Treasure Hunt – a serious game to support psychotherapeutic treatment of children

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Abstract. Computer and video games for children have gained negative publicity due to reported associations between intensive gaming and aggressive behaviour, school failure, and overweight. While most studies centre upon negative consequences of video games, their innovative potentials tend to be overlooked. One field for the innovative use of computer games is child psychotherapy. By including therapeutic concepts into a video game, children can be offered attractive electronic homework assignments that enable them to rehearse and repeat basic psychoeducational concepts they have learned during therapy sessions. Moreover, therapeutic games can help therapists to structure therapy sessions. Psychotherapeutic computer games translated into foreign languages could form a useful tool in the treatment of migrant children. ‘Treasure Hunt’ is the first serious game based on principles of cognitive behaviour modification. It is developed for eight to twelve year old children who are in cognitive-behavioural treatment for various disorders. Reactions of children and therapists to experimental versions of the game are positive. Serious games might prove a useful tool to support psychotherapeutic treatment of children.

Keywords. Home-based e-Health, Human-Computer interaction, learning and education

Introduction

Although computers and internet are a normal part of life for millions of children, they have gained mainly negative publicity due to the reported association between intensive gaming and aggressive behaviour, game addiction, school failure and overweight [1-3]. As a consequence, most reports on the effects of video games centre upon their potential negative consequences [4-6], while their innovative potentials tend to be overlooked [7].

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However, these innovative potentials exist. Computer games improve spatial performance in children, adolescents and adults [8]. Action-video-game playing with so called first person shooters has been reported to alter a range of visual skills and to enhance visuospatial attention [9, 10]. Studies also show that commercial computer games can be used innovatively at school [11]. In the medical sector, various reports show that computer games have been therapeutically successful with physically handicapped children and children with chronic disease like asthma [12], diabetes [13] and cancer [14, 15]. As for psychotherapy, it would be difficult for child therapists to ignore how fascinated children are by computers and video games. Yet, up to now few initiatives make use of this fascination to enhance psychotherapeutic treatment. There are two exceptions: the game ‘Earthquake in Zipland’, based on family therapy, is designed to support psychotherapy of children whose parents have divorced (www.ziplandinteractive.com). ‘Personal Investigator’, a therapeutic game based on solution focused therapy, tries to motivate adolescents for psychotherapy [16].

Developing a computer-based treatment for children does not simply mean putting a treatment manual on the screen. In order to motivate children for psychotherapy, the challenge lies in designing serious games that incorporate therapeutic goals as well as various skills training. By including therapeutic concepts into a game, children can be offered attractive electronic homework assignments that enable them to repeat and rehearse basic psychoeducational concepts they have learned during therapy sessions. Moreover, a psychotherapeutic game that matches the theoretical orientation of the therapist can help him / her to structure therapy sessions and to explain important theoretical concepts in diverse ways and with a metaphor and means attractive to most children.

1. Method

Cognitive behaviour therapy is one of the best-researched and empirically supported treatment methods for adults and children. Its theoretical framework is based on the assumption that emotions and behaviour are largely a product of cognitions; thus psychological and behaviour problems can be reduced by altering cognitive processes. Cognitive behaviour therapy offers several intervention programmes for children from which learning goals for serious games can be derived.

In order to support cognitive-behavioural treatment of children, the Department of Child and Adolescent Psychiatry of Zürich University is developing a serious game called ‘Treasure Hunt’. The game is not meant to substitute the therapist, but to support therapy by offering electronic homework assignments and rehearsing basic psychoeducational parts of treatment. The theoretical background of the game is formed by basic concepts of cognitive behaviour therapy for children as outlined in treatment programmes like ‘Coping Cat’ [17], ‘Friends for Children’ [18] and ‘Keeping your cool’ [19]. These basic concepts are important for the treatment of both internalizing and externalizing disorders.

Treasure Hunt is an interactive adventure game with six levels. Each of the six levels of the game corresponds to a certain step in cognitive-behavioural treatment. The maximum amount of time needed to solve all tasks of a level is about twenty minutes.
1.1. Story

The game takes place aboard an old ship inhabited by Captain Jones, Felix the ship’s cat and Polly the ship’s parrot. Captain Jones has found an old treasure map in the hull of his ship. To solve its mystery, he needs the help of a child. Tasks take place in different parts of the ship – on deck, in the galley, in the dining room of Captain Jones and in the shipmates’ bunks. Each task corresponds to a certain step in cognitive-behavioural treatment, implying a linear structure of the game. For each completed task, the child receives a sea star. The old treasure map has a dark spot in the shape of a sea star at six important places. The child and Captain Jones will only be able to read what is written there when they place the missing sea star on the map. After having solved all the tasks, the last mission consists of a recapitulation of the previous exercises. Once the child has solved this last problem, he/she will find out where the treasure is buried. One of the most interesting parts of the game is dedicated to the hunting of unhelpful (automatic) thoughts by means of an ego-shooter. The child has to catch a flying fish to be able to read the unhelpful thought written on it and replace it by a helpful one.

