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DESIGN AND PILOT STUDY OF AN ADVENTURE VIDEO GAME AS A TOOL IN PSYCHOTHERAPEUTIC PROCESSES OF ADOLESCENT WOMEN WITH SYMPTOMS OF DEPRESSION

presented by
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Dedication

Dedico ese trabajo a mi esposa Megumi, quien me brindó su apoyo y paciencia durante los años de mis estudios doctorales. También dedico este escrito a mis hijos Hernán y Leo, quienes regalaron parte de nuestro tiempo de juego para que su padre tratara de inventar juegos para ayudar a otras personas. A mi padre Hernán por ser un ejemplo de vida que siempre me acompaña.

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Abstract

Aim: Technology and the internet are new platforms to deliver information, to interconnect people and to offer interactive media. The potential of technology has been explored, in promising ways, for the treatment and prevention of different psychological disorders. Also, since several decades ago, the potential of video games for the treatment and prevention of psychological disorders has been explored with positive results. The main goals of this study were two: a) to design an online adventure video game as complementary tool in psychotherapeutic processes of adolescent women with symptoms of depression; b) to evaluate the acceptability by female adolescents of an online video game as a complementary tool in psychotherapy.

Methods: a) Design phase. The game design followed a user oriented iterative process. First, focus groups with teenage girls were conducted to obtained ideas for the video game story. The first prototypes were play tested with some girls. Besides, the video game design process was accompanied and reviewed by 5 psychotherapists. b) Pilot study. Therapist (5) invited patients (15) to play the game. After patients played the video game, they responded the online acceptability and game experience questionnaires. In the sessions that followed therapist and patients reflected on the relation of the video game and the patients' situation. Later, psychotherapists were interviewed to obtain their opinions about the experience.

Results: It was possible to design an adventure video game, sustained in psychological theory that provided a positive game experience for some depressive patients and that it was useful in the context of their psychotherapies.

Discussion: One of the most important contributions of this work is that the video game prototype and the experiences presented provide evidence that future developments and research on video games for mental health are worthwhile. This was a very simple game, a prototype that recognizes a future in which interactive devices and artificial intelligence will offer vast possibilities for education and mental health.

Keywords: Video game for mental health, interactive narratives, depression, psychotherapy with adolescents, psychoeducation.

Introduction

Depressive disorder affects an important percentage of the adolescent population and it is one the main mental health problems in Chile and worldwide. Research has shown the potential of psychotherapy for the treatment of this disorder. It is also known that prevention of depression is convenient and possible.

Technology and the internet are new platforms to deliver information, to interconnect people and to offer interactive media. The potential of technology has been explored, in promising ways, for the treatment and prevention of different psychological disorders. Also, since several decades ago, the potential of video games for the treatment and prevention of psychological disorders has been explored with positive results. However, during the literature review conducted for preparing this project, no video game was found, at the moment, specifically oriented to the treatment or prevention of depression. This is a theoretical and practical gap that this work can help to bridge.

It is known that depression has a higher incidence in adult and adolescent women. For this reason, in part, this work is oriented to women. Also there is data that shows that adolescents play more video games than adults. In relation to gender, it is also important to note that women play less than men and, when they do, women play different kinds of games than men; therefore it is important to consider the gender variable in a video game intended for the treatment and prevention of depression.

The research objective was to design and to evaluate an online video game, sustained in a psychological model, as a complementary tool in psychotherapy processes of adolescent women with symptoms of depression.

This document first presents the theoretical and empirical background found in the specialized literature reviewed to sustain the proposal. This section offers information about depression, its treatment and prevention, as well as research related to the use of technology and video games to treat and prevent psychological disorders, especially depression. Then, the questions and objectives of research are presented. It follows the methodological aspects of the research, the results and the final conclusions.

1. Theoretical and empirical background.

1.1. Depression.

Depression is a mood disorder that can negatively affect the life of those who suffer from it, as well as their family and social environments. During adolescence, depression is related with physical health problems, with diverse psycho-social difficulties (Martínez, Rojas, & Fritsch, 2008), suicide risk and it is a predictor of future adaptation problems (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). In 2003 in Chile, 17,5% of the population was reported to have suffered symptoms of depression during the last year, these symptoms being significantly more frequent among women than men (24,3% vs. 10,4%). In the population between 17 to 24 years, prevalence was 15,7%; for young women prevalence was 18,1% and for men, in this age range, it was 13,4% (Ministerio de Salud de Chile, 2003, p. 266).

Most of the research estimates that the annual prevalence of the major depressive disorder among teenagers is between 4% and 8%. In the United States the lifetime prevalence of depression among adolescents has been estimated in 20% (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993; Seeley, Stice, & Rohde, 2009). In Chile, a research with a sample of teenage women found an annual prevalence of major depressive disorder of 9,3% and sub threshold depression of 11,6% (Cova, Rincón, Valdivia, & Melipillán, 2008, p. 608).

It is also known that the subclinical manifestations predict future psychological problems (Luyten, Blatt, Van Houdenhove, & Corveleyn, 2006). It is important to note that those adolescents with sub threshold depression can manifest adverse consequences equivalents to those that meet all the diagnostic criteria; besides, sub threshold symptoms are a risk factor for future depressive disorders (Martínez, Rojas, & Fritsch, 2008, p. 206; Cova, Rincón, Valdivia, & Melipillán, 2008).

A comprehensive understanding of depression should take into account the risk factors for this disorder. Research on depression can contribute to the development of preventive interventions and treatment regarding cognitive, behavioral, and affective vulnerabilities that influence the beginning of depression and its maintenance. Specific factors include, for example: a previous episode of depression, having a depressogenic cognitive style, symptoms of depression and a family history of depression. Non-specific factors of depression are: poverty, exposure to violence, social isolation, child abuse, family rupture, and in adults, loss

of employment. (Gladstone & Beardslee, 2009). Other risk factors are gender, genetic factors, neurobiological irregularities, temperament/personality, negative cognitions, self-regulation problems, and abilities dealing with stressful situations, like interpersonal difficulties (Garber, 2006, p. 104).

It is also important to consider that frequently there is comorbidity in the cases of depression. Moreover, there is evidence that this is a recursive disorder; a unique lifetime episode is the exception (Moras, 2006, p. 519).

1.1.1. Psychotherapy and prevention of depression.

1.1.1.1. Efficacy of psychotherapy for depression.

There is evidence that psychotherapy and pharmacotherapy are equally effective in the temporal relief of depression in general population samples and, in the same way, in adolescents (Vitiello, 2009). However, it is also known that neither pharmacotherapy nor brief psychotherapy, in their actual modalities, is completely effective in the permanent remission of depression. There is evidence that psychological treatments are associated with higher rates of prevention of relapse that pharmacotherapy (Moras, 2006, p. 521). These results sustain a long logic speculation in relation that psychotherapy produces learning, namely, modifications at the level of neuronal networks which, in the case of pharmacotherapy, are not permanently altered (Kandel, 2001).

For one third of adolescents, the treatment makes a substantial difference by returning them to their normal state of functioning. At the same time, another third improves in a non-specific clinical contact (placebo), while that, for the remaining third, depression is resistant to the studied forms of treatment. Obviously, this is the group of higher risk and the more challenging to therapist. To improve the efficacy of treatments a revision of the nosological categories of depression is required, as well as a better matching between treatment and type of depression (Vitiello, 2009, p. 394). Some authors suggest that this and other problems (noticeable it is the observation of the current a-etiological approach to depression and its adverse implications for treatment) are related with the fact that there is little evidence respect to what theoretical groundings or specific techniques account for the positive changes derived from psychotherapies (Luyten, Blatt, Van Houdenhove, & Corveleyn, 2006, p. 989).

In relation to the efficacy of distinct psychotherapy modalities, comparative studies

between cognitive behavioral therapy and interpersonal therapy have been carried out and no differences have been found (Moras, 2006; Roth & Fonagy, 2005). There is also evidence of efficacy in brief therapeutic modalities that are psychoanalytically oriented (Shedler, 2010), which seem to have an effect that can take longer, but that results longer lasting than results found in cognitive behavioral treatments (Taylor, 2008). Significant clinical changes have been observed in eight sessions for mild forms of depressions and similar results are found in sixteen sessions for more severe cases (Roth & Fonagy, 2005, p. 83).

According to the 2003 Health Survey, 39,2% of people with symptoms of depression sought medical assistance; women asked for help more frequently than men (41% y 35% respectively). The major difference in consultation rates occurred between socioeconomic levels, 74,3% for the higher socioeconomic level and between 34% to 46% in the other levels (Ministerio de Salud de Chile, 2003, p. 277).

Although since 2006, depression treatment for people older than 15 years was included in the Regime of Explicit Health Guarantees (AUGE) of the Ministry of Health, it is possible that still many people with depressive symptoms do not seek or receive adequate treatment. Some report that as much as 50% of people with depression never receive an appropriate diagnostic. In the United States it has been observed that the majority of depressed adolescents do not receive treatment (Newman DL, 1996 in Seeley, Stice, & Rohde, 2009). The reasons for this are a lack of recognition of symptoms, underestimation of the severity of the condition, limited access to services and, in particular for adolescents, diagnostic errors derived of the frequent mood changes common in this phase and resistance to ask for professional help related with negative prejudices or concern for social stigmatization (National Institute for Clinical Excellence, Appraisal Committee, 2002).

Given the high prevalence and costs associated to juvenile depression, the connection between early onset of depression and recurrence of the disorder in adulthood, the complications associated with adolescent depression, and the difficulty to treat depression once manifested, preventive efforts are needed. Moreover, prevention can be more convenient in terms of cost-efficiency as well as lees stressful for people that wait until the full disorder is manifested in order to seek for help. Therefore, several authors have stated that the prevention of depression is a public health priority (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993; Córdoba, Aburto, Sepúlveda, & Silva, 2006; Gladstone & Beardslee, 2009).

1.1.1.2. Prevention of depression

Preventive interventions intent to reduce risk factors and foster protective factors associated to mental health problems. Prevention seeks to reduce the incidence, prevalence, recurrence of mental health problems, the time with symptoms or the risk conditions in people affected, family and society (World Health Organization, 2004).

