The player is given four options for reacting to the person taking his/her turn.

The player chooses one of the options: to fight, engage in relaxation exercises, call for security, or initiate a conversation.

If the player chooses the option of fighting, the avatar that gets in front of the line turns towards the player and throws a punch, leaving the player on the ground, and the player finds himself/herself on the floor.

A message saying *"If you approach the other person in an aggressive manner, you will be in trouble and won't achieve your goal"* appears on the screen and the game ends. The player sees the result of the reaction he/she choose in the virtual environment within the game.

If the player prefers to do relaxation exercises and relax, a short animation of relaxation exercises in the park appears, and the player can relax and calm down by repeating the movements if he/she wishes. The player also remembers and reinforces the relaxation techniques he/she applied in the stress management scenario (First Virtual Reality Scenario).

After the relaxation exercise, a message with two options appears on the screen asking how the player would react now: Option 1: Call Security, Option 2: Talk

By directing the player to one of these two options, it is shown that the player can find a rational solution to the problem he/she is facing after relaxing and calming down.

The player can select both correct options in this section. If the player calls security, the security guard comes and removes the avatar from the queue. When the player selects the talk option, the avatar's aggressive attitude changes and the avatar leaves the queue automatically.

If the player selects the option to call security to solve the problem he/she encountered, the security guard will come and intervene with the avatar who blocked the queue and remove the avatar from the queue.

Then, a message appears on the screen in the security guard's language stating that the player has chosen the correct option.

With this message, the player's positive behavior is reinforced.

If the player selects the "Talk" option to solve the problem he/ she is facing, the avatar who took the turn changes his aggressive attitude, listens to the conversation properly, and leaves the queue on his own.

With this message, the player's positive behavior is reinforced. Afterward, a message appears on the screen stating that the behavior the person has chosen to display in response to the problem he/she is encountering is correct. This message aims to reinforce the person's behavior.

Skills that are expected to be develop with this scenario:

- Self-Awareness: Recognising and identifying one's own emotions is an important part of self-awareness. It supports the player in developing a deeper awareness of their emotional states and responses by asking them to examine their emotions in the game. This increased self-awareness can help people deal with challenging situations more successfully and make more informed judgments.
- Emotional Intelligence: The ability to appropriately identify and categorise emotions is a critical component of emotional intelligence. Players can improve their emotional intelligence abilities by displaying this aspect into the game. This can lead to better self-management, a better awareness of the emotions of others, and stronger interpersonal interactions.
- Emotional Regulation: Identifying emotions is an important step towards regulating them. Players who can identify their emotions acquire the ability to pause and examine their emotional condition before reacting rashly. This empowers them to decide more thoughtful and constructive responses, increasing emotional regulation and minimising unnecessary conflicts or unpleasant outcomes.
- Mindful Decision-Making: Identifying emotions prompts players to pause and ponder before acting. It encourages them to take a more mindful approach, in which they examine the influence of their emotions on their decision-making process. This can lead to more deliberate,

rational, and well-informed decisions, boosting problem-solving abilities and fostering favourable outcomes.

5.2 Guidelines and Recommendations for Implementing TRAIVR

As we embark on the implementation of TRAIVR, it is crucial to establish clear guidelines and recommendations for professionals utilizing this intervention. TRAIVR is designed to provide a controlled and immersive experience for participants, emphasizing the active role of the professional overseeing the process.

- Control Mechanisms

Professionals managing the TRAIVR sessions will have exclusive control through a laptop interface. The main menu, featuring scenario choices, is visible only to the professional, ensuring a controlled and guided experience for the participant. This control mechanism allows the professional to manage and customize the virtual reality experience for optimal outcomes.

- Language Options

Professionals responsible for managing the TRAIVR sessions will have to select the language option according to the nationality of the probationer. Arabic, Persian, Kazakh, Kırghız, Pestu languages are available in the software serving the use of refugee offenders. Although symbolic language domainates the scenarios, for refugee offenders to follow the instructions or warnings shown on the screen have to be in the language they speak. Language menu allows the responsible professional to manage and customize the virtual reality experience for optimal outcomes.

