

**Self-Conversation in Virtual Reality Embodiment to Enhance Healthier Lifestyles among People with Obesity**

**Newsletter #5**

**VHIR Team**

**March, 2022**

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This Newsletter comprises both the Research and dissemination activities from the SOCRATES consortium.

## **Research activities**

### **VHIR**

On February 2023, VHIR finished the recruitment of the Clinical Trial with patients with obesity from the Hospital Universitari Vall d'Hebron. A total of 94 participants were selected for eligibility, but 26 participants have been excluded for different reasons. Hence, a total of 68 participated in the study. The final results from the Clinical Trial are expected to be available in the midst of April, once the last participant will have undergone all the phases of the study. The sample distribution within the Experimental Groups is: Experimental group 1 (N = 24), Experimental group 2 (N = 22), and Control Group (N = 22).

### **IDC**

Other partners have been also working in research activities: During the past six months, the research team at the ARL lab at Reichman University has been improving the artificial intelligence (AI) model. The artificial intelligence model has been trained with Motivational Interviewing data. They also started an exploratory experiment with 75 subjects. This study focuses on the quality and capabilities of the trained AI model (without VR). We plan on recruiting more participants and hope to complete the study in a few months. In addition, we designed our first VR and AI experiment, which will run starting in April 2023. It will include implementing the trained AI model in the ConVRSelf application. Prof. Slater and Prof. Friedman designed the study, and we have two accomplished students leading the experiment, along with Ph.D. candidate Momi Zisquit.

### **VBW**

VBW has been working on improving and optimizing the process of creating avatars for patients who are seeking counseling, specifically those who are obese. The main objective was to make the process more efficient and cost-effective, while also improving the accuracy of the avatars created. To accomplish this, we utilized a deep neural model to automate the process of avatar construction. This involved training the model to infer the 3D shape of the patient from front and side images taken with a smartphone. We also developed a fully movable avatar that can adapt and change in shape over time to reflect the patient's physical changes, as well as an avatar that resembles the patient's healthy body weight. Furthermore, we adapted an existing platform, ConVRself, to fit the specific circumstances of obese individuals interacting with a counselor. This involved making modifications to the platform to allow patients to give simple instructions to their self-avatar, such as standing up or moving around. Throughout the development process, we conducted various

validation studies to ensure the effectiveness and reliability of our approach. These studies aimed to verify that our approach can be used routinely and accurately with patients seeking counseling. Overall, we have made significant strides in the use of avatars for healthcare and counseling, with the potential to improve patient outcomes and quality of care. Our ongoing tasks involve continuing to refine and optimize the approach to make it even more effective and beneficial for patients.

### *Scientific Publications*

#### VHIR

A study that assesses the usability of ConVRSelf with people living with obesity has been accepted and proofread at the Journal *Frontiers in Psychiatry*, Digital Mental Health section.

Anastasiadou, D., Herrero, P., Vázquez-De Sebastián, J., Spanlang, B., Alvarez De la Campa, E., Slater, M., Ramos-Quiroga, A., & Lusilla-Palacios, P. (2022). Virtual Self-Conversation Using Motivational Interviewing Techniques to Promote Healthy Eating And Physical Activity: A Usability Study. *Frontiers in Psychiatry*.

#### IDC

Paper accepted to IEEE VR workshop publication. More details will be provided further on social media once available.

### *Frontiers Research Topic*

As regards the *Frontiers* research topic, 6 manuscripts have been submitted to the Research topic in *Frontiers in Psychology* “Can Virtual Reality Be a Solution for Assessing and Treating Psychological Symptoms Caused by Eating and Weight Disorders?”. The research topic is no longer available for submissions. From the 6 papers, 3 have been accepted, 1 is under review, one withdrawn, and finally, the usability study from the VHIR team is expected to be included in the upcoming days.

