

Personal Investigator

Computer Mediated Adolescent Psychotherapy using an Interactive 3D Game

Mark Matthews, Media Lab Europe/Trinity College Dublin, mark@mle.ie

David Coyle, Media Lab Europe/Trinity College Dublin, davidc@mle.ie

Dr John Sharry, Mater Hospital/Media Lab Europe, johns@mle.ie

Dr Andy Nisbet, Computer Science Department, Trinity College Dublin

Dr Gavin Doherty, Computer Science Department, Trinity College Dublin

1.0 Abstract

Although mental health problems increase markedly during adolescent years, therapists often find it difficult to engage with adolescents. Personal Investigator (PI) is a 3D computer game specifically designed to help adolescents, suffering from mental health problems such as depression, to engage with professional mental health care services. This research has its theoretical foundations in narrative and solution-focused psychotherapy as well as play therapy, and builds on the current research into the educational use of interactive storytelling systems and computer gaming. Previously demonstrated benefits of computer games and interactive story systems in education include increased motivation, increased self-esteem, improved problem solving and discussion skills and improved storytelling skills. By taking advantage of these benefits in a therapeutic setting, PI aims to motivate adolescents to engage in telling a therapeutically beneficial, structured personal narrative. Also by engaging adolescents in a client-centred way PI aims to build stronger therapeutic relationships between therapists and adolescents. PI incorporates a goal-oriented, strengths based model of psychotherapy called Solution Focused Therapy. Results of the trials of PI with four adolescents suffering from mental health problems are presented.

2.0 Engaging Adolescents in Psychotherapy

Although health problems increase markedly during adolescence, the majority of troubled adolescents do not receive professional mental health care and of those who do fewer still will fully engage with the therapeutic process [1, 2]. Adolescents are generally more private and self-conscious and also more confrontational than either younger children or adults. Difficulties engaging adolescents are partly due to the serious nature that therapy is seen to have and the stigma that can be attached to it. For adolescents, therapy is typically something imposed upon them (usually by their parents) and because of this they are less willing to accept it. They are more likely to seek help from informal sources such as friends. Up to twenty percent of adolescents also use the Internet to seek help for emotional problems, however the most popular source of help is chat rooms. Chat rooms are the Internet equivalent of informal help sources, but with the added risk that instead of approaching a trusted friend or family member, you are approaching a stranger whose expertise and intentions (positive or malicious) are unknown [3]. Research is necessary to enable adolescents to engage more easily with professional sources of mental health care.

Assay and Lambert concluded that, across all therapeutic models, four main factors are responsible for achieving positive change through psychotherapy [4]. They have also estimated the relative contribution of each of these factors, fig.1. Their results demonstrate the central importance of client factors to effective psychotherapy and also the importance of building a strong therapeutic relationship between the therapist and client. Therapeutic interventions are most likely to be successful if the therapist

engages with the client in a client centred way. A quality therapeutic process for adolescents will actively engage their participation, involving their interests, strengths and ideas.

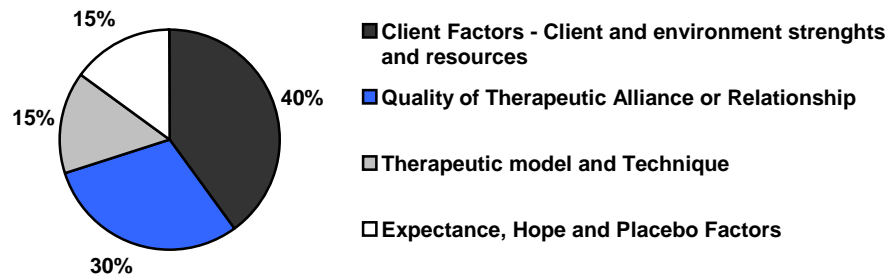


Figure 1: Factors for change in psychotherapy

2.1 Computer mediated psychotherapy for adolescents

Our research is developing a computer-aided model of how therapists can actively engage adolescents (fig.2). Instead of engaging directly with an adolescent the therapist uses a computer as a third party in their dialogue. The model has its roots in narrative psychotherapy and play therapy and applies to this current educational research on the benefits of computer gaming and narrative systems to improve storytelling skills, participation and motivation.