- Scenario Independence

TRAIVR scenarios are designed to be self-independent, minimizing the need for constant engagement from the professional. However, in Scenario 1, set in a park during the relaxation exercises, the professional must assume a key role. Through the laptop, they can select whether the exercise should be repeated, paused, or progressed to the next exercise. Observing the participant's promptness to transition helps tailor the experience to individual needs.

- Technical Considerations

Technical preparations play a crucial role in ensuring a seamless TRAIVR experience. Given the software's battery consumption, the professional should ensure that the laptop is fully charged, ideally located near a power outlet. Pre-session checks should include verifying the full charge of VR glasses and remotes. Charging intervals are recommended to prevent disruptions during sessions.

- Session Duration and Health Monitoring

To prevent discomfort or adverse reactions, participants should not be immersed in TRAIVR scenarios for more than 20 minutes. Professionals must remain vigilant for any signs of nausea or sickness, ensuring immediate cessation if such issues arise. Adequate space for the VR experience should be confirmed to prevent accidents and promote participant safety.

- Informed Consent and Participant Awareness

Before each session, professionals must confirm that participants have read and understood the informed consent document. Participants must be fully aware of the nature of the VR experience, potential sensations, and the importance of communication during the session.

In summary, successfully implementing TRAIVR hinges on meticulous control, technical readiness, and participant well-being. By adhering to these guidelines, professionals can harness the full potential of TRAIVR as a transformative tool within probation systems, fostering effective rehabilitation and skill-building experiences for participants.

5.2.1 Skill's needed

Implementing VR tools within probation systems requires a unique set of skills and competencies from professionals tasked with overseeing and facilitating the experience.

· Technological Proficiency

Professionals engaging with TRAIVR must possess a solid foundation in technological proficiency. This includes familiarity with the VR hardware, software, and the laptop interface. Competence in troubleshooting technical issues is vital to ensure participants' smooth and uninterrupted VR experience.

· Adaptability and Problem-Solving

The nature of VR technology introduces an element of unpredictability. Professionals must adapt to unforeseen challenges and solve problems on the fly. Whether addressing technical glitches or participant concerns, thinking on one's feet is paramount.

· Empathy and Sensitivity

Cultivating empathy and sensitivity becomes crucial as professionals guide participants through immersive VR scenarios. Understanding the potential emotional impact of specific scenarios and being attuned to participants' reactions allows for more personalized and practical support.

· Attention to Participant Well-Being

Monitoring participant well-being during and after VR sessions is imperative. Professionals should be attuned to signs of discomfort, nausea, or any adverse reactions.

· Cultural Competence

Professionals working with diverse populations within probation systems must exhibit cultural competence. Awareness of cultural nuances and the ability to adapt VR scenarios to resonate with participants from various backgrounds enhance the effectiveness of the rehabilitation process.

· Ethical Considerations

Understanding the ethical dimensions of VR implementation is paramount. Professionals must adhere to confidentiality rules, ensure informed consent is obtained, and prioritize participant autonomy and privacy throughout the VR experience.

· Continuous Learning

Given the ever-evolving landscape of VR technology, a commitment to continuous learning is essential. Staying informed about advancements, attending training programs, and seeking professional development opportunities contribute to ongoing competence in utilizing TRAIVR effectively.

In conclusion, professionals undertaking the implementation of TRAIVR within probation systems should possess a multidimensional skill set encompassing technology, interpersonal dynamics, and a deep understanding of rehabilitation principles.

5.3 Form to be Used

Before the implementation of TRAIVR scenarios, certain forms need to be filled out during the application phase and after the application.

5.3.1 Informed Consent

The Informed Consent form, which provides general information about the implementation of the scenarios and allows us to obtain the person's Consent for participation, should be signed before starting the sessions. Informed Consent informs individuals about the anticipated outcomes of scenario implementation, privacy, and details about instructors. Additionally, to prevent any adverse situations in the VR environment, individuals are informed about any discomfort that may arise. They are provided guidance on situations where VR applications may lead to undesirable outcomes. This includes information about any existing discomfort, potential issues in the VR application, and the actions to be taken in case of discomfort. Obtaining this information and Consent creates a safer environment for both the practitioner and the participant. This form should be stored in the participant's probation file throughout the probation process.

