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Training for Life: Designing a Game to Engage Younger People in a Psychological Counselling Program

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Abstract. In this paper we review the general use of games in the domain of psychological counselling. We introduce a particular online program called *SHADE* that is designed to assist younger people with comorbid depression and alcohol or drug issues. We also discuss the design features of *SHADOW*, a game version of the *SHADE* program that is being designed to better engage participants so they complete this psychological counselling program.

Keywords: Computer Games, Psychological Couselling, Gamification

1 Introduction

Depressed mood and alcohol misuse represent significant community problems, contributing first and fifth to the global disease burden in middle-high income countries [1]. Up to 89% of people with alcohol and other drug use disorders also experience comorbid depressed mood [2]. Efficacious treatments for comorbid disorders have been developed, with available evidence supporting the use of integrated psychological treatments that address both addictive and psychiatric symptoms concurrently [3-4]. If implemented widely in clinical practice, these integrated treatment programs could significantly impact the burden of illness [5].

Given the high personal, societal, and global costs of comorbidity, it is imperative that cost-efficient and effective treatment models for depression and alcohol and other drug use comorbidity are identified and implemented. The *SHADE* study [6] was the first and—as yet—only randomized controlled trial of a computerized psychological intervention for comorbid depression and alcohol and other drug use problems, including a range of symptom severity. The *SHADE* study recruited 274 participants with current comorbid depression and alcohol and/or cannabis misuse to a randomized controlled trial that compared therapist-delivered cognitive behavioural therapy and motivational interviewing (10 sessions delivered face-to-face in research clinics), clinician-assisted computerized cognitive behavioural therapy/motivational interviewing (1 face-to-face session followed by 9 computer-delivered sessions with brief weekly clinician assistance) and supportive counselling (control, 10 face-to-face sessions of nondirective support delivered face-to-face in research clinics). Computerized cognitive behavioural therapy (CBT)/motivational interviewing was associated with improvement that was at least equivalent to that achieved by therapist-delivered CBT/motivational interviewing, with superior results in reducing alcohol consumption [6].

Computer and internet-based therapies such as *SHADE* have the potential to reduce costs associated with treatment (by reducing contact time with the therapist), increase standardization and treatment accessibility [7]. Unfortunately engaging clients in treatment is difficult, especially young people with substance use issues, whether in terms of initially accessing services, attending appointments, or maintaining motivation for treatment [8]. Given the relatively poor rate of treatment-seeking for these problems, the use of new technology in these arenas has been of particular interest [9-13].

Given these factors, it is not surprising that researchers and developers have been considering innovative ways to use gaming technologies to engage younger individuals in therapy. Australian and international literature suggests that young people are extensive consumers of digital media and users of digital devices, including video games [14]. In a sample of 1,326 Australian school and university students, Thomas and colleagues [15] found 91% of college, and 83% of university students had played computer games in their lifetime. Internationally, research indicates that in a 12-month period approximately 93% of adolescents play computer games, with 57% of a sample of Spanish adolescents [16] to 63% of Norwegian adolescents [17] playing at least once a week.

This potential, combined with the demonstrated effectiveness of *SHADE* when participants complete the program, has led us to develop a computer game version of the *SHADE* program. In the following section we review some previous use of game technology for the purpose of psychological counselling. Following this, we outline the key elements of the *SHADE* program and then look at how we have translated these features into a game called *SHADOW*.

2 Serious Games in Psychology

The use of game play in therapy is not new, play therapy in child psychotherapy dates back over 50 years [18]. The related concept of 'serious gaming' was proposed by Abt [19], where the primary goal of such games was not simply entertainment, but rather, eliciting a carefully thought-out educational objective. In essence, the category includes any game that engages users in order to achieve a desired goal, such as teaching, training, or behavioural change [14], [20-21].