Typically, it has been proposed a distinction between: primary prevention, which tries to reduce the number of new cases of a particular disorder (incidence); secondary interventions undertaken to reduce the prevalence, that is all specific treatment-related strategies; and tertiary prevention which include interventions that reduce disability and all forms of rehabilitation as well as prevention of relapses (World Health Organization, 2002).

Primary interventions can be (a) universal (directed to a whole population) and (b) specific (oriented to subgroups of the population). Specific interventions can be of two types: selective prevention, directed to groups of the population that have a higher risk of developing a disorder than the average population; indicated prevention, oriented to individuals under risk for presenting some of the symptoms but that do not meet the complete criteria for the diagnostic of the disorder (Córdoba, Aburto, Sepúlveda, & Silva, 2006).

Some authors recommend specific programs because there is a better chance of showing their efficacy and because they avoid the cost and effort that preventive actions with populations out of risk imply. In the other hand, the disadvantages of specific interventions are related with the difficulty of identifying people in risk and with the inconvenient of generating non-natural groups. Also, if the process of selection is evident for the peers (as in the case of school based interventions), there is a risk of stigmatization of the participants (Córdoba, Aburto, Sepúlveda, & Silva, 2006).

Frequently, preventive interventions of depression in teenagers have been realized, for strategic reasons, in schools. Generally, these programs are based in a cognitive behavioral theory of depression or interpersonal psychotherapy (Gladstone & Beardslee, 2009). The programs have been focused in developing protecting cognitive factors at an individual level and, in some cases they have included some form of family interventions. These treatments frequently are manualized group workshops and about ten sessions long. The workshops area oriented to: increment of pleasurable activities; social skills training; self-monitoring and self-reward; training on problem resolution; training in relaxation; cognitive restructuring; interruption of thoughts and self-instructions (Córdoba, Aburto, Sepúlveda, & Silva, 2006). In

the review of Cordoba and others (2006) just exceptionally programs take as an explicit focus, besides of cognitive behavioral techniques, the typical concerns of adolescents. A pilot preventive program realized with high schools girls in Concepción suggests that more attention to these aspects could be helpful (Aburto, Rubilar, Sepúlveda, & Silva, 2005).

There is consistent evidence for the efficacy, from small to moderate, of this type of interventions on reducing the symptoms and the disorder, in particular in the short term and for specific programs (Martínez, Rojas, & Fritsch, 2008, p. 209). Moreover, some studies have detected additional preventive effects in relation to anxiety disorders (Córdoba, Aburto, Sepúlveda, & Silva, 2006).

Less consistently it has been observed that programs modify central cognitive aspects that theoretically should be related with the preventive effect. A reiterative problem is that, given the research methodology commonly used (randomized control trials) the knowledge about the efficacy is not accompanied by a clear comprehension of what is actually producing the change. Therefore a central challenge for research is precisely a more clear comprehension of the vulnerability and protective factors for the disorder, the way in which the interventions interact with them and what are the variables that moderate the results, all of which is crucial for a better understanding of the etiology and treatment of the depressive disorder (Córdoba, Aburto, Sepúlveda, & Silva, 2006).

Given the higher prevalence in women, some studies have explored the efficacy of specific interventions for teenage girls; a study found evidence of better adherence to treatment and efficacy in comparison with mixed groups (Chaplin, y otros, 2006 in Córdoba, Aburto, Sepúlveda, & Silva, 2006).

1.1.2. Computer based interventions for the treatment and prevention of depression

Computer based therapeutic programs have been used with positive results in the treatment of depression (Roth & Fonagy, 2005). However not all the attempts to transfer this model have been successful because the construction requires taking into account the non-specific factors implicit in the therapeutic relationship. Frequently these programs have been based in the cognitive behavioral model. When successful, these computer-based programs show positive results in terms of efficacy, effect size, cost-effective relation, viability in natural setting in comparison with other treatment alternatives. These programs include

content and activities in multimedia format presenting multiple choice exercises, self-report questionnaires, problem solving situations, recognition and challenging of thought, scheduling of activities, behavioral experiments and psycho-educational activities (Proudfoot, 2004).

A remarkable example is the *Beating the Blues*[1] program, recommended for cases of mild and moderate depression by the United Kingdom National Service of Health (National Institute for Health and Clinical Excellence, 2008).

Computer based programs, especially if delivered via the internet, have the potential of contribute to the preventive efforts. An internet program could, in a cost efficient manner, be offered to many people and targeted to specific groups. This kind of program could be accessible in a preventive way and even be accessed spontaneously and anonymously for individuals that, for different reasons, do not seek the traditional health services. McKeown y Potts (2009) found a small but growing number of studies about the preventive use of computerised programs based in the cognitive behavioral model. The preliminary results are promising and the researchers begin to ponder the potential of technology for prevention purposes but, to this date, research remains scarce (McKeown A. , 2009).

1.1.3. Treatment and prevention models of depression

A review of articles of different efficacious interventions for depression showed that although there are differences in the actions and emphasis between preventing and psychotherapeutic modalities, in both situations, effective interventions share theoretical views with respect to the factors that influence the development of the disorder and change. Even though the models represent different schools of thought, there are understandings, interventions and particular emphasis that have common elements.

There is, at least, a common recognition that early relationships influence the development of persistent relational schemas up until adult life, albeit with a margin of modification (Luyten, Blatt y Corveleyn, 2005; Knox, 1997, 1999, 2001; Horowitz, 1994; Zvelc, 2009). These schemas imply cognitive, affective, and behavioral factors. When relationships were not sufficiently enriching, it is possible that there will be a development of dysfunctional and maladaptive relational patterns and certain psychological capacities that will not develop adequately. One aspect regarding these schemas that has been especially

[1] Web site: http://www.beatingtheblues.co.uk/

studied has been cognitive distortions in terms of self-evaluation, like negative cognitive bias in terms of the events of the external world.

The presence of stress in vulnerable subjects increases significantly the probability of experiencing depression (Garber 2006, p. 112). The loss of significant persons or objects is a common and important source of stress. In this sense, a normal loss can become more intense, longer, or more complicated in certain vulnerable people. In adolescents, due to the importance given to peers, difficulties in this area can become an important factor of stress, especially in girls (Conley & Rudolph, 2009). During this stage, academic responsibilities and the transition to the adult world can generate stress that can be related to depressive symptomology. Dysfunctional ways of relating and deficits in certain psychic capacities can be at the bottom of inadequate responses that fail to resolve stress situations, and that in certain cases can generate more stress, giving way to a vicious cycle (Garber 2006; Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001).

Cognitive-behavioral psychotherapy attributes depression to cognitive distortions and its effect on social behavior and relationships, and/or an alteration in the behavioral reinforcement patterns (Brewin, 1996, pg. 22; Davidson, Rieckmann, & Lespérance, 2004, p. 168). Distortions related to depression arise from cognitive schemas that are derived from experiences from infancy to current day (Zvelc, 2009). Interventions seek to modify cognitions and promote functional tools to cope with stress and improve interpersonal relationships (Horowitz & Garber, 2006).

The interpersonal model also recognizes the influence of inadequate interpersonal relationships from early infancy as a factor of vulnerability for depression. The intervention emphasizes the identification of current interpersonal difficulties and stimulates strategies to face these difficulties.

The model of interpersonal dynamic therapy and traditional psychoanalysis share the importance they give to early attachment for the development of psychological capacities related to mental health. The therapy is centered on the current relationship difficulties, helping the patient to identify dysfunctional patterns and stimulating through the therapeutic relationship, the capacity to reflect on one and others.

A review of preventing strategies for depression, it was noted that with frequency, interventions are multi-modal, including diverse and complementary actions.

In synthesis, the interventions focus on the present situation, particularly gearing attention towards the identification of relational patterns and dysfunctional cognitive styles.

All the interventions follow and stimulate the process of recognition and reflection of the patient´s own mental state and others, and its relationship to behavior and the consequences over affect and mood. Interventions that promote a real and positive perception of oneself are common. Behavioral activation is stimulated, as well as personal strategies to face problems, looking for healthy alternatives for problem solving and reviewing social skills. All these strategies are not just promoted for overcoming a current state of depression; they also seek to be available in future situations that could trigger the recurrence of depressive symptoms.

1.2. Play.

Many authors have categorized play in different ways, they have noted its diverse functions and they have defined play in several complementary ways. According to some authors, play obeys a congenital impulse of imitation, some see it as a behavior that satisfies a need for relaxation, or as an exercise for serious activities, to learn, one would play to acquire command of oneself or of the social environment. Others look for the origin of play in the pursuit of power or fulfillment or in the need to compete. Some consider it as a discharge of impulses, as a compensatory defense or as satisfaction of not fulfilled wishes (Cárdenas, Carrasco, Cornejo, & Galdámez, 1995). These theories are not necessarily exclusive, and therefore each can be partially correct.

There are certain characteristics that distinguish gaming from other behaviors in which the majority of conceptual constructions coincide (Monighan et al., 1987):

Active commitment. Players participate actively in their games. This participation is evident in their wish of not being interrupted. Many times it seems that gamers are distracted, when in reality, they are actively participating in a ludic fantasy.

Intrinsic Motivation. Refers to the genuine desire to do what is being done in the moment. This implies that the game is always voluntary. An imposed activity cannot be a game. On the other hand, intrinsic motivation also implies that the ludic activity is pleasant in and of itself, in part explaining why the player wishes to initiate or remain in the game.

Attention to the means more than the ends. During the game, the players are more interested in the means more than the results. An example of this is that even though the ends are often times imposed by the players, they can vary as they progress with the game.

Non literal behavior. This characteristic defines a symbolic game. The players

transform the objects and situations so that they fit their games. For example, a pencil holder can be a submarine that is submerged in a bucket of water that represents the ocean.

Freedom from external rules. Practically all the games include certain norms (with the exception of sensorimotor games). This is obvious in games bound by rules, like some sports and organized games. But, it is also possible to observe certain rules in games where the player pretends to be something or someone. For example, when pretending to be a firefighter in a game, there are certain rules that must be met to play. One can say that all organized and collective games imply certain rules. These rules exist within a ludic dynamic, and are external, not proposed or imposed, and the player can accept or decline. In these cases, the acceptance of rules determines if the child can or cannot play.

