Clinical usefulness of virtual reality: Illustration through case studies
Aurélie Wagener (PhD)

Health Psychology + Psychological and Speech Clinic, ULiège

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Virtual Reality: Theoretical background
What is virtual reality (VR)?

= a technology allowing individuals:

1) to explore 3D virtual environments in real time
   e.g. walk in a supermarket, wait in a train station

2) to interact with the environments
   e.g. pick up objects, talk to avatars
Since when do we use VR and in what purpose?

Since 1933
Authors and producers think up devices which might transport individuals in other virtual worlds.

1962
Release of the movie « Sensorama », a cinematic experience augmented with movements, smells,...to enhance the immersion in the story.

1966
First VR headset
Ultimate Display < Ivan Sutherland

1980
Use of VR by the NASA & the army to train pilots

1992
First use of VR in a therapeutic goal by researchers of the Virtual Reality Technology Laboratory (fear of flying)
Today, VR applications are various!

Scientific

Fun

Etc.

Clinical

Artistic

Military

Educational

VR applications?
What are the clinical applications of VR?

- In psychology, VR = training tool within a psychological treatment
  - Virtual Reality Exposure Therapy (VRET)
    // classical cognitive-behavioral exposure therapy (CBT)

Why using VR in therapy?
< reluctance for *in vivo* exposure

→ 60 to 80% of phobic patients don’t ask for professional help
→ 25% decline exposure therapy
Virtual Reality Exposure Therapy (VRET)
VRET: What aim?

- **Extinction** of the fear (classical CBT)
VRET: How?

- **Use of the principles of classical exposure therapy**
  - *Graded, progressive* and *repeated* exposures to objects or locations eliciting anxiety (e.g., plane, elevator, spiders, dogs)

  - Through VRET, reality is replaced by *artificial stimuli* which are controlled in a virtual environment
VRET: How?

- Confrontation to objects
  - Increase of the anxiety
  - Habituation « Stay & practice »
  - Decrease of the fear and of the avoidance behavior
  - Increase of the sense of self-efficacy
VRET: Clinical usefulness?

- Since 1999, growing interest for the field of « cyberpsychology »
- Increase of the number of studies assessing (1) the usefulness & (2) the efficacy of VRET
VRET: Clinical usefulness?

- GAD • VRET +
- Addictions • VRET +
- Eating disorders • VRET +
- Chronic pain • VRET +
- Schizophrenia • VRET ≥ CBT
- Phobia • VRET ≥ CBT
VRET: Clinical usefulness?

Overall, VRET $\geq$ CBT

$\rightarrow$ VRET seems *beneficial* for patients

AND

Apparent *preference* for VRET (Garcia-Palacios et al., 2007)

BUT

Lack of randomized trials comparing VRET to standard treatment (i.e., CBT)

Lack of follow-ups
Case studies
Case studies

Research & clinical question

Reminder – Underlying principles of exposure therapy

Confrontation to objects

- Increase of the anxiety
  - Habituation « Stay & practice »
    - Decrease of the fear and of the avoidance behavior
    - Increase of the sense of self-efficacy

Until now, studies focused on the level of **fear** and **avoidance behavior**

▶ How VRET influences the **sense of self-efficacy**?
Miss C suffering from acrophobia

- 29 years, married, PhD Student, likes hiking in the mountains
- Specific phobia (acrophobia = fear of height)
  - Important physical symptoms: oppression, perspiration when confronted to ravines
- VRET: 4 sessions including 3 VR exposures
- General Self-Efficacy Scale
  - Pretreatment: 28 (max. 40) + 4
  - Posttreatment: 32 (max. 40)
Mister D suffering from fear of talking in public

- 72 years, married, retired (veterinarian)
- Specific phobia (fear of talking in public)
  - Important physical symptoms: blushing, oppression, perspiration
- VRET: 4 sessions including 2 VR exposures
- General Self-Efficacy Scale
  - Pretreatment: 32 (max. 40) + 3
  - Posttreatment: 35 (max. 40)
Conclusion
Conclusion

- VR ≠ « recent » technology

- But its use in clinical psychology is relatively new

- Even though there is a growing interest and an increase in the number of studies in cyberpsychology, some issues should be addressed in future research (i.e., lack of RCT and follow-ups)

- Case studies can be relevant in that purpose < results might be obtained more quickly
Thank you for your attention

Aurélie Wagener, PhD
aurelie.wagener@uliege.be