Research on the use of computer games in psychotherapeutic settings started as early as the 1980s and early 1990s [22-27]. Early research by a number of therapists used off-the-shelf commercial computer games with adolescent clients in an attempt to build mastery, self-confidence, reduce the stigma of therapy, displace their aggression, develop problem solving skills and to deal with both negative and positive outcomes [22], [24], [28-30]. Therapists also attempted to use commercial video games in order to evaluate cognitive skills, frustration, tolerance, and affective regulation of a child during game play, hoping to gain insight into intrapsychic conflicts [31]. For example, McGraw and colleagues [32] investigated the effects of the commercial game *Dance Dance Revolution* game on reading disorders of children affected by ADHD.

A number of researchers have also promoted the use of the online virtual world, *Second Life*, as a platform for medical and health education, support and therapy [33-34]. It has been used to educate people about hallucinations [35], as a healing space for veteran soldiers [36], as a virtual reality (VR) exposure therapy for agoraphobia [37] and as a VR space for individuals with Asperger's syndrome to interact with others and develop their social skills [38].

Adventures of Lost Loch was an early attempt at a psychotherapeutic text-based game, developed for use in therapy by adolescents with low impulse control [23]. A number of attempts were made to develop games for young people with substance abuse problems includingBusted [39] and *SMACK* [26], though evaluation of these programs is lacking. *Relax to Win* is an example of an early biofeedback-based 2D game for the treatment of children with general anxiety [40]. While *Eyespy: The Matrix*, is a computer-based game developed to help improve processing of negative social information in cases of low self-esteem [41]. More recently, researchers at Melbourne's Orygen Youth Health Centre have created a prototype computer game for young people recovering from psychosis, entitled *Pogo's Pledge* [42].

Two game suites for autistic children have been developed. *Let's Face It* [43], aims to teach ability-appropriate distinctions between faces and objects, and recognition and labeling of facial expressions. While *TeachTown* [44], uses game-like tests to assist with receptive language skills, social understanding, self-help, attention, memory, auditory processing and early academic skills for children with autism and other developmental delays. *KidTalk* [45] and *The Junior Detective Training Program* are computer games developed to assist children with Asperger's syndrome by enhancing their social skills and emotional understanding [46].

Games utilising specific CBT techniques have also been developed, including *Treasure Hunt* [47] for children (8–12-years old) who are in CBT treatment for various disorders. *Personal Investigator (PI)* is the first 3D-computer game specifically designed for use in adolescent psychotherapeutic interventions. The game implements a model of goal-oriented, strength-based, solution-focused therapy in order to help 10–16-year olds overcome various mental, emotional and behavioural problems [48-49]. The same research team behind *PI* have recently developed *gNat's Island*, a game designed to support face-to-face clinical CBT with young people aged 10–15 experiencing moderate to severe depression and anxiety [50].

Also based on the principles of CBT, the recently developed Australian *Reach Out! Central (ROC)* program aims to teach life skills (e.g. communication, problem solving and optimistic thinking) to an young adult population and engage 16-24 year old males who have particularly low levels of help-seeking [51-52]. While *SPARX* (an interactive New Zealand creation) aims to reduce depressive symptoms in adolescents via a fantasy game format [53].

Recently, work has commenced in designing and evaluating serious gaming and VR platforms for use in the medical field. These include *PlayMancer* [54-56], *NeuroVR* [57], *PlayWrite* [58] and ScriptEase [59]. *ScriptEase* is currently being used in the development of a serious game to treat chronic depression [60]. Similarly, a third person character-based game is currently being developed for depression prevention/early intervention based on specific CBT interventions including changing negative thought patterns into positive thought patterns and changing non-adaptive social skills [61].

The *SHADOW* program has some similarities with these previous games. It is designed to target younger adults, aged 18-30, of both genders. A key differentiating factor for *SHADOW* is that it will target a population with comorbidity of depression and alcohol or other substance abuse. Like some of this previous work, the *SHADOW* game also builds upon a previously existing and empirically-tested psychological treatment program. This program, called *SHADE*, is described in the next section.