Huizinga offers a classic definition of a game that contains several essential elements: ¨a game is a free activity executed ´as if´ and felt as situated outside of daily life, but that, despite everything, can absorbed the player completely, without anything to gain, that is accompanied by a feeling of tension and joy, that is executed within a limited timeframe and a determined space that is carried out in order under certain rules¨ (1938/1968, p. 29).

1.3. Games and video games.

It is estimated that, worldwide, people dedicate 3 billion hours per week to play video games (McGonigal, 2010). Forty-three percent of the players are women. For the year 2005 the industry of video games moved 29 billion dollars annually and it was estimated that for the year 2010 it would reach 42 billion. The most popular online games have millions of subscribers, for example it was reported that World of Warcraft had 5.5 million players (Perry, 2006).

According to a survey realized in Chile in a sample of school students and their parents, to the year 2008, 76% of the respondents had a computer and, among this, 67% had access to internet in their homes. (Adimark; Fundación Chile; VTR, 2008, p. 48). The students that were not connected (either from their homes, schools or paid public places) were just 4%, besides, the high rate of connectivity was transversal to all socioeconomic levels (p. 40). Seventy-five percent of teenagers reported to connect to the internet more than two days per week and the average time each occasion was 2 hours (p. 74). In the same report it was informed that 45,1% of the surveyed adolescents had some type of game device (Play Station, Wii, X-Box) and a 48,7% used these devices; with a use of 55% in the ABC1 socioeconomic

level and 47% in D level (lower). Fifty percent of students reported to play online and 36% to play online with other people (p. 81). In other study made with high school students from the city of Temuco, 52% of these youngsters reported to play video games frequently (choosing the option "almost always" among the answer alternatives) (Alonqueo & Rehbein, 2008).

This data gives an idea of the impact size of video games in the popular culture of the 21st century. Video games are increasingly complex and attractive, while the experience of playing them can be consider a significant psychological, social and cultural phenomena of this epoch.

Video games have been defined in different ways. A video game can be understood as a game that employ electronics to create an interactive system that includes an user interface to generate a visual feedback on a video device (Wolf, 2002 cited in Ceranoglu, 2010, p. 142). Others have described gaming as a ludic interaction with the computer and for others video gaming is the mental state of the player while trying to overcome an unnecessary obstacle (Goh, Ang, & Chern Tan, 2008).

A central element of game and videogames is that it's fun. It has been proposed that the diversion found in videogames is referred to factors related to: novelty, attractive presentation, interactivity, challenge, and a feeling of control and reward (Hsu S & M., 2005 en Baranowski, Buday, Thompson, & Baranowski, 2008)

Game designers have tried to categorize the various forms of play in: action, adventure, fight, puzzle, role playing, simulations, sports and strategy games (Rebetez & Betrancourt, 2007). For this project we will understand video games as games built on diverse digital media such as: computer games that can be downloaded from internet or that are available on CD or DVD, online subscription games, games for mobile devices or that require specific devices that connect with a television set.

A distinction in the study of videogames appears among those that emphasize the importance of the characters and the narrative consequences of the gameplay –the narrative- and those that study games as games –the ludologists-, people interested in the psycho-social dimensions, rules and other formal aspects of games. While some state that the narrative elements are accessorial, others propose that those elements are, at least, beneficial for the experience of the players (Järvinen, 2007; Squire, 2008).

1.3.1. The video game experience

The definition of Huizinga previously mentioned (1938/1968, p. 29), like the analysis of Monigan et al (1987) in terms of game components, propose concepts that in current videos game studies are referred to as engagement, flow, immersion, and intrinsic motivation. These are characteristics of videogames that make them interesting for education and psychotherapeutic purposes. Games in general, and videogames in particular, place the external world in parenthesis, favor a state of alertness, curiosity, motivation, and pleasure, characteristics that are essential for learning. Though there are many commercial games that are highly attractive for young people, serious games (with educational, prosocial, or therapeutic purposes) have been much less effective in achieving entertaining games; some even propose that with frequency these attempts are not really game, rather, interactive multimedia applications (Prensky, 2005). With this precaution, this study proposes the construction of a videogame and as a consequence will be important to evaluate if the program created possesses the characteristics desirable in games. In order to contribute to the construction and the evaluation of the game experience, some concepts will be presented that are presumed to be pertinent.

According to the theory of self-determination (TSD), intrinsic motivation is what underlies motivation in games and sports, and this is also relevant for videogames. A videogame is not played to gain an external benefit, on the contrary, gamers must often pay to play, and are even reprimanded for playing. It is possible to conceive that videogames are intrinsically satisfactory, or, in other words, people play games because they are entertaining (Ryan, Rigby, & Przybylski, 2006).

A mini theory of TSD, the cognitive evaluation theory (CET), proposes that events and conditions that favor the feeling of autonomy and competence, support intrinsic motivation, while factors that decrease perceived autonomy or the feeling of competence hurt intrinsic motivation (Ryan, Rigby, & Przybylski, 2006). Autonomy implies a sense of agency or wish when a task is being done. When activities are done with interest or personal value, perceived autonomy is high. The provision of alternatives, the use of reinforcements with information feedback and non-controlling instructions has shown to increase autonomy. The second element of CET proposes that factors that increase the experience of competence, like opportunities to acquire new skills and abilities, optimal challenge, or positive feedback contribute to intrinsic motivation (Ryan, Rigby, & Przybylski, 2006). Clearly, an adequate

articulation of these elements in the design of a videogame contributes to a positive game experience.

In addition to the feeling of autonomy and competence, Ryan et al. (2006) propose that the intrinsic motivation is related to the sense of presence or the feeling of being inside the game world. The concept of presence is important for videogame designers that try to create an experience of virtual worlds that feel real and authentic in terms of the creation of a story and an attractive narrative in the graphic environment and to make the controls as user-friendly as possible. Other similar constructs are: immersion, flow, psychological absorption, and dissociation. It has been proposed that these formulations incorporate different levels of the subjective experience of involvement in the game (Brockmyer, Fox, Curtiss, McBroom, Burkhart, & Pidruzny, 2009).

Ryan et al. (2006) have made an interesting and relevant case for this work, proposing that TAD offers a model of wellbeing in people. Specifically, another mini theory within TAD, the theory of psychological basic necessity specifies that the impact of any activity in which wellbeing is a function of the person´s experience of satisfying necessities. TAD argues that there are three basic primary necessities that are at the base of psychological wellbeing: autonomy, competence, and relating. These authors propose that the psychological attractiveness of games is due to their capacity of generating feelings of autonomy, competence, and relating, and this happens to the point that these feeling are not just generated throughout the course of the game, but also promotes a feeling of psychological wellbeing (subjective vitality, self-esteem, positive affect), at least during a short-term period. Ryan et al. (2006) carried out several studies exploring the relationship between game and psychological wellbeing after playing, and the results were not consistent. There was little to no change in positive or negative mood due to exposure. In these experiences, the exposure to videogames seemed, on average, to generate tiredness, which was inferred from negative effects in the post-game vitality measures. However, people who report an experience of more autonomy and competence also showed more positive results in measures of wellbeing.

Approaching games from a perspective of measurement, Parnell (2009) identifies four factors of the videogame experience: experience (immersion in fiction, sensory immersion, and affective valence), challenge (challenge, absorption, and property), playability (variety, clear objectives, navigation, and help/training), usability (control, personalization, consistent, camera-view, game interface). The instrumental proposal of IJsselsteijn, de Kor & Poels (in preparation), includes seven components referring to the experience during a game

(immersion, flow, competition, positive affect, tension, and challenge), and four components for the experience immediately after the game (positive and negative experience, tiredness, return to reality). De Grove, Van Looy, & Courtois (2010) adapt to serious games IJsselsteijn, de Kor & Poles' model and include a new scale, which they named ¨perceived learning¨.

Batista & Cornachione (2005) define ¨perceived learning¨ as self-evaluation by the participants of the knowledge and learning acquired throughout the stimulation. In the work of IJsselsteijn and others, this scale receives the influence of the learning taxonomy by Bloom (in Rovai, 2008) that identifies three areas: cognitive, affective, psychomotor, the two first areas of relevance for the construction of the scale. Another base for the development of this scale is Kirkpatrick´s (1998) theory that proposes a model of four levels to evaluate entertainment programs. The first level, ¨reaction¨, is related to how participants react affectively when exposed to training. If the reaction is positive, success in the second level is possible, while a negative reaction inhibits success. The second level is defined as ¨learning¨ and implies the measurement of the cognitive and affective domains. The following levels, ¨conduct¨ and ¨results¨ refer to the evaluation of learning outside of the direct learning experience. Finally, the ¨perceived learning¨ scale has two dimensions: ¨affective gaming¨ that includes questions relative to the attitude of being educated through a video game; the second dimension, ¨learning¨ is related to the affective and cognitive domains in relation to perceived learning (De Grove, Van Looy, & Courtois, 2010). An interesting finding came out of the work of De Grove et al., in which they found a strong effect that the game experience had on perceived learning, which according to them, confirmed that a positive game experience contributes to the experience of perceived learning.

1.3.2. Video games for learning and psychotherapy.

Among the traditional theories of play some have noted that certain ludic activities would be at the service of learning. Play has been promoted as a teaching strategy and video games have been explored as a learning resource (Prensky, 2005; Lindley, Nacke, & Sennerten, 2008). There is plenty of evidence that games facilitate learning (Rebetez & Betrancourt, 2007; Dondlinger, 2007).

Prensky (2005) mentions several benefits of playing video games in an educational context: fun and intrinsic motivation; a sense of structure (rules); promotion of certain kind of activity or inter-activity; self-esteem strengthening; emotional activation; problem solving stimulation; social learning; and video games are a safe environment to explore and try new

behavior.