### *Deliverables*

#### White paper on regulatory framework and reimbursement for embodiment therapies

As it was initially stated in the proposal, the white paper is being elaborated by a subcontracted company by VHIR (PredictBy). The different topics comprised in the White paper have been divided into different tasks (deliverables) carried away in the last six months and in the upcoming months. More particularly, PredictBY has already done Task 1, a Systematic Review of the State-of-the-art of the current landscape of the virtual reality treatments for obesity offered both in public and private institutions in Europe, and Task 3, the arrangement of focus groups, interviews, and a summary of the more important findings and results from such meetings. The first task is already

completed and proofread by VHIR, and the 3<sup>rd</sup> is currently being proofread. In the next months the case study, the conclusions, and the definitive elaboration of the White paper are expected to be done.

### *Conferences*

Partners of the Consortium have participated in conferences and congress publications in multiple formats. Scientific conferences presented in the last six months are the following:

#### VBW

- VBW organized the first SOCRATES Consortium meeting (face to face) on November 23 and 24, in which all partners from the SOCRATES gathered at Barcelona Health Hub and shared, respectively, the main findings from each work package each partner is in charge of.



Participants in the meeting

A video is derived from this event, in which each principal investigator was interviewed. It has a large dissemination purpose. You can see it on the SOCRATES website and the SOCRATES youtube channel.

- Virtual Reality and Healthcare Global Symposium: Dr. Slater described several studies in which the Body Swapping technique takes place. Conference that took place on March 3rd.

## VHIR

- Jornadas de Obesidad from Vall d’Hebron: Pol Herrero, a Research Technician from VHIR, presented, mainly, the theoretical background of the project, along with some brief commentaries regarding the preliminary results.
- AEETCA:
  - Oral Communication: This Congress was held in Palma de Mallorca from the 10<sup>th</sup> to the 12<sup>th</sup> of November. There, Dra. Anastasiadou delivered some preliminary results of the SOCRATES Clinical Trial.
  - Poster presentation: The objective of the poster presentation was to show the characteristics of the sample from the Clinical Trial.
- SEEDO:
  - Oral communication: This Congress, held in Barcelona from the 16<sup>th</sup> to 18<sup>th</sup> of November, reunited the main specialists in the field of obesity from all over Spain. There, Pol Herrero Castillo delivered some preliminary results of the SOCRATES Clinical Trial.
  - Poster presentation: VHIR presented the Motivational Interviewing Skills the participants from Experimental Group 1 developed after the training they undergo for the Clinical Trial.  
*Title of the Poster presentation: Autoconversación Motivacional en el Metaverso: promoción de hábitos de vida saludables en pacientes con obesidad (Proyecto SOCRATES).*



SEEDO poster presentation by VHIR.

## IDC

- Emerging Technologies for Social Interaction: Dr. Friedman gave a talk at this event organized by Touchless Project. Among different topics, he provided information about the SOCRATES Project.

## **Events**

*Informative Events to the general public*

## VBW

Science week: 15th November 2022 in Barcelona. A face-to-face meeting with general public to spread research and the use of virtual reality for facing obesity. A demo session with the virtual reality glasses was offered among the volunteers (see pictures below).



Showcase participation by VBW



## Lectures

### VBW

Lecture in Carlos III University (Spain): by Dr. Elena Álvarez de la Campa “*3D Human Body Shape Estimation and Virtual Reality Integration to Enhance healthier Lifestyles Among People with Obesity*” for sharing the knowledge between post-docs and researchers. Lots of questions and interest were raised during the talk of one hour of duration.



Screenshot from the participants from the lecture organised by VBW.

### IDC

Competition award: IDC research team won the 2023 GALA Showcase with the project “A GPT Walks into a Bar”, by Alon Shoa.

#### Winning Submission

We are pleased to announce the winner of this year's GALA Showcase: **A GPT Walks into a Bar** by Alon Shoa. Watch the video below:



Winning submission proof from IDC

## Dissemination activities

### *Social media posts*

Several posts concerning the Socrates project (i.e., blogs, news, events...) were published on different social media platforms: Instagram, Twitter, and LinkedIn. To see these posts visit:

[https://www.instagram.com/socrates\\_vr/](https://www.instagram.com/socrates_vr/).