3 The *SHADE* Program

SHADE is a clinician-assisted intervention program designed for the treatment of comorbid depression and alcohol/other drug use problems [6]. It is an Internet-delivered, evidence-based, psychological treatment that uses the prin-

ciples of CBT, mindfulness meditation and motivation enhancement to target these conditions in an integrated way over a 10-week program. Participants using the *SHADE* Website complete their 10-session intervention from their home computer (or other preferred port of internet access). Each time a site user accesses the site and enters their login code, they have the option of continuing to work through the modules from the point at which they previously logged out of the program, or to start at a different point.

The *SHADE* program contains interactive components, video demonstrations, voiceovers and in-session exercises. Written material is pitched at a maximum reading level of Year 8, minimizing the length of paragraphs. The ten *SHADE* sessions are completed on a once weekly basis in sequence, with participants asked to leave sufficient time in between sessions to digest and implement the strategies covered during the module. During the *SHADE* program, participants also receive a once weekly phone call at a pre-arranged time, limited to 10 minutes duration. This brief session includes a review of issues covered during the *SHADE* session for that week, prompting to complete the current *SHADE* session, the development of a plan progressing towards goals set during the session (including homework completion); and a brief suicide risk and mood assessment. Fig. 1 displays the session-by-session content of the *SHADE* program, highlighting the two key skills that have been incorporated into the *SHADOW* game, namely, managing negative (unhelpful) thoughts and mindfulness.