McFarlane (2002 in Rebetez, & Betrancourt, 2007) distinguishes three potential uses in learning environments: development of skills, cognitive and social abilities, as a learning stimulus, and to carry out content derived from instructional objectives. Rebetez & Betrancourt (2007) identified the same three tendencies in studies regarding the effects of videogames. Most studies reviewed by Rebetez & Betrancourt, videogames show promising results. However, according to these authors, studies that try to correlate videogame activity and specific abilities (for example, spatial or video-spatial abilities) are faced with methodological challenges because it's difficult to separate what affects what: Are specific abilities promoted by intensive game or is the intensive game caused by having a high level of this specific ability? They also highlight results that show that some studies show that women seem to benefit less than men in the development of certain abilities when playing videogames; which highlights the gender dimension in these types of studies. Rebetz & Betrancourt (p.6) literature review show that these studies ask themselves about what characteristics a game needs to become a factor of change in the cognitive and perceptual abilities. But the results of these studies lead the authors to ask: What about cognitive and perceptual abilities of players can a game change? In relation to studies that question the potential of videogames in promoting learning content, the authors believe that these games are multimedia explanations that add an aspect of interactivity and that move away from the characteristics of videogames that are commercial and more attractive. Furthermore, in terms of the same dimension, they mention studies (Rieber, Tzeng, & Tribble, 2004; Rieber & Matzko, 2001) that conclude that without multimedia explanations, the presented content in the game is not remembered (Rebetez & Betrancourt, p. 8).

On the other hand, games have been part of the therapeutic arsenal, mainly for the work with children and adolescents, since the early stages of formal psychotherapy. Freud made clinical observations in relation to children play; A. Freud, M. Klein, D. Winnicott, V. Axline introduced play in their psychotherapeutic practice and treated the matter in their writings (Griffiths, 2003; Carrasco, 2007). Analytic psychology appreciates sandplay as a technique for the work with children and also with adults (Bradway, 1997). Besides, child therapist have used commercial board games or specially made games in psychotherapeutic or educative contexts (Ceranoglu, 2010). Since the eighties, when personal computers began to be more accessible, there have been studies on the potential of videogames for health, in psychological development, for education and psychotherapy (Wilkinson, Ang, & Goh, 2008).

The use of video games in the area of general health has included psycho-education on the management of chronic illnesses (for example diabetes and asthma) to improve adherence to treatment; physical treatment and rehabilitation after a brain injury; video games as a distraction of pain and as a training tool for clinical skills in medical education (Ceranoglu, 2010; Kato, 2010). Also interesting, is the use of videogames for the modification of health related behavior, for example, to promote physical activity and healthy eating habits (Baranowski, Buday, Thompson, & Baranowski, 2008).

Baranowski et al., (2008, p. 2) mention that the use of electronic games for health purposes is in its developing stages, but the incorporation of procedures of behavioral change based on theory, provide reason to believe they can be effective. Baranowski et al. (2008) carried out a literature review regarding this topic and they found that games for health purposes led to a wide range of desirable results, from the increase in knowledge to an attitudinal and behavioral change, and other changes related to health. These researchers point out two methods through which videogames can influence behavior. The first involves the incorporation of procedures regarding behavioral change (ex. Definition of goals) in the process of playing the game. The second involves the use of the narrative or stories and the incorporation of concepts of behavioral change in the narrative.

Specific video games have been design for mental health purposes. There is evidence that video games are useful to deliver manualized interventions as the ones proposed by cognitive behavioral therapy (USAB & Gesellschaft, 2007 cited in Ceranoglu, 2010, p. 141). In addition, other video games are used in the mental health field: for prevention of aggression; anxiety disorders and phobia (virtual reality); attention deficit; personality disorders; psychotic disorder; prevention of drug use; Asperger syndrome; autism and emotional support for hospitalized children (Wilkinson, Ang, & Goh, 2008).

Some of these games have been developed for off line playing while others have explored the potential of the internet for screening of patients, for follow up strategies and for virtual social contact. These games have been designed both in 2D and 3D environments. Results of research about these games are generally positive and present a promising view for digital ludic interventions for the prevention and treatment of psychological disorders (Wilkinson, Ang, & Goh, 2008; Griffiths, 2003).

The introduction of videogames in psychotherapy has recurred to commercial versions that are introduced to clinical practice, or to videogames specially designed for psychotherapy that are based on a theory of change.

1.3.2.1. Commercial videogames in psychotherapy

Stemming from clinical practice, there are reports regarding the incorporation of videogames in the work with children and adolescents (Ceranoglu, 2010. p. 142). Skigen (2008) reports cases that incorporate the game The Sims with a positive clinical evaluation. For Skigen, The Sims offers a psychotherapeutic potential that is similar to that of sandbox (pp. 172-174). In this sense, this videogame would offer a secure context for the expression of nonverbal unconscious dynamics that are favorable for psychological relief and development. Enfield and Grossner (2008) also report clinical cases with children that have benefited for the incorporation of commercial games in psychotherapy. According to these authors, in the mentioned cases, the videogames contribute to the socioemotional growth by stimulating conversational instances related to social skills and social problem resolution (p.187).

Of the reports of psychotherapeutic clinical use of videogames, Ceranoglu (2010) identifies various potential benefits. It has been observed that the incorporation of videogames contributes to the establishment of the therapeutic relationship. Sharing emotional states during the video game can bring the therapist and client closer. The videogame is able to bring the therapist closer to the adolescent's world. It is common for teenagers to resist becoming actively and verbally involved in psychotherapy; in these cases, videogames offers a means of interaction that shows the patient that the therapist remains available (Ceranoglu, 2010, pg. 144). In his review, Ceranoglu notes that observing the type of game and the choice of content can offer important clues to interpret children's conflicts, and can provide the therapist with material to stimulate the elaborations of said conflicts (p. 143). Some aspects of psychological functioning that can be observed during games are memory, visual-spatial, motor, and planning skills, academic abilities, and frustration tolerance. Strengths or vulnerabilities of a skill while the child manages the game's challenges and the tolerance of possible frustrations can be informative. A therapist can observe affective regulation and operating defenses when winning or losing the game (Ceranoglu, 2010, p. 145). Various types of available games and the patient's game choice can offer important clues into the mental processes of the child. Videogames can be a means of expression for those who find it difficult to verbalize conflicts. The therapist's complicity in the game, along with knowledge of the conflicts in the family and social context can provide opportunities to help elaborate

and clarify conflicts. Competitive games between therapist and patient can show aspects of the transference that can orient the therapeutic process. A teen can chose to play alone, competitively, or form a team with the therapist, this can highlight the status of the transferational relationship; Ceranoglu mentions that there is little literature on this topic (p. 144).

1.3.2.2. Videogames specifically designed for psychotherapy and health

On the other hand, two examples of videogames specifically designed as psychotherapeutic aid are Treasure Hunt (Brezinka, 2008) and Personal Investigator (Coyle, Doherthy, & Sharry, 2009). Treasure Hunt is a videogame for children developed by the Department of Infant and Adolescent Psychiatry of the University of Zürich that is based on the cognitive behavioral model. This videogame is offered as a support for traditional therapy and offers homework and opportunities of rehearsing basic psychoeducational parts of the treatment. The game is organized in six levels, each one corresponding to a certain stage in the cognitive behavioral treatment. Ludic activities are inserted into the contextual narrative: a story about a pirate and the search for a treasure. Playability tests with the preliminary versions show that children appreciate the game. This version was tested in therapy with patients afflicted with diverse disorders (anxiety, depression, and behavioral disorder). All the therapists appreciated the resource and reported positive reaction from the children. Thought the game was originally thought up to offer homework between sessions, the pilot study showed that the game could also help less experienced therapists to structure therapy sessions and to explain important cognitive behavioral concepts, such as, the influence of thoughts on our feelings or the difference between useful and useful thoughts. The author recognizes that more research is needed in order to determine the efficacy of the game.

We were able to obtain and play a version of the Treasure Hunt. It is certainly easy to agree with the aspects that Brezinka evaluates as positive, however, in regards to the story and the interaction, it is worth noting that there is little to no relation between the narrative context (the pirate and the treasure hunt) and the interactive activities (for example, clicking on the negative thoughts that appear as flying fish, without relating it to the story). Though the effort put into the design is apparent, the narrative and interactive elements are not integrated in a consistent form.

Coyle, Matthews, Sharry, Nisbet y Doherty (2005, p. 74) point out that therapists often

find it difficult to work with adolescents, that the majority of adolescents experiencing disorders do not receive treatment, and out of those that do receive treatment, few become proactively involved. This happens because adolescents feel that the problem is too personal to talk about it, that no one can help them, or that they are able to cope with the situation by themselves. Often times, the therapy is imposed on youth, and they view the therapist as an authority figure. There is also still a social stigma attached to therapy that indisposes many adolescents. As has been mentioned, the game is one of the strategies used to help patients express themselves. In the case of adolescents, many forms of ludotherapy that works well with children can seem childish for adolescents, and they may refuse to engage in these forms of therapy. However, technology is the new mean of expression for youth, who are attracted to technological devices and comfortable using them. On the other hand, perturbed adolescents have a higher probability of seeking help through informal means, like their friends. There are reports showing that up to 20% of adolescents seek help through the internet when faced with emotional problems (Gould, Munfakh, Lubell, Klienman, & Parker, 2002 en Coyle et al., 2005). These figures lead these authors to highlight the need for more research in order to create access to the helping resources adolescents could benefit from for their problems.

Personal Investigator (PI) is based on an intervention model that is centered on solutions oriented towards adolescents. This videogame is not directed towards once specific disorder, rather, it shows an open and nonspecific therapeutic model. The game uses 3D graphics and incorporates videos depicting youth talking about their problems and ways of dealing with these problems. PI was designed to be played online in a self-directed way, as a way of making new resources accessible for youth with problems, or as a mediation tool enabling communication between therapist and patient. This game presents situations that create a context of communication between therapist and patient. The authors point out that communication between therapist and patient can benefit from computer mediation, and they propose a new model, which they name: Computer Assisted Communication.

To implement the Solutions Oriented Therapy (SOT) model, the game proposes five conversation strategies:

- Goal definition: instead of focusing on problems, clients create objectives they must meet;
- Recognition of exceptions: youth are asked to recognize situations in which their problems are not present or are less intense;

- Strategies to cope with problems: they are asked to recognize in what ways they currently face their problems;
- Identification of resources: clients are asked to identify family and friends that could help them, as well as, their own strengths that they could use in order to face the problem;
- The miraculous question: by imagining a future void of problems, it is hoped that youth will be motivated to find a solution.

