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COMPUTER-AIDED VICARIOUS EXPOSURE (CAVE)

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Definition: A computer game to teach users exposure therapy as they direct a supposedly phobic screen figure to approach and remain in avoided feared situations shown on the screen until that figure's fear score drops.

Elements: By pointing and clicking with CAVE's computer mouse, users steer a 'phobic' screen figure through avoided discomforting scenes (e.g. spider phobic nearing a spider, agoraphobic leaving home, claustrophobic entering a lift, OCD washer touching garden soil) as that figure's supposed anxiety-thermometer score rises with each approach and then falls as the figure remains in the situation. The game gives and displays to users points for moving the figure towards exposure scenes, the aim being to score 2000 points. All mouse human-computer interactions are recorded for process analysis.

Related procedures: Vicarious/symbolic/live/in vivo modelling of exposure, vicarious/etc mastery (high initial fear falls as exposure continues), coping, computer-aided self-help.

Application: Used individually to date in research trials.

1st Use? First CAVE software: Kirkby et al (1992)

References:

1. Clark A, Kirkby KC, Daniels BA, Marks IM (1998) A pilot study of CAVE for obsessive-compulsive disorder. *Australian and New Zealand Journal of Psychiatry*, **32**: 268-275.
2. Gilroy LJ, Kirkby KC, Daniels BA, Menzies RG, Montgomery IM (2003) Long term follow-up of CAVE vs live graded exposure in the treatment of spider phobia. *Behavior Therapy*, **34**: 65-76.
3. Kirkby KC, Daniels BA, Watson PJ (1992) An interactive computerised teaching program for self exposure therapy of avoidant behaviour in phobic disorders. 4th World Congress on Behaviour Therapy, 4 July 1992, Gold Coast, Queensland, Australia; Abstracts, Australian Academic Press, Queensland, p73.

Case Illustration (Kirkby, unpublished)

Jill aged 45 had been phobic of spiders since childhood. After outpatient assessment she had three 45-minute sessions of CAVE at 2-week intervals. At Session 1 she met a researcher who remained to answer queries. She sat at the computer to complete CAVE's 5-minute explanatory introduction on the screen which showed navigation techniques for its animation scenes. The researcher left the room. Over 45 minutes by trial and error Jill learned the effects of directing CAVE's screen figure to do various things, eg approaching a spider in a room (= exposure), leaving that room (= avoidance), staying in another room (= neutral). Jill saw the anxiety thermometer on the screen display the screen figure's anxiety which was high on first exposure to the screen spider and then gradually fell with accumulating exposure. The aim of the game was to score 2000 points gained, for example, by moving the screen figure to repeatedly or

persistently touch a perspex container with a large live spider inside. She learned by doing how to achieve the target score by exposing the screen figure to the phobic scenes and observing how this reduced anxiety over time.

After 3 CAVE sessions Jill looked closely at a container with a large spider in it, and held this partial improvement to follow-up some years later.