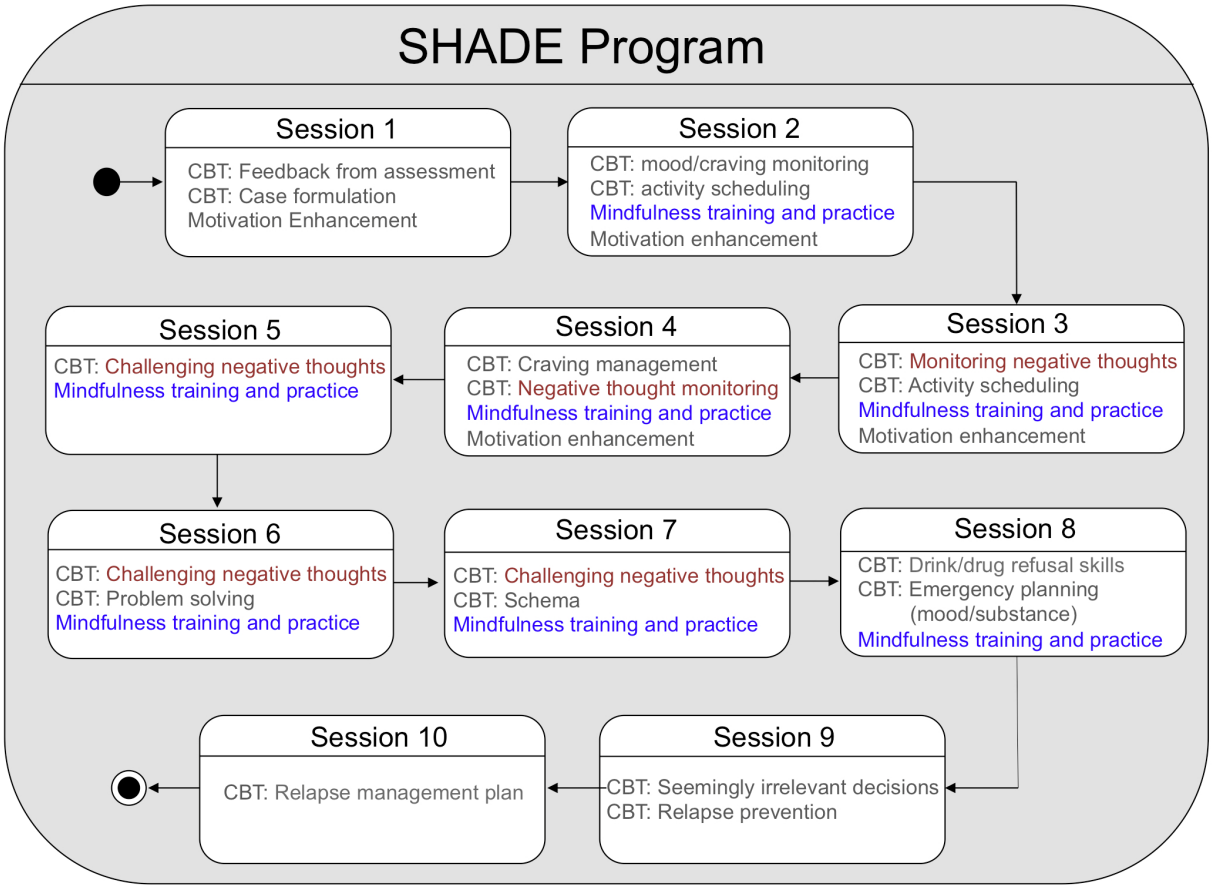

Fig. 1. Session by session content of the *SHADE* program, highlighting the key skills related to mindfulness and negative thought management that have been incorporated into the *SHADOW* game.

A major objective of CBT is to identify and challenge the unrealistic beliefs that maintain a person's problematic patterns of thinking and behaviour [62]. Monitoring situations in which these thinking and behaviour patterns are most likely to occur is an important first step in this process. Following this, a person then can learn how to examine their mood and craving experiences more closely, with a view to developing alternative, more helpful ways of thinking and behaving. When people are feeling depressed, a negative, automatic bias often sets in, which results in a tendency to automatically think in a negative way about every situation without testing out alternative interpretations to these situations. These automatic thoughts tend to fall into the following categories: black/white thinking, jumping to negative conclusions, personalising, catastrophising, and should/oughts. The most effective way to circumvent this process is for the person to catch themselves in this automatic pattern of thinking, to recognise the thought for what it is, and to then substitute it with a more helpful or reasonable set of thoughts.

Mindfulness is an important skill, particularly when learning how to cope with negative automatic thoughts that are associated with depression and drinking alcohol. The central idea of mindfulness is not to prevent these thoughts from occurring, rather to stop these thoughts from setting in and taking control when they are triggered [63]. Mindfulness is a

way of stepping out of this automatic thinking pattern (‘automatic pilot’), and teaches people to pay attention in a particular way to what is happening in the present moment and without judgement. By using mindfulness skills, a person can be taught to recognise when they are in ‘automatic pilot’, and to "check-in" with themselves to see whether thoughts or judgements might be related to depressive symptoms or problematic thoughts about drinking.

4 The *SHADOW* Game

SHADOW, the game, is designed to provide challenges that allow participants the opportunity to practice and develop two key skills developed within the *SHADE* program. These key skills are mindfulness and the ability to monitor and manage negative thoughts and moods. This coincides with the key skills developed in the session-by-session *SHADE* program (Fig. 1). Focusing on these two skills a series of game mechanics where designed in order to represent the use of the skills in a simulated world. The skill practice is designed to supplement the skill development used within the *SHADE* program.

The *SHADOW* game is a branching dialogue scenario in which the player responds to events that occur over the duration of each scenario. Currently we are developing the first prototype with a single scenario. The design of the prototype is purposefully limited to allow for both rapid development and a focus on preparing key game mechanics for a proof of concept. The game is played from a detached, third person perspective with no identifying player character. The prototype scenario involves the participant traveling to a venue for a party, along the way they encounter a series of events, the first of which serves as an introductory tutorial to the game's event structure. Subsequent events in the game are randomly selected from a collection including phone calls, messages from friends, or passing areas of temptation such as a bottle shop. Each event consists of an introductory premise and dialogue, and a series of response options (Fig. 2). During the game, the participant must monitor and manage mood levels and negative thoughts via the use of a mindfulness mini-game (Fig. 3).