These activities must be completed in order to finish the game. In each stage, players register in writing responses to questions regarding aspects of the therapeutic model; these responses are registered and printed out at the end of the game. Therapist and patient evaluations suggest that the videogame contributes to the structuring of the sessions, reduces the stigma adolescents might feel attending therapy, helps to construct an effective relationship between therapist and patient, helps youth to construct a personal narrative and improves the patient's commitment to the therapeutic process (Coyle et al., 2005).

We were also able to play a version of PI. The games relies on a metaphor, that of a detective, but instead of investigating crimes, the player investigates personality, problems, and resources. The game doesn't have a story or a theme that unfolds; there are a series of situations that pose questions that don't affect the course of the game. Without a doubt, the game is an important contribution and can be of great use for some youth, as mentioned previously. In the area of health, there have been some experiences of videogames oriented towards modifying behavior using theoretical elements (Thompson, Baranowski, Buday, Baranowski, Thompson, Jago, Griffith, 2010). Thompson et al. (2010) recognize that behavior is the result of multiple influences, and therefore, is often resistant to change. The focus that these authors propose, attempts to modify behavioral mediators, rather than modify behavior itself. Theories that propose mediators for means of entertainment are: socio-cognitive theory, self-determination theory, and transportation theory (Thompson et al., 2010, p. 589). Examples of said mediators are immersion, attention, functional knowledge, the development of self-regulation skills, self-efficacy, internal motivation, and feelings of competence and autonomy, among others. Also, form the Elaboration Likelihood Model, arguments come up that point out that story characters that are perceived as credible and attractive are more likely to persuade others. Social cognitive theory specifies the definition of objectives, modeling, the importance of feedback to form and guide the behavior and the development of skills.

Thompson et al. (2010) propose that videogames have the potential of incorporating elements oriented towards modifying behavioral mediators through means that are entertaining and attractive for children and adolescents. The authors designed the game, "Escape from Diab" (Diab) based on different theories of behavioral change. The game is oriented towards promoting healthy eating habits and physical exercise. Diab's entertaining aspect was mainly achieved through the story and the characters of the videogame. The game's designers interwove components of behavioral change into the story and in the game's activities to help maintain the entertainment value, increasing the immersion into the game and the attention paid to the game. Throughout the game, the characters with physical qualities and with attractive personalities are a model of behavior and communicate practical information. Mini-games are also useful in reinforcing and examining functional knowledge that is relevant to the game. As a part of the game, the players must set goals that have to do with behavioral change in the real lives as a way of stimulating problem resolution abilities. During the game, they were presented, and players had to select, possible problems that could block achievement as well as solution alternatives.

1.3.2.3. The potential of adventure video games for learning

Research in educational games has shown that while games have a pedagogic value, not all genres of game are equally important for any given goal (Goh, Ang, & Tan, 2008). Psychotherapeutic games attempt to promote certain prosocial behaviors, and the design of such games can take advantage of the literature regarding educational games. For example, drill-and-practice games can be used in treating objectives related to language learning. On the other hand, virtual reality games can be applied to the training of social skills and phobias (Goh, Ang, & Tan, 2008). Goh et al., (2008) reviewed psychotherapeutic games and proposed a relationship between genres, treatment objectives, and mental conditions. Some of these aspects mentioned are worth noting:

Table # 1

Treatment objectives, activities, and possible game genres.

Treatment objectives	Activities	Possible game genres	Examples of mental health conditions
Behavioral modification	Self-conscience, consciousness of consequences, decision making	Virtual reality games	Phobias
Communication	Imitation, observation, interaction,	Virtual reality games	Anxiety, social disorder, depression
Control	Cognitive skills, reinforcement, information processing	Problem resolution	Impulsivity and anxiety
Social skills	Verbalization, information processing, negotiation, executive planning, cognitive skills	Virtual reality	Disorders on autistic spectrum

Summary of table by Goh et al (2008, p. 2225)

In a similar analysis, Prensky (2005) makes the following connections:

Table # 2

Types of learning and possible play styles

"Content"	Possible playing styles
Skills	Persistent state of mind games, role playing **adventure** games, detective games
Behaviors	Role playing
Reasoning	Puzzles
Systems	Simulation games
Observation	Adventure games

"Content"	Possible playing styles
Communication	Reflex games, role playing, adventure games

Table summarized from a table by Prensky (2005, p. 113)

Following these author's proposals and after an ample review of games of different genres, it is proposed that adventure games can work well with the general objective of this research project.

Adventure games are videogames in which the player takes the role of the protagonist in an interactive story that is motivated by exploration, manipulation of objects, and/or the exchange of information between the characters that allows for the resolution of puzzles or problems. Adventure games can be seen as puzzles inserted into a narrative frame (Fernández-Vara & Osterweil, 2010). A puzzle is a challenge in which there is no active opponent, rather, there is a problem that needs to be solved. The solution requires logical thinking, instead of physical skills. Usually, puzzles have one solution, even though there can be more than one way to reach the solution (Fernández Vara, 2009).

The characteristics of adventure games make them particularly convenient in motivating learning. These games offer a narrative in which problems can be integrated, stimulating learning through the resolution of problems. The player must learn about the game through permanent exploration, conversing with the characters, examining objects and manipulating them. While the player explores, he/she obtains information about the world.

Another interesting aspect about these games is that the process of problem solving can be shared by the player with another person (who can be a peer or the therapist); as a result, there exists the possibility of a common resolution of the puzzles in an adventure game (Fernández-Vara & Osterweil, 2010).

Puzzles are central components to the view that recognizes the potential of adventure games for learning. For learning game designers it is important to keep in mind: a) the integration of the narrative and the puzzles and b) the characteristics of the problems being posed. There will be greater flow and continuity in the experience of games if the puzzles are integrated into the story and there will be implicit and procedural learning when the puzzle solving process integrates the knowledge and skills that it intends to promote. In some puzzles, when the solution patterns appears in several puzzles, the player is not learning the response to a specific question, rather, a strategy of problem resolution (Fernández-Vara & Osterweil,

2010) or a cognitive schema (a stimulus pattern generates a response pattern). The resolution of a problem generates a positive response of achievement in the player. In an adventure game that is well designed, where one puzzle leads to another, the feeling of achievement is recurring, providing an incentive to keep playing. These steps are reinforced when giving the players a new type of prize: from obtaining a prize to opening a new area of the game to seeing a new scene that reveals what happens next in the story.

Puzzles are situated in a domain; there can be puzzles in which the solution is ubiquitous in the area of language or implies logical, mathematical, or social reasoning

1.4. Interactive Narratives

Some authors have focused on the narrative aspects of videogames (Järvinen, 2007; Squire, 2008). Stories and tales have been used to share personal experiences or to teach youth social and ethical values (Ritter, Göbel, & Steinmetz, 2010). This is an old strategy; for example, Campbell (1988/1991) points out that for the most part, myths have a pedagogic function. The narrative permits people to assign meaning to their experience. According to Robinson and Hawpe (1986 cited en Dickey, 2006, p. 252) the narrative is a type of casual thinking in which the narrative schema identifies categories (protagonists, situation, conflict, results, etc.) and relevant types of relationships (temporary, motivational, and procedural). Stories and narratives usually attract individuals feel empathy towards their protagonist and are effective when the protagonist shows changes in their value system (for example, courage or cowardice), exemplifying a lesson that can be learned. In a story, the writer can incorporate conflicts that demand a change in values, obstacles are situated so that the protagonist must overcome them, serving as a model of problem resolution (Baranowski, Buday, Thompson, & Baranowski, 2008, p. 5). Dickey (2006, p. 248), refers to various works by other authors, shows that integrating narratives into contexts of learning provides opportunities of reflections, evaluation, illustration, comprehension, and search.

The narrative and game technology provides excellent opportunities to reflect on social and personal themes in an attractive way. In a similar way, modern literature and movies attempt to combine fiction with social critique (Ritter et al., 2010, p. 1). Crawford (2005) maintains that the principle elements of interactive narratives are people and their relationships, and that the main cognitive modality implied is social reasoning.

However, the idea of combining game and narrative, or interaction and story, generates a tension that has not been inadvertently looked over. In a lineal story, the reader should not worry about the character's actions, because it's the author who predefines the course and the resolution of the story. Moreover, the author can, at least temporarily, bring other characters into the scene outside of the main character in order to exploit other narrative methods. In an interactive narrative, and even more so in a game, the player adopts the role of the main character, who is always present and active. Also, in a game the player must have the liberty of action, and some actions can go against the initial scene. Finally, in a videogame, the player can lose. On an interactive stage, losing the game can put the narrative in danger, whether it require the player to repeat certain steps, which can generate boredom, or causing the end of the game, which would end the experience previously desired. The tension between narrative and interactivity, and the need for integration, presents a technical challenge for programming and artificial intelligence that has not yet been resolved (Champagnat, Delmas, & Augeraud, 2010).

Champagnat et al., (2010) propose that adventure games and virtual learning environments share the same context: the users interact with the simulation of a process. These authors affirm that for educational means [like objectives related with behavioral change and in psychotherapy] it is interesting for a narrative to communicate information that is relevant to pedagogic objectives combined with the benefits of virtual interaction. The direct participation in a story and the adoption of a first person perspective in control of the events unfolding, are central aspects of interaction in some videogames. As in real life, the players learn through planning, decision making, and personally observing the relationship between cause and effect. In role playing games, for example, the players combine the emotion of narrative with becoming immersed in the character. In adventure games, the narrative provides initial and permanent motivation for the game. In these types of games, the narrative provides an environment in which the players can identify and construct causal patterns that integrate what is known (underlying story, environment, rules, etc.) with what is conjectural, yet plausible within the context of the story. The game designer can structure the interactive options to afford significant feedback in terms of the player's decisions. Feedback is a form of reinforcement, information for future decisions, or sequences of experiential learning (for example, interactions with animated characters that provide theoretical specific experiences) (Baranowski, Buday, Thompson, & Baranowski, 2008, p. 6).