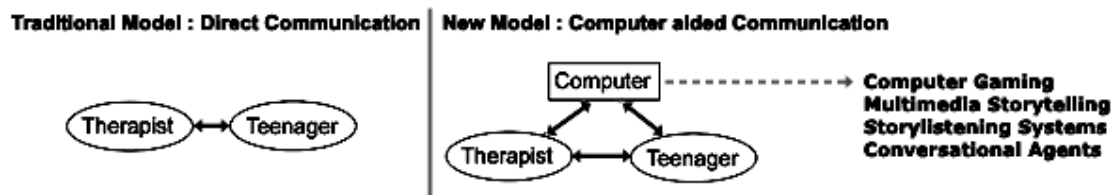


Figure 2: Computer aided communication in psychotherapy.

Personal Investigator is an implementation of this new model. The next sections explore the theoretical foundations of *PI* and related work.

3.0 Narrative Psychotherapy and Play Therapy

Many different forms of psychotherapy use storytelling. Personal narratives are central to a person's sense of self; through narrative thinking a person forms a sense of self, a sense of the world around them and of their place in that world [5]. Narrative psychotherapy can be seen as the process of inviting clients to tell and re-tell their life story from a variety of perspectives with the aim of generating alternative stories and reaching a coherent and meaningful narrative at the end [6].

Engaging children or adolescents to tell their story through direct dialogue is not straightforward and the therapeutic process can become blocked. Whereas for adults dialogue is the favoured means of communication, children and adolescents often struggle to express themselves with words alone. Much research has been conducted into ways of engaging children and adolescents in a therapeutic process using play. Some examples of tools used are storybooks, construction materials, artwork, puppets and board games. Many therapeutic non-digital board games have been developed. Some of these games provide enough symbols and props to allow for play and the expression of a narrative. The Hero's Journey, a fantasy board game developed around issues of woman abuse, blends game playing (i.e. rolling dice, deciding where to move your character, picking up cards) and the discussion of sensitive topics. These games allow problems to be brought up and discussed within the game metaphor, providing an established vocabulary for the players to use. This can be

easier for clients than using their own words. These games can be cathartic, allowing players to deal with and master sensitive and difficult situations. The game world is a simulation and as such is a safe environment in which to experiment and most importantly, in which to fail. Games provide the therapists with a way into the client's world. Narratives emerge through playing the game. Research has shown that child and adolescent clients can use games almost as a safety net or shield from both the trauma of their problems and the trauma of therapy [7].

While being uncomfortable with direct dialogue, adolescents can also be resistant to these traditional methods of play therapy. They like to be treated as adults and will not engage if they perceive they are being treated as a child. However adolescents often show a great interest in using computers and video games and these can be an appealing way of joining with adolescents on their own terms. A recent UK survey reported that 53% of eleven to fourteen year olds play games four times a week or more, and that 44% play for more than one hour at a time [8]. Digital games currently constitute a client-centred approach to adolescent psychotherapy.

4.0 Related Work

4.1 Computer games for adolescent psychotherapy

Given the potential of computer gaming relatively few researchers from a psychology/psychotherapy background have developed and tested their own games for use with adolescents in therapy [9, 10]. David H. Allen, an early proponent of computer games in therapy, reported success using Ultima, an off the shelf commercial adventure game, with adolescents aged 7-14 [11]. Children who completed therapy with the game appeared "to have more self-confidence, a sense of mastery, more willingness to accept responsibility and less stigma about being in therapy"[11 pp333]. In 1984, a psychotherapeutic text based game entitled 'Adventures of Lost Loch' was developed for use in therapy with impulsive adolescents [12]. The aim of the game was to engage clients and to reduce the stigma related to therapy. SMACK was a game dealing with the decisions and consequences related to drugs [13].