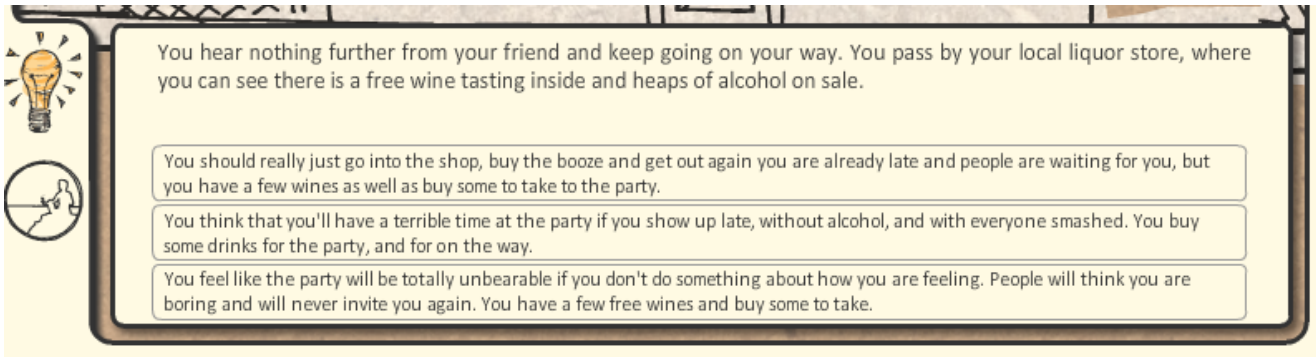

Fig. 2. An example of an event that occurs in the game and some possible responses the player can choose from the dialogue screen. The choices presented may be limited based on their current mood level. Furthermore, the player’s choice will subsequently impact on their current mood level. Note the player can always decide to manage their mood by playing the mindfulness mini-game (bottom icon on the left of screen). The light bulb icon (top icon on left of screen) provides a player with access to a thought box that is regularly updated with a serious of automatic thoughts relevant to the current situation.

Fig. 3. The mindfulness mini-game allows the player to categorise their thoughts into various categories such as black/white thinking, jumping to negative conclusions, personalising, catastrophising, and should/oughts. By managing their thoughts the player can improve their mood level in the game.