Ritter et al. (2010) appreciate the potential of videogames and interactive stories to foster

sensibility on social aspects. The basic idea is to integrate-in a subtle way- the topics in ludic environments of exploration, based on a narrative, with the purpose of increasing intrinsic motivation in order to deal with the topic at hand. Role playing games have the potential of encompassing different perspectives, allowing the player to situate himself/herself in a role and exploring the topic. The concepts of interactive narratives, provide the opportunity of increasing enthusiasm and the immersion of the players when recurring to: 1) characters behaving realistically- finally resulting in a game experience that is immersive for the player and b) dramatic concepts previously tried out (theme and story models) (Ritter et al., 2010).

In regards to this last point, it is interesting to consider Delmas, Chapagnat, and Augeraud's (2007) proposal to create an interactive story of the hero's journey (Campbell, 1949). The authors propose a monitoring architecture of the hero's journey plot for educational purposes (see figure #1). The proposal is to adapt the original structure into an interactive medium, keeping in mind three aspects. In this type of game the player must always remain at the center of the action and all the key action points must go through him or her for the game to progress. Also, each time the player is given an option, each reaction must be valid, allowing for the game and the story to follow its course. The game must consider the failures and the frustrated attempts of the player-hero in the same way it considers his/her successes so as not to interrupt the progression of the game. Help, which is frequently part of hero stories, should take form of activities that appear in case the hero fails at the first try.

In commercial games, the narrative is generally found in role playing games, action games, and in adventure games (Dickey, 2006, p. 249). The use of structural narrative of the hero's journey is commonly used in movies and in commercial videogames (Dickey, 2006). The original proposal by Campbell was modified by Vogler (2007 cited by Ip, 2010a, p. 9) as a structure to create narratives applied for entertainment purposes and have been contextualized by other authors for interactive games (see Ip, 2010a, p. 9). Additionally, Campbell and Vogler expand on the hero's journey by referring to the work of Carl Jung (1991) in order to describe archetypal characters that are recurrent in stories (Ip, 2010a, p. 9). Apart from the hero, these include the mentor, the herald, the allies, and the shadow. With frequency, the narrative is integrated in the way that a story gives context to the game or short animated videos that appear as the player progresses.

Table # 3

Twelve stages of the hero's journey

Stage	Description
1. The ordinary world	The player first meets the hero and is introduced to the hero's background, typically via the back story.
2. The call to adventure	A hint that the hero will be leaving the ordinary world to begin a new adventure. This stage acts as a catalyst that triggers off the main storyline.
3. The refusal of the call	In the traditional structure of the monomyth, the hero will turn down the initial offer to leave the ordinary world to begin a quest, usually as a moment of doubt or uncertainty.
4. The meeting with the mentor	When the hero decides to take on the quest, the mentor provides her with the information needed to choose what action to take. Mentors can be anything which provides information—a bearded old man, hub, robot, library, past experiences, and so on.
5. Crossing the first threshold	The hero crosses from the safety of the ordinary world to a new, dangerous, and unknown world of the quest.
6. Tests, allies, and enemies	This phase is usually the largest part of the game story, as the player is introduced to all the major characters.
7. The approach to the innermost cave	This is where the hero finds the reward she seeks—such as gaining the essential skill, weapon, or mastery of everything she has come across up to this point. Typically, this is situated toward the end of the game. The main objective of this part of the story is to prepare the hero for the final battle.
8. The ordeal	This is where the hero faces the final battle with her nemesis or ''final boss.'' The nemesis can appear as either a physical (person or object) or nonphysical (time, intensity, or difficulty) entity.
9. The reward	Many games end at this point, when the enemy is defeated and the reward is usually an ending cut scene detailing what happens to the hero after her triumph.
10. The road back	Some games will allow the player to return to the ordinary world after the reward but it may not be possible for the hero to integrate successfully into the old world.
11. The resurrection	This part of the story addresses any unanswered questions, such as the consequences from the quest, potential conflicts that may arise for future sequels, or any tests the hero must face before the end. It can also be in the form of a final plot twist, as something unexpected by the audience.
12. The Return with the reward	This is the last stage of the story, where the hero finally returns to the ordinary world and sees the benefits of her reward. The hero can compare her life before and after the quest to see how things have changed.

(Ip, 2010a, p. 10)

The analysis carried out by Ip (2010b, p. 11) in 11 popular commercial action video

games found that all of them had the clear presence of a narrative structure of a hero's journey. Ip found that not all the phases of a hero's journey were equally represented in terms of frequency and length; it is interesting to note that the phase that occurs most regularly in the games studied is the "getting closer to the deepest cave"; a symbol that is frequently interpreted con death prior to the rebirth of the transformed hero, the dark night, or the depressive phase of people on track to development. In this same piece of work, Ip recognizes that aside from the hero, the presence of several archetypal characters in video games. The threshold guardian figure is the most represented; a character that summits the hero to tests and helps the hero. The shadow also appears (a projection of the negative aspects of the hero), the mentor, the herald, the shape shifter, the trickster, the anima, and the animus (Ip, 2010b).

In contrast to what Ip (2010a y 2010b) reports for commercial video games, the games oriented towards psychotherapy make little to no use of the structure of the hero myth, and, at least in video games for psychotherapy or health that were reviewed, there is no reference to the incorporation of archetypal theory as a narrative resource. Meanwhile, analytically oriented psychotherapies frequently refer to the hero's journey and to archetypes in their writings, interpretations, and psychotherapeutic work. It is worth noting that the aforementioned work of Delmas et al. (2007) presents a proposal that refers to educational arena. Dickey (2006, p. 257) also proposes that the narrative structure of the hero's journey in Vogler's version, can be adapted to the design of interactive ludic learning environments. Dickey also makes this proposal for the incorporation of archetypal characters in learning environments mediated by computers and traditional learning environments.

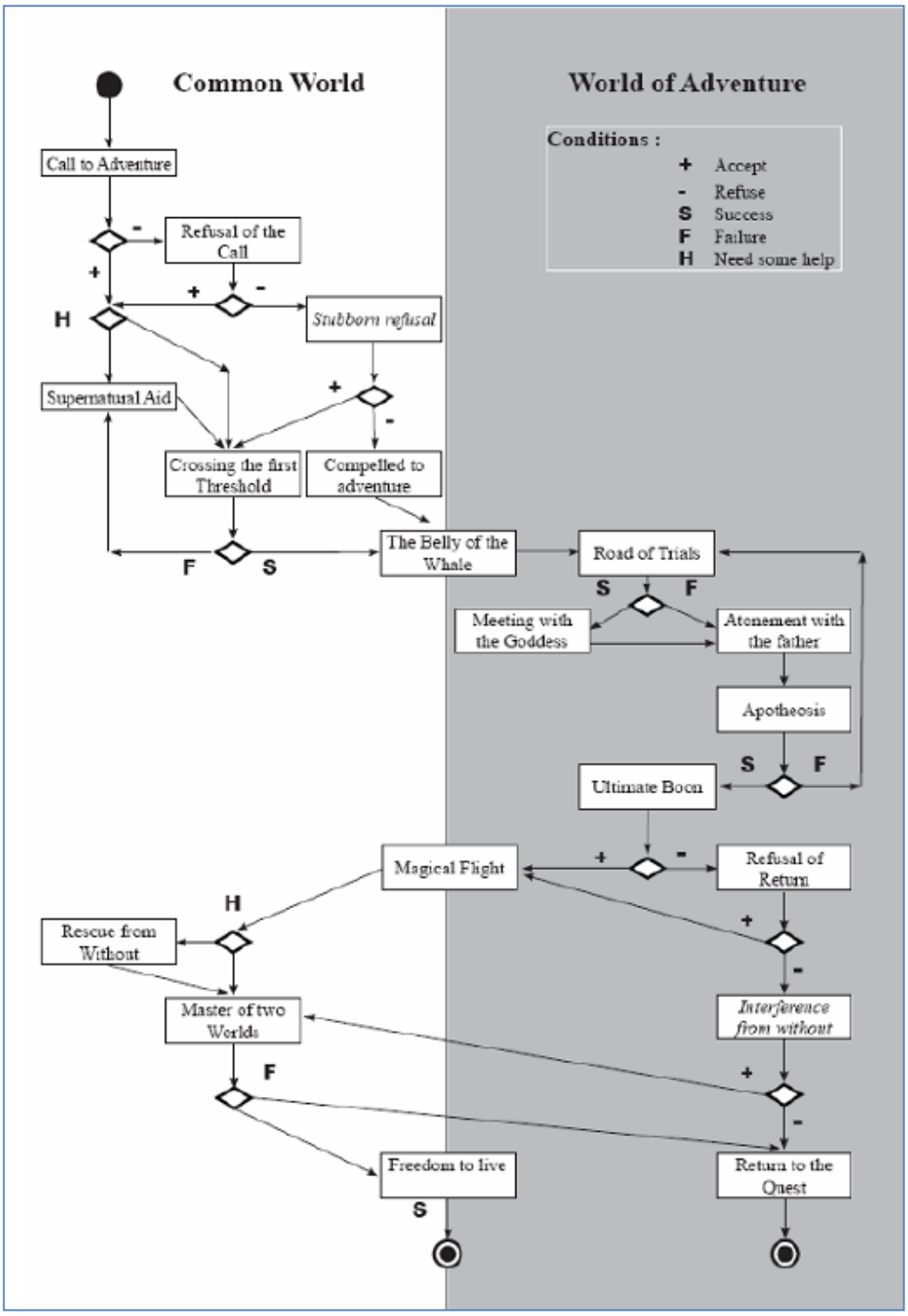

Figure # 1. Interactive adaptation of the hero's journey. Figure by Delmas, Champagnat y Augeraud (2007, pág. 193).

2. Problem approach

Depressive disorder is one of the most important mental health problems in the world. Diverse preventive and treatment strategies have been tried and some have obtained positive results. The cognitive behavioral and interpersonal psychotherapeutic models have consistently shown positive results in terms of efficacy. However, it is commonly known that a high percentage of the adolescent population that suffers from depression do not seek help, and when teenagers are taken to therapy, therapy frequently is bound to many difficulties that are characteristic of the work with youth. With the purpose of accessing a wide scope of the population and recurring to a format that is attractive for adolescents, there are several research initiatives that are exploring the potential of new technologies for the delivery of information, presentation of activities, tools, and videogames that can improve the mental health of young people; this piece of work aspires to be part of said exploration.