4.2 Computers and Narrative Learning Environments

Various studies have shown the benefits of computer tools to encourage literacy, storytelling and personal narratives in educational settings. A substantial body of work has investigated the use of story listening systems, and conversational agents embedded in children's toys [14, 15]. Bickmore has provided initial demonstrations of the benefits, in health care, of embodied conversation agents designed to create a perception of caring [16]. The conversational agents used in these works are relevant to our work, but embodiment in children's toys will be more relevant to future work in engaging younger children in psychotherapy interventions.

Ghostwriter is an interactive virtual reality role-play specifically designed to engage young people in educational drama and improve story writing skills [17, 18]. Trials showed that young people were motivated by and remained focused on their tasks while playing the game. Players formed relationships with each other and game characters. Stories written subsequently contained more portrayals of characters' relationships. There were also beneficial effects for self esteem.

Marina Umaschi Bers has coined the term *Identity Construction Environments* to describe the constructionist computer tools she has developed for exploring personal and moral values and personal identity within community environments [19]. In Zora, a narrative based graphical virtual world, Bers investigated the use of constructed 3D

communities as a tool for exploring personal identity in adolescents. Zora is distinctive from Bers' other Identity Construction Environments (Sage, Kaleidostories) in its use of 3D, chosen specifically because the project aimed at engaging teenagers. Zora demonstrated the potential of a constructionist 3D graphical world to engage and support adolescents in personal narratives, personal reflection, self-discovery and identity formation. The system demonstrated positive health care benefits in a pilot study in the Pediatric Dialysis Unit of Boston's Children's Hospital.

5.0 Solution Focused Therapy and Gaming

Solution focused Therapy (SFT) is an established and effective strengths-based, goal-focused approach to counselling and psychotherapy [20]. SFT helps clients construct solutions rather than to focus on problems, concentrating on the future not on the past [3, 21]. The approach can be divided into five therapeutic conversational strategies:

- **Setting Goals:** Instead of focusing on problems, clients set goals they want to achieve.
- **Recognising Exceptions:** Exceptions are times when the client's problem is not present or is less acute. SFT helps clients recognise and explore these times with a view to repeating them more often.
- **Coping:** SFT helps clients to recognise ways they currently have of dealing with their problem and how they have successfully overcome past problems.
- **Identifying resources:** SFT helps clients identify resources, in particular support from family and friends, which they can draw upon. Drawing on this support can make a vital difference for clients. Resources refer also to the client's own strengths i.e. things they are good at.
- **The Miracle Question:** "Imagine you woke up tomorrow and the problem was solved, how your life would be different?" By imagining a future without their problems, clients are motivated to seek a solution.

Solution Focused Therapy was chosen as the therapeutic basis for PI because it shares a goal-oriented approach with computer games. In computer games players must achieve minor goals (e.g. fight an enemy, vault a wall) to achieve the major goals (e.g. finish the game). In SFT clients achieve therapeutic goals (e.g. learning coping skills) in order to solve a life problem (e.g. overcoming depression).

6.0 Personal Investigator

Personal Investigator was developed as a 3D computer game for use as tool to engage adolescents in psychotherapy. The game employs a 'detective' narrative to engage adolescents and help them to construct their own personal narrative and to tell their own story in discussion with a therapist. The choice of 3D represents a client-centred approach and also allows the young person the potential to pace and personalise their journey through the game. The game was designed both for potential self-directed use online but also as a computer-mediated tool to aid therapeutic conversations between adolescents and therapists.

In PI players visit the Detective Academy. The overall goal is to learn how to find solutions to personal problems and graduate from the Detective Academy as a Master Detective. The adolescent plays the role of a trainee 'solution detective', a detective looking for solutions to personal problems. The trainee learns to become a Master Detective by talking to five other master detectives and listening to stories from adolescents about how they overcame their problems. PI maps SFT's five conversational strategies, discussed above, into five distinct and separate game areas with five different computer characters (figure 3).