<https://twitter.com/SocratesVr>

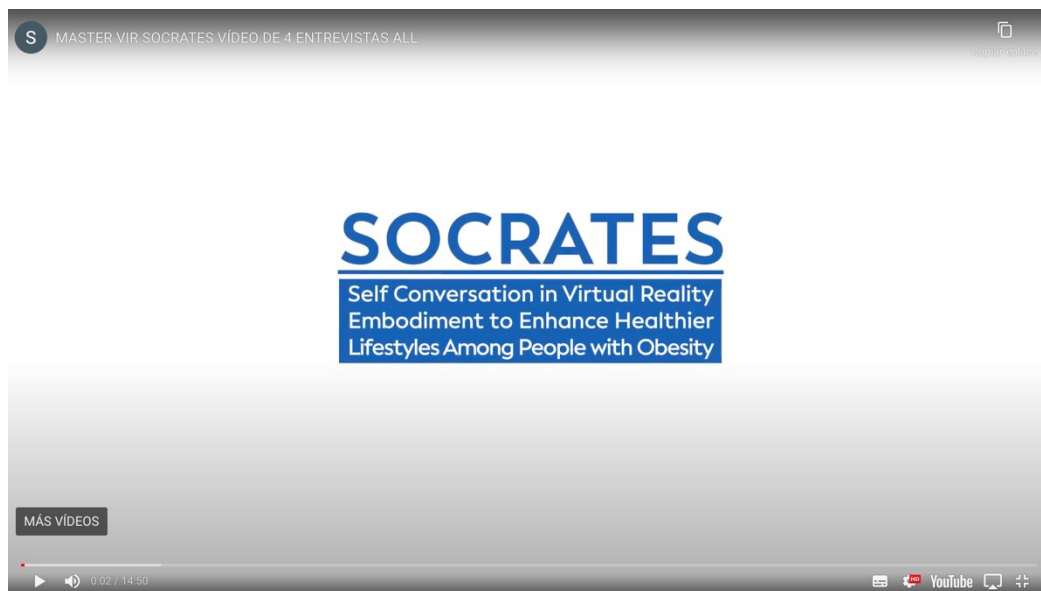
<https://www.linkedin.com/groups/12473464>

### *Website publication and Blogposts*

The Socrates website has also been very active. Different blogposts have been published by different partners. Since September 2022, 5 blog posts have been published of which 2 were written by VHIR, 2 by UM, and 1 by IDC and 1 by VBW. To read these blogposts visit the following link: <https://socratesvr.eu/blog/>

### *Videos*

The SOCRATES consortium has compromised on increasing its content dissemination in social media by spreading video content. As previously mentioned, VBW has been in charge of a video in which the SOCRATES project is presented by the four partners' principal investigators.



Screenshot from the video made by VBW.

## Staff incorporation

Paula García Royo was hired by the VHIR team as Research Technician to provide expertise in the field of statistics and psychometrics.

## Upcoming events

### ○ **VHIR Team:**

- **Espaiciencia:** VHIR team will participate to in an event on March 15<sup>th</sup>, in which they will have the opportunity to exhibit ConVRself to interested participants (mainly researchers and students).
- **Abstract submission and accepted** at European Psychiatry Association, 2023 (EPA 2023). The oral communication will take place at March 26 in Paris, France.
- **Abstract submission** at the 30<sup>th</sup> European Congress for Obesity (2023). This congress will take place in Dublin from the 27<sup>th</sup> to the 30<sup>th</sup> of May.
- **Abstract submission acceptance at CyPsy, 2023.** This congress, about Cyberpsychology and Cybertherapy, will take place in June in Paris, France.

### ○ **IDC:**

- **Lab Event** at the Media Innovation Lab. A mini-conference that will take place in March.
- As a part of a conference, there will be an **AI performance** (March, 28).

### ○ **VBW:**

- **Frontiers Talks:** Dr. Slater has arranged a Frontiers talks titled "Tackling the Obesity Crisis with VR". This event will be held online the speakers, along with the schedule, will be the following:

Pilar Lusilla, Ph.D.

24/05/2023

16-17h CET

Elena Álvarez, Ph.D.

31/05/2023

16-17h CET

Bernhard Spanlang, Ph.D.

07/06/2023

16-17h CET

Beatrice De Gelder, Ph.D.  
14/06/2023  
16-17h CET

Dimitra Anastasiadou, Ph.D.  
21/06/2023  
16-17h CET

Doron Friedman, Ph.D.  
29/06/2023  
16-17h CET