In the last decades, there have been diverse initiatives to design and utilize videogames for educational purposes and in psychotherapeutic work with children with diverse psychopathological conditions. Promoters of the use of videogames for learning and psychotherapy have identifies as potential benefits the following: the facilitation of the establishment of a positive therapeutic relationship, the generation of stimuli for the therapeutic conversation, the generation of opportunities for the expression of unconscious aspects, the emergence of information in terms of transference, the utility of a diagnostic resource, psychoeducational opportunities, help structuring sessions with less experienced therapists, effect on behavioral mediators, the possibility of modeling and opportunities to exercise social problem resolution and decision making. These are some of the potential benefits that are being researched when designing and testing a pilot videogame that is supportive in psychotherapy. In particular, this study seeks to inquire if the videogame constructed can contribute to stimulate psychotherapeutic interactions that are relevant for the treatment of depression with adolescent women. For this reason, the opinion of therapists and patients is important.

Some of the most recent and interesting experiences found in psychotherapy are based on psychotherapeutic models that propose activities, modeling of desired behaviors, and the delivery of information for the physical and mental health of children and adolescents. However, in the search carried out for this piece of work, no games were found that had as initial objective the treatment of depression specifically. On the other hand, the games

reviewed, though without doubt innovations of great value for the child and adolescent psychotherapy, did not take advantage of the potential of the narrative as a resource that contributes to a positive game experience, which is hope to be accomplished in the game constructed for these thesis project.

In the exploration of videogame genre, it was discovered that adventure games offer the possibility of integrating narrative and ludic elements, also, there are various game engines and computational programs that can help in the construction of videogames. The narrative element of this genre offers possibilities in the divulgence of information and modeling. It is estimated that the narrative scheme of the hero's journey, used frequently in movies and commercial video games, can serve as a starting point for the creation of a narration that includes aspects of youth culture, the condition of depression, and its resolution. On the other hand, interactive and game aspects offer the opportunity of communication interactions that are pre-structured between the player-protagonist and the game characters, and the possibility of presenting interpersonal problems that require a solution. Due to these characteristics, it is estimated that this game genre can allow for the incorporation of elements present in cognitive behavioral therapy, as well as other psychological ideas that help in the treatment of depression that contribute to a positive game experience.

Designing a videogame that complies with therapeutic means and is also entertaining for adolescent youth is challenging and implies technological, esthetic, psychological, and above all, creative aspects. In order to value the results of the design and the construction of the game, and to analyze results in terms of efficacy, it is important to have information regarding how acceptable this construction is for youth in a therapeutic context, and if the interaction with the program is experienced by youth as a positive game experience.

3. Research questions and objectives.

3.1. Questions.

1. Can an adventure video game, sustained in a psychological model for the treatment of depression, allow a positive game experience in adolescent women?
2. How can elements of psychological intervention such as, interpersonal problem solving

training, social skills training, recognition of negative cognitive bias and recognition of relational schemas, be integrated into an adventure video game oriented towards the treatment of depressed adolescent women?

3. Is an adventure video game oriented towards the treatment of depression acceptable as a psychotherapeutic complementary tool by adolescent women?
4. Can an adventure video game oriented towards the treatment of depression in adolescent women contribute to focus psychotherapeutic interactions on patients' life aspects that are relevant for the treatment?

3.2. Objectives

3.2.1. Design phase:

- To design a video game, sustained in a psychological model, oriented to the treatment of depression in adolescent women.
- To design a web page that allows to: a) host the video game; b) deliver information and complementary activities for the treatment of depression; c) deploy instruments of evaluation; d) log the players' activities.
- To identify variables of the female adolescent culture to incorporate them in a video game oriented to the treatment of depression.
- To adapt the narrative structure of the hero´s journey to the interactive format of an online adventure game for the treatment of depression.

3.2.2. Research phase

- To know therapists' opinions about the utility of an online adventure video game as a complementary tool in the treatment of depression in adolescent women.
- To know therapists' opinions about the utility of an online adventure video game as a stimulus to focus on psychotherapeutic interactions relevant for the treatment of depression in adolescent women.
- To evaluate the acceptability by female adolescents of an online video game as a complementary tool in psychotherapy.

- To evaluate the game experience of female adolescents when playing an online video game oriented to the treatment of depression.

4. Method

4.1. General research design

The research consisted of two phases: the video-game design phase and the pilot study.

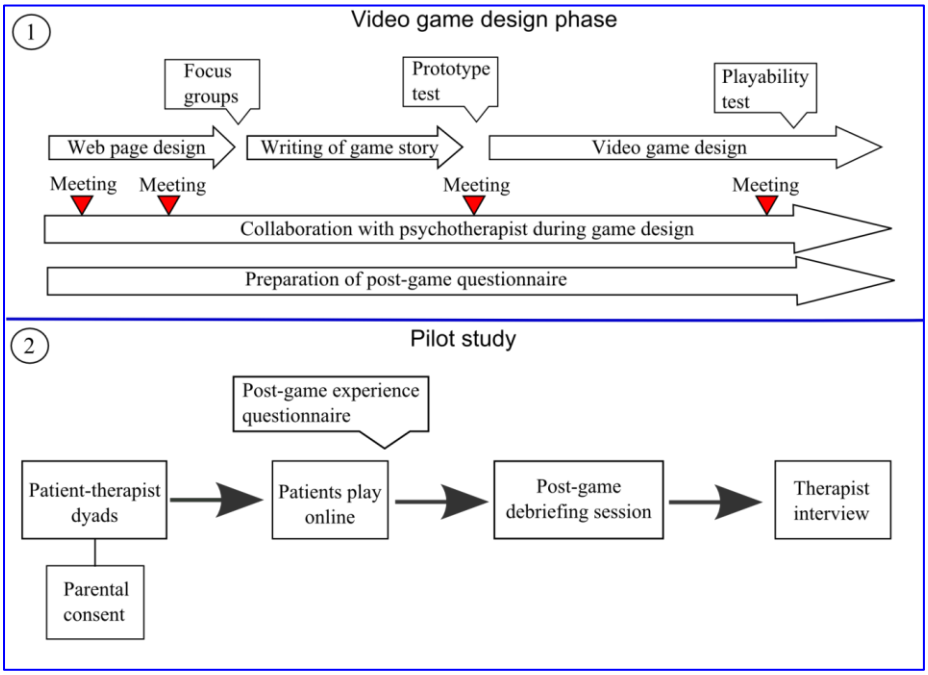

Figure # 2. Research design diagram.

4.1.1. Video game design phase.

Frequently, to design a video game, as well as other technological artifacts aimed to interact with people, developers follow an iterative design based in a cyclical process of testing of a prototype, analysis, emergent questions and refining a work in progress. Because the experience of a user/player cannot ever be completely predicted, in a process of iterative design, decisions are based on the experience of the prototype in progress. In such a design, the interaction with the designed system is used as a form of research for informing and evolving a project as successive versions of a design are implemented (Zimmerman, 2003, p. 177; Schell, 2008, p. 79).

A process of iterative design was followed; phases of gathering of data about game playability and game experience fed phases of game design.

In parallel, the researcher initiated and maintained contact with three psychotherapists to share ideas and to sanction the game design.

A concurrent activity was the preparation and pilot test of the post-game questionnaire.

4.1.2. Pilot study

A pilot study is "an investigation designed to test the feasibility of methods and procedures for later use on a large scale or to search for possible effects and associations that may be worth following up in a subsequent larger study" (Everitt, 2006 cited in Thabane et al., 2010). A pilot study can be conducted in order to evaluate the feasibility of recruitment, retention, acceptability, assessment procedures, new methods, implementation of a novel intervention and its safety (Leon, Lori & Kraemer, 2011). Since the video-game was an innovation for the mental health field it was necessary to evaluate if it was accepted by patients and if therapists found it harmless and useful. The idea was to test the video-game in a small, controlled and supervised sample of patients. If the results were positive this resource or other like this could be used in mental health projects or in other studies.

The contact with psychotherapists during the video-game design allowed the researcher to have access to patients that could participate in a pilot study. Since there were no guarantees that the any particular psychotherapist had, during the research time, patients that met the inclusion criteria, other therapists and institutions were invited to participate in the pilot study. Psychotherapists invited patients to participate in the research; those who participated played the game online and responded the post-game questionnaire; in latter sessions, therapists and patients reviewed the game experience and tried to relate it to each case. Finally, the researcher interviewed the therapists.

4.2. Procedure.

4.2.1. Video game design phase.

4.2.1.1. Web page design.

The first task undertaken was the web page design. In July of 2011, during a stay in Germany and with the help of colleagues of the Center for Psychotherapy Research of

Heidelberg University, the construction of the website began. The final version of the web page was ready by September of 2012.

From a design point of view, the idea was to construct a simple but attractive and functional web site. Several web sites for teenagers were reviewed to inspire the selection of colors. The web page was built integrating HTML, PHP, MySQL databases (for more detailed description, see section 5.1.1.).

4.2.1.2. Focus groups

During the year 2011, three focus groups in two schools (one in Santiago and one in Viña del Mar) were conducted with girls between 14 and 18 years old. The overall objective of these activities was to obtain information for a user centered videogame design.

Three schools principals were contacted to requested their authorization to do the focus groups. In the school in Santiago a coordinator was designated to maintain the communication with the researcher and to organize the activities, in Viña del Mar the principal made the arrangements. A copy of the passive informed consent document was sent to the school representative, who sent to the parents the consents and arranged the meetings with the girls. In the school of Santiago two meetings were arranged and one in Viña del Mar. At the moment of the interview the informed assent was obtained from the girls. The focus groups were conducted in the schools, during a time established by the coordinator. The focus groups lasted between 40 and 60 minutes.

4.2.1.3. Process of creating and writing the story

The process of creating the story for the game began after the focus groups were conducted and analyzed, between November of 2012 and February of 2013.

Writing the story was a creative process that had the additional difficulty of incorporating the elements required to make it useful for the psychological ends.

It became evident that writing a story for a game had particularities related with the interactivity. Since the actions of the player affect the course of the narrative, several alternatives had to be written. When considering the best way to write the game story, a

couple of programs were reviewed: HypeDyn and Twine. These are hypertext authoring tools to create text-based interactive stories that adapt to reader choice; although, in the end, none of these tools were used in this research, they indicate a type of tool that can potentially be used in future projects. Text-only interactive stories could also be used for education and mental health. Interactive stories in text would allow more freedom to create fictional worlds.