Figure 3: Mapping the game areas.

6.1 The Gameplay

When PI is used in a session both the therapist and the adolescent sit in front of the computer. The adolescent takes control of the keyboard and mouse, chooses a username and logs into the game. An individual account is created for each player, which allows them to save their progress as they go along. The first character the player meets is the principal of the Detective Academy, who guides players through the goal setting stage of therapy. Usually a goal is negotiated with the therapist at the start of therapy. This can be a difficult step to complete, but here it is presented as a game goal and is not as serious or daunting for an adolescent to achieve. The principal gives the player a detective notebook, which appears at the bottom of the screen, and is used throughout the game to record goals, resources and thoughts.

Inside the Detective Academy, there are four distinct areas to be explored, corresponding to the four remaining aspects of SFT. Waiting in each of these areas is a master detective who assigns the player tasks, and rewards their completion with a key. For example in the 'Backup' area, the player meets an American policeman, who helps players understand the need for support and invites them to watch a video testimony from one of his former pupils. This pupil describes how she overcame a personal problem by talking to her brother. When players identify their own strengths and resources and note them in their detective notebook, they receive a key and can move on to the next area. Interaction in each room follows a similar pattern; players meet a character, who tells them about what they need to do to get a key and in two of the three further rooms they hear a narrative from former pupils of the Detective Academy. Players are required to collect a key from each room in order to graduate from the academy. As a reward for graduating the Detective Academy, players receive a printout of their detective notebook, which can then be used in further therapeutic work outside of the game.



Figure 4: Screenshots from Personal Investigator

The game provides the therapist an opportunity to observe the adolescent and analyse their answers. Adolescents have less difficulty giving answers because questions are not posed directly by the therapist but by the computer and also because they can type their answers instead of speaking them. Some of the answers given by the adolescent can stimulate further discussion. The therapist can elaborate on the subjects brought up by the game or answer more specific questions from the adolescent in relation to their situation. Throughout the game the therapist is a partner in the exploration of the game world and is no longer an interlocutor.

7.0 Trial descriptions

Four adolescents have completed a pilot study using PI with three therapists in three Dublin clinics. The adolescents ranged in age from 13 and 16 (two boys and two girls) and were referred to the clinics for issues including anxiety and behaviour problems, attempted suicide, and social skills difficulties. Initial expectations were that the game would take one session to complete. However, the average game took three sessions spread over three weeks to complete due to the amount of discussion the game produced between therapist and adolescent. It is important to point out the inherent difficulties in getting detailed feedback when conducting cross-disciplinary studies in therapeutic settings. Direct access to therapeutic sessions or clients by the game designers is not possible. Feedback is in the form of questionnaires from therapists and adolescents and post trial discussions with the therapists.

8.0 Discussion

8.1 Therapist Feedback

All three therapists rated PI as very helpful in engaging adolescents to open up and talk about their problems and in particular in keeping them focused on a therapeutic task for an extended period. The gaming goal of collecting keys motivated the adolescents to answer therapeutic questions, and the 3D aspect (including the high quality 3d graphics) and choice of navigation, gave them a sense of control and allowed them to pace their journey through the game and likewise through therapy. In talking-based therapies the pace of the session is often controlled by the therapist. However, the virtual environment allows the player to control how fast they deal with each aspect of therapy and gives them control over the order in which they tackle these different aspects. A critical feature of the game was the therapeutic conversation that was evoked between therapist and client. Before and after answering the questions, the young people would discuss their answers with the therapist and this conversation could last up to ten minutes per question.