5.3.2 Demographic Form

The Demografic form will provide information about the demographic characteristics of the convict, such as nationality, age and languages spoken. The demographic form should be completed before the implementation of the TRAIVR scenarios.

5.3.3 Observation/Evaluation Form

The evaluation form for each scenario should be filled in by the practitioner for the participant at the beginning of the sessions, during the implementation of the sessions and after the session. It is important that the practitioner carefully observes the participant during the completion of this form.

Please see the appendix for all the forms.

5.4 Evaluating the Impact

VR scenarios were selected after reviewing further validated evaluations that could be applied. These options include cognitive reappraisal and expressive suppression methods because they are universal in all scenarios. The methods used provide a holistic perspective on participants' cognitive and emotional states and identify potential language barriers between participants. It is also ideal for measuring the capabilities addressed in the scenarios and TRAIVR's success in achieving its goals.

The cognitive reappraisal method involves assigning a different meaning to a situation. Changing one's perspective on a stressful situation reduces discomfort-related reactions and helps the person cope with challenging situations. It enables him to organize his thoughts and comments and improve his coping mechanisms (Garcia et al., 2023). The expression suppression method states that the management of emotions is necessary for successful interactions. That is, it involves regulating outward emotional displays and reducing conflicts by increasing interaction with the outside world (Garcia et al., 2023).

The Emotion Regulation Questionnaire-Short Form (ERQ-S) measures these two basic emotion regulation strategies and is a 6-item self-report measure (Gross & John, 2003). Originally in English, this survey has been translated into 37 languages (Stanford Psychophysiology Laboratory1, 2023). The ERQ has demonstrated strong psychometric properties in university and clinical settings and across different cultural groups (e.g., Preece et al., 2020; Sala et al., 2012; Santos et al., 2021; Eldeleklioğlu & Eroğlu, 2015; Sadiq & ALHadrawi, 2021; Wang et al., 2020). This survey has an essential place in the TRAIVR application, especially since it has been validated in Arabic, the language of the majority of refugees in Turkey (Santos et al., 2021; Eldeleklioğlu & Eroğlu, 2015; Sadiq & ALHadrawi, 2021). Self-answered questions in the ERQ correspond to expected emotional experiences and the role of cognitive reappraisal (Gross & John, 2003). High expressive suppression and low reappraisal indicate difficulty regulating emotion (Preece et al., 2018). With this survey, a more accessible and easily understandable evaluation can be made, unlike complex evaluations. In this way, a more effective measurement can be made and helps overcome language difficulties.

5.5 Integrating the TRAIVR Solution in Rehabilition Systems

The primary goal of the probation system is to rehabilitate offenders and complete the probation period, aiming to minimize the risk of reoffending. The probation process is conducted in conjunction with rehabilitation processes like individual interviews, group sessions, and family trainings. During the interaction with refugee offenders in this process, difficulties arise due to language barriers. Hence, the scenarios developed under the TRAIVR project, when integrated into the probation system, will make a significant contribution to the rehabilitation process.

When implementing virtual reality scenarios within the probation process, the following points are recommended to be considered:

*Each scenario replaces one session of any obligation planned in the probation period. The frequency of the scenarios may vary according to the length of the person's probation process. However, the interval between the implementation of two scenarios should not be longer than two weeks.

*When deemed necessary, the 1st and 2nd scenarios can be applied together in one session, and the 3rd and 4th scenarios in one session.

*The flow of application of the scenarios should be ordered. However it is possible to change the application order of the scenarios if needed. Since the reference is made only in the 4th scenario with the aim of reinforcing the skills learned in the 1st scenario, Scenario 4 should always be implemented after Scenario 1.

*As long as the person implements the VR scenarios, he should not be considered to have violated the probation even if he cannot fulfill the requirements of the scenario.

*If the practitioner decides that it would be beneficial for the convict to repeat the scenarios, there is no harm in applying them again after all the scenarios have been implemented. However, each application will replace any obligation planned in the probation plan.

