

Using Technology and computer games for the treatment of children with Conduct Disorder

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Abstract:

It is vital that the design of computer games for therapeutic intervention for children take into account models that will promote good social skills and behaviour. The current paper outlines the steps taken in designing a game based on cognitive behavioural therapy for the treatment of children with mental illness. The design stages involved an ethnographic study and experiments with the target children. The result was a set of design guidelines which have subsequently been augmented after interviews with child mental health professionals. The design is now being realised using a game engine being developed at the University of Nottingham

Keywords: Cognitive behavioural psychotherapy, Computer games, User-centre design, Children with Conduct disorder, clinical treatment

1. Introduction

There is now significant evidence that continuous use of violent computer games leads to violent behaviour in children. Children who are already displaying the symptoms of mental illness – particularly conduct disorder– have tended to be more susceptible to these effects. (**Kaplan & Sadock's, 2007**). Having an already lowered ability to relate their own actions to the effect they have on others is a primary cause of this.

On the converse the national Association for Health and Clinical Excellence (NICE) in the UK have recommended the use of computer based materials as therapeutic tools for adults with mental health problems. A number of prominent workers (Paul Stollard, Veronika Brezinka) have developed computer based “games” for use in the treatment of children with symptoms of mental illness. However, such games must promote good social skills and behaviour. Table 1 shows symptoms of Conduct Disorder (CD), factors that lead to CD and the clinical approaches applicable to the game design.

Factors contribute to the development of CD	Symptoms of CD	Clinical Approaches used for the application of game design
Neuropsychology: -Impairment in the frontal lobe Genetic basis Psychological factors: - Hyperactivity - Anxiety, depression & obsessionality, and mood disorder -Correlated comorbid disorder Family: -Divorce -Punitive parents with physical and -verbal aggression. -Parent psychopathology -Family instability caused by sever marital disharmony Sociocultural factors -Low socioeconomic status - Social problems -Dysfunctional environments	Symptoms gradually escalate and neglecting treatment could cause personality disorder. Actively refuses adults and defies rules. -Truancy, theft, vandalism -Deliberately sets fires -Physical aggression toward people and animals - Frequently bullies others - Forces others into sexual activities -Initiates fighting - Often angry or resentful	1- Principles of cognitive behaviour therapy such as: -Psycho-education -Modelling -ABC Model 2- The theory of social learning

Kaplan & Sadock's (2007), Holmes, Slaughter & Kashani

Table 1. The Factors contributing to Conduct Disorder and the treatment approaches adopted in the game design

The current paper outlines the steps taken in designing a game for the treatment of conduct disorder in children. Experiments, an ethnographic study and expert advice have informed a set of design guidelines for the game. Figure 1 illustrates the methodology used in the game design.

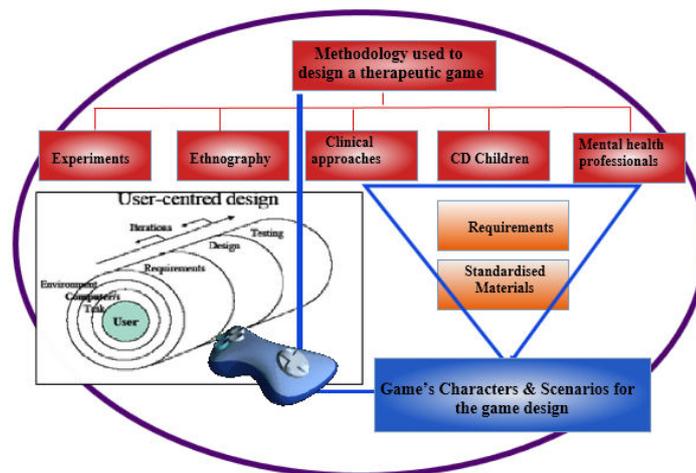


Figure 1 Contributions to the game design methodology.

