

(30) Experiences with Repertory Grid Analysis for Investigating Effectiveness of Virtual Environments

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Abstract

There are many facets to research on presence (Draper et al. 1998), but one key one that has preoccupied the community is measurement of presence response. In this abstract we show how we have used repertory grid analysis (RGA) as a tool to help us understand participants' presence response to virtual environments.

According to the theory of personal constructs (Kelly, 1955), constructs are ways of construing the world, enabling people to respond to what they experience in ways that are 'explicitly formulated or implicitly acted out' (op.cit. p.6). RGA analysis starts by identifying a set of elements of experiences. In an interview, the interviewer picks three of the elements and the participant is asked to pick two and state how they are similar and how they are distinguished from the third. This forms one construct with two poles that characterize the distinction. This is repeated with further triads until no more constructs seem to be emerging. A grid is drawn up in which elements form columns and each construct elicited forms a row. The raw grid is subsequently 'focused' by encouraging the participant to assign a rating on a five-point scale to each element. The focused grid can then be analyzed to find constructs and elements that are similar and explore what characterizes particular elements.

We explored RGA in two pilot trials and are now using it in a study of agoraphobia. In the 1st pilot we were primarily interested in whether RGA would yield useful comparisons between virtual environments. The elements varied from a spacecraft (W1) to a tropical island (W6). Table 1 shows a selection of the constructs elicited. Some of these are not so interesting for the virtual environment designer, but others are related to factors that are considered to be determinants of presence.

Table 1: Selection of constructs from 1st pilot

	W1	W2	W3	W4	W5	W6	
Triggers natural body movement	5	1	3	5	4	2	No intuitive reaction
Urges discovery of familiar places	X	X	4	4	4	1	Meets expectation – no surprises
No engaging task	3	1	2	4	5	5	More involved, unaware of outside
Voyeuristic	1	2	3	4	4	5	Interactive

In a 2nd pilot we were able to use the RGA to start to explain the variation in participants' subjective ratings of presence in the environments.

References

- Draper, J. V., Kaber, D. B., Usher, J. M. (1998) Telepresence. *Human Factors*, 40(3), 354-375.
 Kelly, G.A. (1955) *The Psychology of Personal Constructs*, vol 1 and 2. Norton, New York.