THE ROLE OF PRESENCE AND REALITY JUDGEMENT IN VIRTUAL ENVIRONMENTS IN CLINICAL PSYCHOLOGY

Baños, R.M. (1), Quero, S. (2) Salvador, S. (1) & Botella, C. (2)

1Universidad de Valencia (Spain).
2Universitat Jaume I. Castellón (Spain).

- VR is a very useful tool for Clinical Psychology field, but…
- … Which key factors make a good simulation work”?

  So far, scientific literature has paid attention to “presence”, but…
- …the concept of “reality judgmen”t has received less attention being usually subsumed into de concept of presence

PRESENCE e.g. simulators, graphic adventures, … .	**REALITY ATTRIBUION** e.g. TV, VE to give active distraction to burned patients, … .
PRESENCE + REALITY ATTRIBUTION e.g. VE for treatment in Clinical Psychology	

Baños et al. (2000)

- 124 undergraduate students from Spain and USA
- Immersed in: claustrophobic, body image or spider environments
- Participants who scored high in Claustrophobia, Spider Phobia, and Body Image questionnaires were excluded
- RESULTS: 3 factors
  - Reality Judgment factor
  - Interaction/External correspondence factor
  - Attention/Absorption factor
- Did the type of sample employed influence on the results?

Baños et al. (2001)

- 112 clinical participants
- Immersed in: claustrophobic, body image or spider environments
- RESULTS: 4 factors
  - “EMOTIONAL INVOLVEMENT/ INTERNAL CORRESPONDENCE
  - “SATISFACTION WITH THE EXPERIENCE”
  - “PERCEPTUAL REALITY/ EXTERNAL CORRESPONDECE”
  - “QUALITY OF SOFTWARE”

PURPOSE

- the aim of the present work is to carry out the validation process of the Presence and Reality Judgment Questionnaire in a larger sample

Subjects

- Total N = 470
- 294 “normal” participants (university students)
- 176 clinical participants
  - Claustrophobia N=30
  - Fear of flying N=35
  - Acrophobia N=6
  - Spiders/cockroaches phobia (N=60)
  - Panic and agoraphobia (N=15)
  - Body image disturbances (N=30)
- Mean age = 24.07 Range from 16 to 58 (SD=73.82)
- Range age: from 16 to 58
- Gender: 36,2% males and 63.8% females

Measures and Procedure

- a 57-item reduced version of the Presence and Reality Judgment Questionnaire (Baños et al. 2000).
- Six different VEs were used (claustrophobia, fear of flying, Spiders/Cockraches, Panic and Agoraphboia and virtual parks scenarios)

Hardware

- a PC Pentium II based platform with an AccelEclipse Graphical Card from AccelGraphics,
- a medium quality Head Mounted Display (V6 from Virtual Research),
- a 2D mouse.

RESULTS

- Factor analysis with a Varimax rotation
- items excluded from the analysis:
  - factorial loads less than .30
  - not load in any factor
  - loaded in several factors with a difference less than .10
- 33 items in 7 factors (explaining 56.121% of variance)

Factors	Items
Factor 1: Emotional Involvement	21. What I experienced produced some emotions on me (anxiety, happiness, sadness,...) 22. I felt emotionally involved in the virtual experience 10. The things I perceived in the virtual world had impact on me 5. I felt bodily sensations (heat, cold, etc...) 50. I think the virtual experience lacked emotions 55. The bodily sensations I felt in the virtual world influenced how into the virtual world I went
Factor 2: Reality Judgment and Presence	13. I felt I "was into" the virtual world 14. The experience seemed real to me 29. The objects in the virtual world seemed real to me 30. What I experienced in the virtual world was congruent to other experiences I had in the real world 26. My interactions with the virtual world seemed natural to me, like the interactions in the real world 31. What I experienced in the virtual world was different to other experiences I had in the real world 15. I felt as an external and passive spectator of the virtual experience 6. I felt I "was" physically in the virtual world 19. The virtual experience seemed to me a place I have only seen.

Factor 3: Interaction and External correspondence	16. The virtual world responded to my actions	.757
	28. I could interact with the virtual world	.720
	32. I could move around the virtual world	.705
	17. I believe other people similar to me could have an experience similar to mine in the virtual world	.524
	11. What I experienced in the virtual world fitted my expectations about what could happen in a virtual world	.388
Factor 4: Influence of the Quality of the Software	54. What I heard and the quality of the sounds in the virtual world influenced how real the experience seemed to me	.861
	53. The quality of the images in the virtual world influenced how real the experience seemed to me	.701
	56. The sound influenced how into the virtual world I went	.626
	4. What I heard in the virtual world was similar to reality	.489

Factor 5: Software Easiness	25. I found the control devices (mouse, joystick, etc.) easy to manipulate	.706
	1. I could see with clarity the environment	.649
	8. The images in the virtual world had quality	.574
Factor 6: Satisfaction with the experience	48. I would like to repeat the virtual experience	.804
	45. I felt self-satisfaction while experiencing the virtual environment	.659
	46. I got bored while experiencing the virtual world	-.605
Factor 7: Attention	38. I had to pay a lot of attention about was going on in the virtual world	.815
	44. I felt it was necessary to demote of my attention to what I was doing in the virtual world	.768
	37. The experience implied a mental effort to me	.596

DISCUSSION

- The three first factors (Emotional Involvement, Reality Judgment and Presence, and Interaction) show a similar structure to
  - Schubert et al's (2001) three components (Involvement, Realness, and Spatial presence)
  - Lessiter et al's (2001) three factors (Engagement, Naturalness, and Physical Space).
- Results confirm that presence is a multi-component concept
- Presence can not be considered only as a sense of a physical environment but also a personal evaluation of the realness/believability of both the displayed environment and its content.

DISCUSSION

- Results show that emotions play an important role in the sense of presence and the reality attribution of users.
- In previous studies
  - Baños et al., (2000), with “normal” participants, the items about emotions were excluded from the analysis
  - Baños et al., (2001), with clinical participants the items about emotions proved to be the most important
- Present study:
  - items about emotional involvement shaped the first factor (“Emotional involvement”) and were also present in other factor (“Satisfaction with the experience”).
- Results emphasize the importance of the content of the software and the emotions induced in VR