Before joining Captain Jones on the final search for the treasure, the child receives a sailor’s certificate that summarizes what he/she has learnt through the game and that is signed by Captain Jones and the therapist.

1.2. Software and Tools

Treasure Hunt is a 2.5 D Flash adventure game programmed with Actionscript and XML. Flash was used to guarantee platform independence, as only a Flash compatible internet browser is needed and no programme has to be installed. This facilitates giving homework to children independent from their computer hardware and operating system at home. User interaction will be recorded in XML files to help therapists analyze children’s choices and/or progress.

2. Results

Playability tests with an experimental version showed that children appreciate the game and its diverse tasks. Several therapists in the Department of Child and Adolescent Psychiatry of Zürich University have used pilot versions of the game with children treated for a variety of disorders (anxiety disorder, depression, behavioural disorder). Because they worked with an experimental version, therapists were not allowed to give parts of the game as homework assignment, but instead used it during therapy sessions. They reported to use the game as reinforcement, telling the child ‘if you work well, we will play Treasure Hunt for the last ten minutes’. All therapists reported positive reactions of the children in treatment and liked to work with the game themselves. Although Treasure Hunt was originally developed to offer attractive homework assignments in between therapy sessions, the pilot showed that the game can also help young or less experienced therapists to structure therapy sessions and to explain important cognitive-behavioural concepts like the influence of thoughts on our feelings or the distinction between helpful and unhelpful thoughts.

While these primary findings are encouraging, conclusions about the effectiveness of Treasure Hunt are premature, as the professional version of the game is not finished
yet. Treasure Hunt is not developed as a self-help instrument and should be used under guidance of a behaviour therapist. Our pilot showed that using a computer game in psychotherapy sessions does not mean that classic therapeutic methods like writing, drawing or role-playing lose their significance in the treatment of children and adolescents – on the contrary, as various exercises for further therapy sessions can be derived from Treasure Hunt. Therapists reported for example that they asked children to ‘help us to design a next level’ or to ‘draw flying fish with more unhelpful thoughts’.

Whether Treasure Hunt can really support cognitive-behavioural treatment of children and enhance child compliance for homework assignments will be evaluated as soon as the professional version of the game is finished.

3. Discussion and Conclusion

Psychotherapy of children and adolescents is an area in which innovative use of computers in the form of psychotherapeutic video games may enhance child compliance and offer new ways of treatment. Such games have the potential to enhance child compliance, offer attractive homework assignments, structure therapy sessions and support treatment of migrant children who could play the games in their own language and share their content with parents and siblings.

Cognitive behaviour therapy offers several intervention programmes for children from which learning goals for therapeutic video games can be derived. For example social problem solving, a standard therapeutic intervention for young children [20, 21] could be incorporated into a game to support psychotherapy with children as young as five years. Such a game might even be used for the prevention of behaviour problems in this age group. Incorporating elements of anger management programmes [19, 22] into video games could be an even greater challenge for the development of serious games. As most of the children treated for anger and aggression problems are boys, and boys are reported to show considerably more fascination for computers than girls [8], creating serious games that include anger management strategies might support treatment of this notoriously difficult and non compliant group. An alternative pathway could be the development of therapeutic games built on Dodge’s theory of social-cognitive biases of aggressive children [23]. If such games could help aggressive children to reduce hostile attributional biases and to ameliorate cognitive processing of potentially threatening situations [24, 25], treatment of a chronic and difficult group of clients might become easier.

There is, however, still a long way to go and considerable resistance to overcome. Not all game-designers are positive about the concept of serious games, suggesting that a game that has to be played might lose its attractiveness. On the other hand, many academics and health professionals are not used to view computer games as something different from ‘pure fun’ or ‘only a game’ and doubt that a computer game can teach useful skills. Moreover, there is fear that if psychotherapeutic games are successful, computers might replace therapists in the long run. However, no psychotherapeutic game will be able to alleviate childhood problems on its own, and therapeutic games will show their maximum potentials only under guidance of a therapist who can explain and comment the concepts introduced in the game.

New developments in gaming technology as well as more research on therapeutic games will hopefully lead to the creation of more serious games to support child
psychotherapy. Ideally, these games should be labelled with a quality seal for therapists.

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Bibliography