Overall, it can be argued that PI's structured division of SFT within a computer game metaphor and the use of simple game goals and rewards helped adolescents engage and maintain focus during therapy. The level of control adolescents were given, of pacing and of subject matter, can be viewed as a significant factor in motivating them and increasing their confidence with therapy. Furthermore, the less direct and less confrontational communication between therapist and adolescent helped make sessions less stressful for clients and helped develop the therapeutic relationship.

8.2 Young person feedback

All four young people rated the game as very helpful to them in assisting them to think about and solve a personal problem. When asked to name what they thought was helpful, they named 'collecting the keys', 'answering the questions', 'hearing from other people' and 'listening to the videos'. Listening to the videos of other young people's experience was rated as particularly valuable and rated by three of them as the most memorable aspect of the game. One adolescent gave suggestions for improving the game and he felt that the game was too short and would have liked the opportunity to answer more questions and gain more keys. He also suggested the possibility of an 'extra level' in the game for more experienced or older players.

8.3 Case Study

In order to give a more detailed sense of a young person's use of the game there follows a brief case study. Sue (not real name) was 13 years old when she was

referred to adolescent mental health service due to anxiety problems in school and social situations. She also had poor self-esteem and a mild learning disability. Before introducing PI, the therapist had already seen Sue for seven sessions. Though there had been some progress, Sue would often forget her goals and not carry out plans between sessions.

After the game was introduced, there was noticeably more discussion between therapist and adolescent. Sue completed the game over four sessions and was very much engaged by it. It was a boost to her self-esteem to be able to navigate the game, to be able to type her answers in the detective book (writing would have been a difficulty for her in school). Though she typed concise answers to the questions, these were the result of extended conversation with the therapist and the final answers were often very meaningful to her. For example, one of her difficulties was feeling anxious when out shopping when she would be very self-conscious of other peoples' reactions. When asked in the game how she coped, she typed (after discussion with her therapist) 'think that people are minding their own business', meaning that she realized it was better to shift her thoughts from believing that people were focused on her (thus making her anxious and self-conscious) to an opposite belief which would help her be calmer and more collected. This represented an important cognitive strategy that she built upon and remembered in subsequent situations. PI facilitated this discussion and in this respect helped the therapeutic process.

The positive outcome for Sue was reflected in her own self-rating within the game. In Session 3 she was asked to rate between 1 and 10 how close she was to her goal and she chose 7. In Session 4 she changed this to 10, indicating that she felt she had made sufficient progress towards her goal, to consider ending the therapy. It is important to emphasise here that PI (or any game used in therapy) should not be viewed as a panacea but as a tool that helps a client engage in a meaningful way in therapy. In this case PI helped create sufficient conditions from which effective therapeutic work could proceed.

9.0 Future Developments

To date, PI has been used in face-to-face therapy with adolescents. Research into games used between therapeutic sessions would be interesting and could help motivate adolescents to continue therapeutic work when they are away from therapy (e.g. therapist does face to face therapy for first session and then the adolescent continues working in their own time). Data from these games could then be used in therapeutic sessions.

Currently, PI does not adapt to each adolescent's situation. It would be useful to develop upon the sharing of peer narratives, which was a successful aspect of the game with adolescents. Future games could make this sharing of narratives more central to the game. Currently each game has a record of each game played, in the form of a detective notebook. It would be interesting to create a multimedia narrative of each player's game. This narrative could then be made accessible to other players within the game and the stories most relevant to them (including stories taken from other players' games) could be made available through a database.

10.0 Conclusion

Initial surveys of PI have indicated that the game is a useful tool in engaging adolescents in computer-mediated therapy, in particular facilitating extensive therapeutic conversation between therapist and adolescent and thereby aiding the development of therapeutic alliance. It helped provide a structure, keeping adolescents

focused on a therapeutic task and provided a written record via the detective notebook. Further tests are necessary to confirm these conclusions and to determine the exact contribution such a game can make to the therapeutic process. In addition, future research is needed to determine whether a similar game could engage adolescents between therapeutic sessions and whether a more adaptive narrative system could be developed.

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