*In cases where VR scenarios are not sufficient for the probation period of the convict, the process may continue with individual interviews.

VI. Preventive Strategies

The acquisition of socioemotional competencies, notably stress coping mechanisms, assertiveness, problem-solving aptitude, and emotion regulation proficiency, stands as a crucial determinant in mitigating the propensity for recidivism. Hence, a post-criminal-offense pedagogical approach aimed at instilling these competencies is imperative. However, adopting a preemptive stance, antecedent to criminal conduct, is equally imperative in the realm of preventive intervention.

Virtual Reality (VR) training modules emerge as a promising avenue for the cultivation of a myriad of skills beyond the conventional purview. The malleability inherent in these techniques renders them amenable to iterative refinement. The prophylactic potency of these methodologies lies in their capacity to simulate real-world scenarios, thereby facilitating the transference of acquired competencies to quotidian contexts. Consequently, the augmentation of probationary services not only augurs an elevation in quality but also proffers a blueprint for the efficacious training of foreign nationals.

Although not constituting the primary objective of the TRAIVR project, the incidental utility of extant scenarios in crime prevention endeavors is noteworthy. Refugees encountering analogous socioemotional hurdles, albeit non-incriminated, stand to benefit from skill-building interventions congruent with those encapsulated within the TRAIVR framework. Within this framework, the program's applicability extends seamlessly to other civil society organizations engaged in migrant support initiatives, thereby positing itself as a salient preventive measure and a paradigmatic exemplar of innovative prevention endeavors.

Moreover, familial connections to individuals under probationary supervision suggest a similar vulnerability to risk factors. Hence, the prudent expansion of intervention resources to include spouses and children of probationers arises as a sensible course of action. Aware of the dynamic nature intrinsic to the probationary framework, collaborative endeavors with public institutions are imperative for coordinating preventive initiatives effectively.

Given the universality of the socioemotional competencies addressed within the TRAIVR scenarios, their adaptability extends to educational milieus, notably catering to school-age refugee cohorts grappling with linguistic barriers. The integration of these scenarios as a

fundamental framework for preventive initiatives, while meticulously adhering to relevant legal principles, signifies a hopeful path for proactive intervention.

VII. Closing Remarks

This comprehensive document presents a thorough overview of the TRAIVR Virtual Reality (VR) application, meticulously detailing its numerous scenes, multifaceted features, and interactive functionalities. As the transformative journey aimed at rehabilitating refugee and immigrant offenders is embarked upon, heartfelt gratitude is extended to our dedicated team of developers and testers, whose tireless efforts have been instrumental in realizing the TRAIVR vision. Furthermore, appreciation is expressed to the supporting agencies whose invaluable contributions have played a pivotal role in materializing TRAIVR as a tangible reality, positioned to bring about profound change in the lives of those it serves.

Sincerest gratitude is extended to you, the esteemed reader, for investing your time, interest, and unwavering commitment to the TRAIVR project. Together, unified in purpose and dedication, we endeavor to effect transformative change, one immersive VR rehabilitation scenario at a time.

Appendix

A. Informed Consent
B. Interview Protocol
C. Informed Consent
D. Demografic Form
E. Observation/Evaluation Form
F. Emotion Regulation Questionnaire-Short Form (ERQ-S)
G. Assesment Considerations & Scoring

A. Informed Consent (Need Analyses)

We appreciate your interest in participating in this interview.

Before starting, you should be completely aware and informed about what it consists of and the importance of your participation.

Context:

You are being asked to participate in an interview to provide your perspective on the reality of refugee probationers, your needs, aspirations, and particularities.

The purpose of this interview follows the scope of the Training of Refugee Offenders by Virtual Reality (TRAIVR) project, which aims to develop a virtual reality program that will improve the coping skills of substance-using refugee probationers.

This project proposes an innovative solution using Virtual Reality technology to help these groups acquire these skills and reduce the risk of engaging in criminal behavior.

By participating, **you will be supporting the TRAIVR team to build and develop a program tailored to the specific needs of substance-using refugee probationers.**

Procedure:

If you agree to participate in the interview, you will be asked eight questions related to your experiences and perspectives.