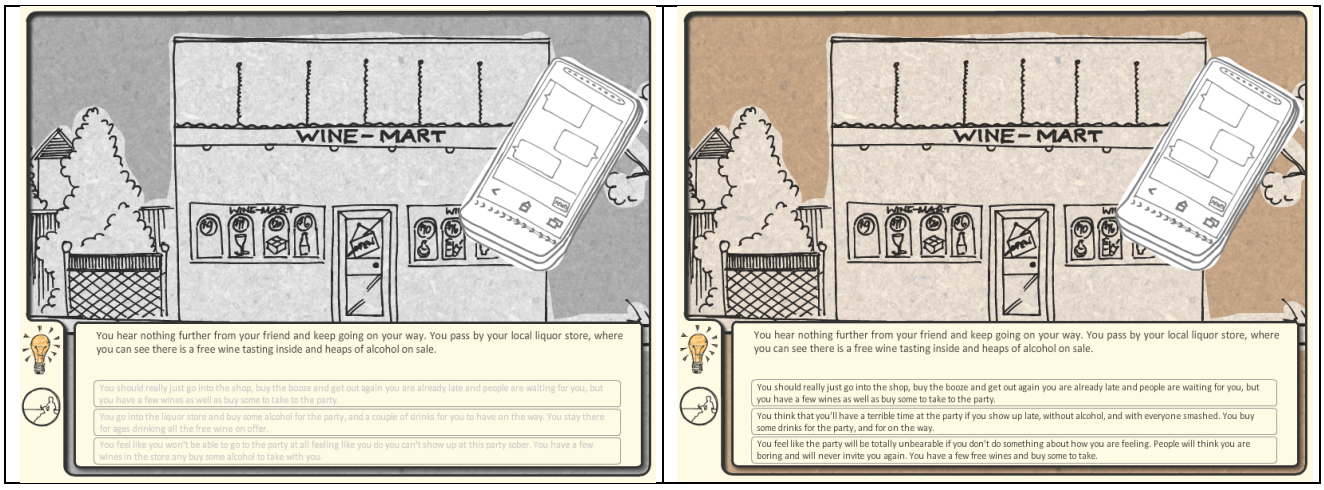

Fig. 4. The player can monitor their current mood in the game by looking at the level of colour saturation in the game world. A grey, colourless world indicates a low mood while a relatively brighter and more colourful world indicates a good mood level.

The goal of the *SHADOW* game is to successfully complete the scenario while maintaining a consistent mood level. The player can monitor their current mood level using the colour saturation of the game graphics (Figure 4). A grey, colourless world indicates a low mood while a relatively bright and colourful world indicates an appropriate mood level. Completion of the scenario hinges on the participant's ability to make appropriate choices and manage mood and negative thoughts. If mood levels reach a critical point, an end game event is triggered, resulting in the participant not completing the scenario.

The dialogue option's (Figure 2) availability is also influenced by current mood, each of which has descriptive consequences that affect the game's mood level and impacts upon later events. The mindfulness mini-game is the game mechanic through which the player manages their mood; by firstly identifying that the game mood is in a hazardous state (too low or high), the player can choose to enter mindfulness mode at any point. Mindfulness mode (Figure 3)

presents the player with the collection of automatic thoughts, having been generated throughout the game, with the purpose of categorising and thus dealing with each thought. The correct categorisation and thus removal of thoughts reverts the mood level to a neutral state, allowing the player to modify available dialogue choices and successfully complete the game scenario.

The visual design of the game is based on simple line illustration with splashes of watercolour paint. This visual style allowed for the modification of colour in the game world to signify changes in mood (Figure 4). As one of the many visual indicators that were considered in the game design, utilising colour saturation in the game world to represent mood changes allowed for a more subtle impact upon the game. Along with the event response options, the mindfulness mini-game provides the player with a practical and risk-free environment in which to practice skills used throughout the *SHADE* program.

The key differences between the *SHADE* program and the *SHADOW* game are both in their presentation and how players engage in the program. *SHADE* is delivered as a progressive series of courses. This structured approach builds upon skill-sets each week. By contrast *SHADOW* provides an explorative environment in which the application of such skills influence the mechanics of the game world. The player's choices as well as their current mood level directly impact on the situations and choices experienced by the player. *SHADOW* is built around short sequences, each a self-contained exercise in mood awareness and management within different scenarios, themselves a randomly generated series of events with overarching themes pertaining to alcohol use and depression.

5 Conclusion

We have developed a prototype game called *SHADOW* that is designed to assist younger people with comorbid depression and alcohol or drug issues. We introduced a previous online program called *SHADE* that has previously proved successful in treating this condition when participants engage in the program sufficiently to complete it. We also discussed the design features of *SHADOW*, a game version of the *SHADE* program that is being designed to better engage participants so they complete this psychological counselling program.

The next phase of the project involves testing the game mechanics and aims to identify how the game engages program participants and whether such engagement leads to an improvement in personal management skills. The effectiveness of the game will be compared against both the *SHADE* program and the *SHADE* program in conjunction with *SHADOW* within the context of a clinical trial. After this testing phase, further refinement of mechanics and the development of content will be undertaken to provide a larger pool of scenarios that allow participants a new experience each play through. Ideally, given expansion of content, *SHADOW* could operate independently from the *SHADE* program, standing on its own as an online treatment option.

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