

DIFFERENCES IN PRESENCE AND REALITY JUDGEMENT USING DIFFERENT DISPLAY DEVICES IN A CLINICAL POPULATION

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INTRODUCTION

- There is not an accepted definition of presence and reality judgment
- Presence: a multi-component construct determined by 2 general categories of variables:
 - Media characteristics
 - User characteristics
- However, in the user-environment binomial a central role has been given to the media
 - Immersion, interaction and perceptual realism have been overemphasized
 - Erroneously presence has been defined as a direct function of immersion.

INTRODUCTION

a person feels present in an environment when his/her cognitive processes lead to a mental representation of a space, where the person locates him/herself (Biocca, 1997; Schubert, Fridemann & Regenbrecht, 2001).



Not only media form characteristics but also users characteristics and media content characteristics should be considered

INTRODUCTION

- VR therapy is effective for clinical participants by using a relatively cheap hardware and software on stand-alone computers currently in the market (Emmelkamp, Bruynzeel, Drost & van der Mast, 2001)
- Also several works conducted by our group (e.g., Baños et al., 2001, 2004, 2005) showed that in clinical populations the user characteristics and the media content seems to play a central role in the sense of presence

OBJECTIVE

- to which extent media form variables (immersion displays and the use of virtual environments or videos) have an impact on the sense of presence and the reality attribution of the user in clinical (mental health) populations?

Differences in Presence and Reality Judgement
Using Different Display Devices
in a Clinical Population.



METHOD

Participants

- 114 participants
- Diagnosis:
 - Different specific phobias:
 - Claustrophobia (N=12)
 - Acrophobia (N=6)
 - Flying phobia (N=19)
 - Phobia to small animals (N=24)
 - Public speaking fear (N=32)
 - PDA = 21
- 89 female and 24 male
- Mean age was 28.34 (SD=9.15) ranging from 16 to 58

METHOD

Participants

- Condition 1 (HMD group)= 58 participants
 - 12 claustrophobic
 - 6 acrophobic
 - 19 flying phobic
 - 21 panic disordered
- Condition 2 (Desktop VE group)= 24 participants
 - Phobia to small animals
- Condition 3 (Desktop Video group)= 32 participants
 - Public speaking fear

METHOD

Measures

- Presence and Reality Judgement Questionnaire (PRJQ: Baños, Botella, García-Palacios, Villa, Perpiñá & Alcañiz, 2000):
 - Post-test subjective presence and reality judgement measure (scale 0-10)
 - The last version (Baños et al., 2000) with a total of 57 items was used.
 - The validation carried out recently revealed 7 factors in a large sample composed of normal, clinical and subclinical participants (Baños, Quero, Salvador & Botella, 2005).

METHOD

Measures

- PRJQ Factors:
 - Factor 1- Emotional Involvement (6 items)
 - Factor 2- Reality Judgement and Presence (9 items).
 - Factor 3- Interaction and External correspondence (5 items)
 - Factor 4- Influence of the Quality of the Software (4 items)
 - Factor 5- Software easiness (3 items)
 - Factor 6- Satisfaction with the experience (3 items)
 - Factor 7- Attention (3 items)

METHOD

Virtual Environments

- HMD group:
 - 4 VR scenarios for claustrophobia, acrophobia, flying phobia and PDA

 - Desktop VE group:
 - Mice, Spiders and Cockroaches VR scenarios

 - Desktop Video group:
 - Video recorded audiences included in the telepsychology self-help program "Talk to me" (www.internetmeayuda.com)
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METHOD

Hardware

- Pentium-based platform (Intel Pentium III, 450Mhz, 128 Mb RAM, graphic engine: Riva TNT with 64 Mb RAM) running windows NT/2000 from a Microsoft Corp. operating system.

 - Display device in condition 1: Medium quality HMD (model V6 from Virtual Research).

 - Motion input device: a standard mouse
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METHOD

Procedure

- Participants were receiving VR therapy for their problems in our clinic.
- PRJQ was fulfilled after their first VR exposure session.

RESULTS

PRJQ	HMD group (N= 58)		Desktop VE group (N=24)		Desktop Video group (N=32)	
	Mean	SD	Mean	SD	Mean	SD
F1: Emotional Involvement	6.28	1.98	6.70	2.04	5.57	1.97
F2: Reality Judgment & Presence	6.52	1.79	6.07	2.12	6.11	1.71
F3: Interaction & External Correspon.**	7.52	1.52	7.28	1.07	4.76	1.57
F4: Influence Quality Software**	7.20	1.98	4.80	2.52	6.04	1.83
F5: Software Easiness*	7.29	1.97	7.93	1.27	6.64	1.55
F6: Satisfaction with experience**	8.31	1.74	7.30	1.77	6.89	1.86
F7: Attention	5.36	2.42	5.84	2.31	6.32	1.95

*p<0.05

**p<0.01

DISCUSSION

- Results support the role of media content on presence and reality judgment in clinical populations:
 - No significant differences between the 3 conditions in *Emotional Involvement* and *Reality Judgement and Presence*
 - All participants felt emotionally involved in the virtual experience
 - All participants attributed reality to their experience
 - No significant differences between the 3 conditions in *Attention*
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DISCUSSION

- Significant differences were found:
 - For the formal factors of the PRJQ: *Interaction and External Correspondence, Influence of the Quality of the Software, Software Easiness*
 - For *Satisfaction with the Experience*
 - Different display devices have different advantages and disadvantages
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Final conclusions

- The more clinically significant is a virtual environment to the user, the less influence of media form characteristics on sense of presence and reality judgement.

 - Media form characteristics are relevant for other aspects like interaction, quality of the software or satisfaction.
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Final conclusions

- Relation between presence and emotion:
 - Results support those obtained by our group in previous studies (Baños et al., 2001; 2004).
 - Other authors have also emphasised the relevance of emotions:
 - Hoorn, Konijn & Van de Veer (2003). "*Virtual Reality: Do not augment realism, augment relevance*". Argue that VR experience gains more from increased emotional relevance than from higher realistic solutions
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Final conclusions

- Emotions play an important role in the sense of presence and reality judgment.

 - From an applied perspective: central aspect in the design of VR applications for treating people suffering from psychological disorders:
 - Even using more simple interfaces (desktop or videos) is possible to provoke in the user not only the sense of being there and the attribution of reality to the experience but also some level of emotion.
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Future guidelines

- More studies are needed to help us to decide:
 - What type of program, which immersive and interactive characteristics, which user, which task and in which context.

 - In the specific case of clinical populations for mental health it will be necessary to consider not only the sense of presence and the reality judgment, but also the therapeutic effectiveness achieved with the virtual environments or with other type of displays.
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***Thank you very much for
your attention***

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