When answering the questions, we encourage you to reflect on your personal experiences and situation, while also considering the broader refugee community. We understand that each person's circumstances are unique, but your insights and perspectives can help us gain a more comprehensive understanding of the challenges faced by refugees. Additionally, if you have knowledge of the experiences of other refugees, we welcome your input and encourage you to share any insights that you believe may be relevant or valuable.

The average time for the interview consists of 30 to 40 minutes.

Voluntary Participation:

Participation in this interview is completely voluntary, and you have the right to refuse to participate or to withdraw from the interview at any time without any penalty. Your decision to participate or not will not affect your relationship with any agencies or organizations that you may be involved with.

Confidentiality:

All information collected during this interview will be kept confidential and anonymous. Your name will not be associated with any research findings or publications. Your personal information will be protected by using a participant identification number instead of your name. You have the right to withdraw and/or stop the interview, without any consequence to you.

Responsible team:

The responsible team for conducting this interview represents Ankara Probation Directorate, namely the interviewer _____ (first and last name).

To proceed, please fill in the above informed consent declaration.

Informed consent:

I hereby declare that I, _____(first and last name), have I have read and understood the information provided in this consent form, and I willingly agree to participate in the interview for the TRAIVR project.

Date: ___/___/2023

Thank you for your participation!

B. Interview Protocol

The interview we are about to start is part of a project called Training of Refugee Offenders by Virtual Reality (TRAIVR). Our goal is to develop a virtual reality program that helps substance-using refugee probationers develop better coping skills, reducing their risk of committing further crimes.

We think this project can make a big difference, and your participation is key to making it happen.

For this, we would like to invite you to share your thoughts and experiences in an interview regarding refugee probationers. We're interested in hearing about your unique needs, aspirations, and circumstances. By sharing your perspective, you'll help us create a program that is tailored to the needs of substance-using refugee probationers.

Don't worry, all your responses will be kept confidential, and you're free to decline any questions you don't feel comfortable answering

The interview will last between 30-40 minutes and will have two parts:

• The first part will focus on clarifying the information that we have gathered from previous studies. This will help us understand your current situation and identify any areas that need further exploration.

• The second part of the interview will focus on developing specific aspects that are important for your rehabilitation. This will allow us to gain a more comprehensive understanding of your needs and goals, and to develop a customized plan to help you achieve them.

When answering the questions, we encourage you to reflect on your personal experiences and situation, while also considering the broader refugee community. We understand that each person's circumstances are unique, but your insights and perspectives can help us gain a more comprehensive understanding of the challenges faced by refugees. Additionally, if you have knowledge of the experiences of other refugees, we welcome your input and encourage you to share any insights that you believe may be relevant or valuable.

- **Interview questions:**

1. Based on our previous experience, we know that the most important problems that refugees face are related to adaptation to a foreign culture, language barriers and access to education. What is your opinion about this?

2. Apart from that, refugees seem to face social problems and the lack of employment. Do you agree with this observation? In your opinion, do you believe there are any additional challenges or issues that they may be experiencing?

3. Do you think that refugees are aware of how to access social and employment services? What barriers might prevent them from accessing these resources?

4. In your opinion, how much of a role do the following factors play in criminal behavior among refugees?

   4.1 Language obstacles

   4.2 Communication issues

   4.3 Alienation

5. Many refugees are complaining about the cultural differences. What do you think they mean exactly? (e.g., language, religion, polygamy etc.).

6. Do you think the group plays an important role in committing crimes in the destination country? Why is that?

7. How do you think these needs can be effectively met? What resources and services do you believe are essential for successful integration into a new culture?

8. What strategies do you believe could help prevent refugees from engaging in criminal activity? How can we support them in building a positive future for themselves and their families?

C. Informed Consent

Welcome to the TRAIVR programme!

Before starting the virtual experience, you should be completely clear and informed about what this programme consists of.

Goals: The TRAIVR project helps you learn valuable life skills through Virtual Reality (VR). You'll interact in VR scenarios like a park, kiosk, bus station, and official institution.