Related work has been carried out. For example, Earthquake in Zipland. (Ziplandinteractive 2008) was designed to help children deal with emotional distress stemming from a parental divorce, and to implement Strategic Paradoxical and Solution Focused principles in therapy. Paul Stallard, the author of Think Good Feel Good, has also recently undertaken some therapeutic work with computer games. (Stallard, 2005). Most recently, Treasure Hunt, which utilises CBT Techniques as a support tool for psychotherapists has been developed. The game offers attractive electronic homework and allows the child to practice with basic psycho-educational treatments (Brezinka, Hovestadt, 2007).

Despite the fact that many of the above were never developed into finished products, all reported promising initial conclusions and some were tested in real therapeutic settings with clients receiving real therapy.

2 The Current Work

The aim of our work is the production of a Computer Based CBT (CCBT) tool to aid clinicians and others in the treatment of children with behavioural disorders. In particular we are concerned with the treatment of children in the age range eight to twelve. In this study work was undertaken at a treatment centre close to the University. The design has involved a number of stages. These included an ethnographic study by one of the authors at the local centre and experiments in which the responses of children from the study to conventional computer games was monitored. During this development contact with clinicians and other practitioners in the field was used to test the design concepts and to gain information about such aspects as current best practice both in their sessions and what interventions prove most effective.

2.1 Ethnographic study

Further details of the ethnographic study have been reported elsewhere (AlShanqiti et al, 2008). It involved one author being embedded at the centre over a prolonged period – thus reducing their impact on the behaviour of the group being studied. Of particular interest at this point was the behaviour of the children and the activities that they took part in. It was valuable to see their reaction to the activities. A summary of the activities is given in Table 2 below.

Activity Group	Play Group	Discovery Group	Art Group
Sport Group	Fantasy Group	Free Style Group	Construction Group
Film Group	Building Group	Music & Movement Group	Drama Group
Food Group	Pokemon Group	Inventors Group	Creative Group

Table 2 Groups observed in use for treatment during the ethnographic study.

The groups gave the children the opportunity for expression of their thoughts and feelings in many different situations. An important finding from this was that students strongly identified themselves with the media (television, computer games etc.) rather than developing their own ideas in the activities of the group

2.2 Experiment

The experiment involved observing two groups of children as they interacted with a set of different genres of computer games. Again more details of this experiment have been given in (Alshantiti et al 2008) While the groups of children in the study had particular needs it was decided to analyse their experience first with common user interface design criteria. Examples of work in this area are those of (Malone, Lepper 1988), (Sweetser, 2005) and (Federoff 2002). A number of heuristics have thus been proposed to determine the usability of games. Some of the negative measures observed in the experiment were, “task stopped”, “task repeated”, “ability to find a function”, “doubt, unpleasant surprise or frustration”, “quitting task”, “passivity” and “misunderstanding of goal.” Clearly these issues might have had specifically high frequencies for the group of children being observed. On the other hand the software is being designed for this group and clearly issues that can produce such frustrations must be avoided in our design.

2.3 Expert opinion

Advice from the experts was that the game should progress from a normal happy life view before developing towards situations in which the issues faced by the children are addressed from a third person viewpoint. (That is, with the child as observer rather than active participant when in negative situations.) The complexity of the game must be limited to allow for the children’s level of development. Faults in game play should not be “punished” but rather success rewarded. The children work better when accompanied by a therapist or key worker. Many children with conduct disorders have internalised psychological problems despite the CD being considered as an externalised disorder. Expert opinion was divided over this with some believing that CBT techniques work more effectively with internalised disorders such as anxiety, depression and other emotional disorders and not with externalised disorders. Others would add that for children with CD, energetic play may be of more value than those activities which involve

specifically cognitive activity. However, the physical dissipation of energy may have no long term effect without changes in thinking.

3. Conclusions

The game is now at the stage of implementation. The conclusions of the study require that:

- The game starts by exploring factors that lead to positive thinking patterns
- The game strategy is simple though entertaining
- Negative issues (such as hostility) are dealt with only from a third person perspective
- Players are lead to recognise the effect of thoughts on behaviour and their consequences
- The game relaxes the children enabling them to dissipate negative energy

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