Precautions: VR may cause discomfort like motion sickness. It's not suitable for those with epilepsy, vertigo, high blood pressure, ear issues, severe psychological disorders, recent surgery, or pregnancy. If you feel any discomfort during the programme, you must inform the team in charge.

Confidentiality: By joining, you agree to the programme's goals. Your name won't be used or any collected data (such as age, gender, nationality), as it will remain unlinked to your identity.

Certificate: You will benefit from a Certificate of Participation at the end of the programme.

Team: The responsible team at [partner organization], including [trainer names], will guide you and clarify any doubts you may have.

To proceed, please fill in the informed consent declaration:

I hereby declare that I, _____ (first and last name), have **received all information regarding the TRAIVR programme and agree to participate.**

Date: ___/___/2023

I _____ (signature) hereby:

☐ **I Consent**

☐ **Do not consent**

To participate in the TRAIVR programme.

Date: ___/___/2023

D. Demographic Form

Participant ID[1] _____

Age: _____ **Gender:** ☐ Male ☐ Female ☐ Other:

Marital Status_____ **Offence type** _____

Country of Origin: _____
Duration of Displacement (years/months): _____
Current Residence/Camp: _____
Legal Status: ☐ Asylum Seeker ☐ Recognized Refugee ☐ Other: _____

Primary Language: _____
Other languages: _____

Highest Level of Education Completed:

- ☐ No formal education
- ☐ Primary education
- ☐ Secondary education
- ☐ Higher education

Current Employment Status: ☐ Employed ☐ Unemployed ☐ Student

Observation/Evaluation Form

Participant ID[2] _____

[1] Please use the same ID number as the one used on VR Software
[2] Please use the same ID number as the one used on VR Software

Pre-session	**Initial Emotional State:** ☐ Calm/Neutral ☐ Anxious ☐ Excited ☐ Other: _____ **Willingness/Readiness to Engage:** ☐ Eager ☐ Hesitant ☐ Indifferent ☐ Other: _____ **Technological Familiarity/Confidence:** ☐ Confident ☐ Some Confidence ☐ Little to No Confidence ☐ Not Assessable **Notes/Comments:**
During Session	**Engagement with VR Content:** ☐ Highly Engaged ☐ Engaged ☐ Disengaged ☐ Other: _____

Post-session	**Emotional Response During VR Experience:** ☐ Enjoyment ☐ Discomfort ☐ Indifference ☐ Stress ☐ Other: _____ **Interaction with VR:** ☐ Active Interaction ☐ Passive Interaction ☐ No Interaction ☐ Other: _____ **Notes/Comments:**
	Emotional State Post-VR: ☐ Calm/Neutral ☐ Anxious ☐ Excited ☐ Other: _____ **Verbal Feedback (if any):**

	Willingness to Participate in Future Sessions: ☐ Willing ☐ Not Willing ☐ Uncertain ☐ Other: _____ **Notes/Comments:**
Other observations	

E. Emotion Regulation Questionnaire - Short Form (ERQ-S) – Original Version2

Instructions and items

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1	2	3	4	5	6	7
Strongly agree			neutral			strongly disagree

1. _____ When I want to feel more positive emotion (such as joy or amusement), I change the way I'm thinking about the situation.
2. _____ I keep my emotions to myself.
3. _____ When I want to feel less negative emotion (such as sadness or anger), I change the way I'm thinking about the situation.
4. _____ I control my emotions by not expressing them.
5. _____ I control my emotions by changing the way I think about the situation I'm in.
6. _____ When I am feeling negative emotions, I make sure not to express them.

F. Assessment Considerations & Scoring

Respondents' answers are scored on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scoring takes the average of all the scores in each subscale of cognitive reappraisal and expressive suppression. The higher the score, the greater the use of that particular emotion regulation strategy, conversely lower scores represent less frequent use.

Cognitive reappraisal items: 1, 3, 5.

Expressive suppression items: 2, 4, 6.

Do not change item order, as items 1 and 3 at the beginning of the questionnaire define the terms "positive emotion" and "negative emotion".

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