When trying to create the story several considerations related with the literary gender (fiction, realism, magical realism?) and narratives devices (for example: narrative point of view, narrative time, narrative voice) aroused. This experience suggest a line of research that could explore which narrative devices can serve best not only the enjoyment of reading but the psychological and educational objectives.

In the first attempt, the story was located in the future in a dystopian society. Soon it became evident that the creation of a fantastic world would require the design of visual elements that were to complex or expensive to produce for this project. Therefore a more realistic narrative approach was taken.

The process of thinking about the story, reading novels, watching movies and trying different approaches to write the story took about three months. The actual writing of the story script was accomplished in about a week.

Once a complete first draft of the story and dialogues was ready, it began the process of taking pictures and videos with the "actors". In a later moment the complete story script (similar to the version in annex # 1 was presented to five psychologists to sanction it and to receive suggestions. Based on this comment the final version of the script was prepared.

4.2.1.4. Prototype test

Once the story of the game was written, during March of 2012, a storyboard like Power Point presentation with pictures and videos was showed to three girls and afterward they were interviewed and the recorded in audio.

4.2.1.5. Video-game design process

Once the focus groups were analyzed and the story was written, in February of 2012 the design of the game was started and it lasted until September of 2012.

The project had no especial funding to hire programmers or designers to construct the

video game, so these tasks were assumed by the researcher. The first decision had to do with the software and programing language to build the game. Several tools that would allow designing a video game were considered, for example: Adventure maker, Renpy, Game maker, Wintermute engine and Visionaire adventure game engine. In the end, it was considered that the best alternative was to design the videogame in Adobe Flash Professional CS5 and its programming language ActionScript 3.0. This choice was based in the fact that games created using this technology are accessible on most common web browsers that, generally, have already installed Flash Player. Besides, Flash Professional comes integrated with Adobe Photoshop (for editing photos) and Adobe Premiere (for editing Videos), which were both used in the process of making the game.

To create the visual elements that the game story required, it was decided to find volunteer "actors" to video and photograph them. The actors were family and friends of the researcher. Ten actors participated, near 400 hundred pictures were taken and one hour of video was recorded, all these in 8 different locations. Most of the pictures and films were obtained in El Salvador, Central America and one sequence of the game was shot in Santiago de Chile.

4.2.1.6. Psychotherapists' participation in the game design

In the beginning of the design, eight psychotherapists were invited to collaborate in the game design process; three of them accepted: María Luisa Morales, Monika Eing and Josefina Martínez. The researcher presented the project, informed about the progress, showed some of the results of the design process and asked the therapists for comments, suggestions and advice. Three meetings were held with two of the therapist and two with one of them; also some elements were informed by e-mail and comments were received by the same way. The meetings were recorded and later reviewed by the researcher. So, it can be said that the final game and web page contents were influenced and sanctioned by these three psychotherapists.

In some specific moments, two other psychotherapists provided comments on the development of the game: Claudia Beas and Susana Toloza. Also, psychologist Paula Schicktanz made contributions as part of a mutual collaboration in the context of the Chilean German Doctoral Program.

As it has been commented elsewhere in this document, the design of the game and of the

web page received important contributions by the team at the Heidelberg Center for Psychotherapy Research, especially from Hans Kordy, Benjamin Zimmer and Marcus Wolf.

4.2.1.7. Playability test

Once a playable version of the game was finished, it was presented to two girls. With minimal instructions these girls played the game. The purpose was that the players informed any game malfunctioning or any aspect that negatively affected the game experience. After they played they were interviewed and the recorded in audio. Also, the girls were observed while playing.

4.2.2. Pilot test

Since mid-2011 several psychotherapists and health centers were contacted soliciting collaboration with the pilot study. The project was presented in: Psicomedica; Centro de Salud Alejandro del Río de Puente Alto; Vitasalud; Clínica de Atención Psicológica de la Universidad de Chile; Clínica de Atención Psicológica de la Universidad de Artes y Ciencias Sociales and Centro de Salud Mental de Pudahuel. After these efforts and requests, two psychotherapists in private practice and three psychotherapists working in two public health institutions consented to participate and provided cases to the study.

Based on a study protocol handed over by the researcher, the psychotherapists selected patients, invited them to participate and asked parents for their consent. The inclusion criteria were: female patients between 14 and 18 years old that had symptoms of depression or a diagnostic of mild or moderate depression. The exclusion criteria were: severe depression, current suicidal ideation, psychosis or intellectual disability.

When consents were explicitly given, patients received their access code to the online system. This code was previously entered by the researcher in a user database that linked each patient code with its respective therapist.

At registration, a copy of the informed assent text was presented, if patients accepted the conditions, by selecting that option, then they went on to the registration process. A possibility to download a copy of the informed assent was available. The registration asked for a user name, a password and an e-mail address. After the registration an automatic e-mail

was sent asking the user to confirm its registration.

Only registered patients were able to play the game; after playing, patients were asked to respond online the post-game questionnaire. An automatically generated e-mail was sent to the researcher and to the therapist informing that a particular patient finished the game.

In the following sessions, therapists evaluated the situation of the patients and if they considerate appropriate debriefed the game experience and its relation with the patient problems. A brief text with suggestion on how to conduct the debriefing session was presented and given to the therapists (see annex #2). The researcher arranged interviews with the therapists to evaluate the participation of each of the patients: these interviews were recorded in audio. Six interviews were conducted; two interviews with each therapist.

4.3. Subjects.

4.3.1. Design phase

4.3.1.1. Focus groups

The schools that collaborated with this part of the project serve students from middle and upper classes, one in Santiago and the other in Viña del Mar.

The girls were selected by the school representative considering the research target age. One of the schools has an inclusive educational policy, so many of their students have especial educational needs, thus here the school psychologist suggested not to include students under psychological treatment for depression or other disorder.

In Santiago one the focus groups included seven girls of 9th and 10th grade and the other one included three girls of 11th and 12th grade. In Viña del Mar the focus group included seven girls from 8th to 12th grade.

4.3.1.2. Prototype test

The prototype was reviewed by three 13-14 years old girls. These girls were the daughters of friends of the researcher. These girls come from middle class families.

4.3.1.3. Video-game design process

The researcher was the story writer.

The researcher designed and constructed the video-game.

The three psychotherapists that made contributions during the design process were:

1) María Luisa Morales. Psychologist. Master in child and adolescent clinical psychology. Child and adolescent Psychotherapist.
2) Monika Eing. Psychologist. Master in clinical psychology. Adolescent and adult Psychotherapist.
3) Josefina Martínez. Psychologist. Child and adolescent psychotherapist.

In some specific moments, two other psychotherapists provided comments on the development of the game:

Claudia Beas. Pre-school teacher. Psychologist. Master in Clinical Psychology.

Susana Toloza. Psychologist. Master in Clinical Psychology.

Also, psychologist Paula Schicktanz made contributions as part of a mutual collaboration in the context of the Chilean German Doctoral Program.

The design of the game and of the web page received important contributions by the team at the Heidelberg Center for Psychotherapy Research, especially from Hans Kordy, Benjamin Zimmer and Marcus Wolf.

Francisco Pino, a graphic designer, also made some suggestions during the development of the game.

4.3.1.4. Playability test

Two 12 years old girls play tested the video game. These girls were the daughters of acquaintances of the researcher. These girls come from low-middle class families.

4.3.2. Pilot test

4.3.2.1. Psychotherapists

Five psychotherapists provided cases for this research. Three of the therapists worked in public health services: “Centro de Salud Alejandro del Río” and “Centro de Salud Mental de Pudahuel”.

The “Centro de Salud Alejandro del Río” is in the Puente Alto district in the city of Santiago, the most populated district in Chile; professionals at this Center attend low and middle socioeconomic status population.

The “Centro de Salud Mental de Pudahuel” is in the Pudahuel district in the city of Santiago; professionals at this Center attend low and middle socioeconomic status population.

4.3.2.2. Patients

The subjects were patients of the psychotherapists that accepted to participate in the pilot study. All these were patients in natural psychotherapy sessions. According to their therapists, all these patients had symptoms of depression, mild or moderate depression. The exclusion criteria were: severe depression, suicide attempt, psychosis and intellectual disability. Several patients manifested comorbid disorders (eating disorders, for example) or other symptoms (anxiety) or their depressive symptoms were part of a disorder different of depression (adjustment disorder). Patients that met the criteria, who accepted the invitation and whose parents also expressed their consent were given access to the video game.

Fifteen patients, girls between 11 and 18 years old, consented to participate and played the game (see table # 4).

Table # 4

Patients that participated in the research

#	Pseudonym	Age	Clinical setting
1	Carla	16	Public
2	Ana	15	Private
3	Luz1	15	Public
4	Luz2	15	Public
5	Nora	14	Private

#	Pseudonym	Age	Clinical setting
6	Marta1	12 [2]	Private
7	Marta3	17	Public
8	Marta5	16	Public
9	Marta6	18	Public
10	Marta8	15	Public
11	Marta9	16	Public
12	Marta10	18	Public
13	Marta12	11	Public
14	Marta13	17	Public
15	Marta14	13	Public

4.4. Instruments

4.4.1. Video game design phase

4.4.1.1. Focus group guide

A set of questions was prepared to guide the focus groups (see annex #3). The themes of inquiry were:

- interests and forms of entertainment of adolescent women;
- types of common conflicts reported by adolescent women;
- reported behavior when in a depressive mood;
- narrative ideas for and adventure video game.

[2] During the development of the research, considering the characteristics of the final version of the game and the experience with the patients that had already played the game, a therapist and the researcher agreed that the game was even more suitable for younger girls and it was decided to include a 12 years old girl and a 13 years old girl.

4.4.1.2. Prototype test interview guide

A set of questions was prepared to guide the interview. The themes of inquiry were: opinion about the story and the game ideas; aspects to change in the story; aspects to add to the story.

4.4.1.3. Playability test interview guide

A set of questions was prepared to guide the interview (annex #4). The themes of inquiry were: opinion of the video game; functioning of the video game; understanding of the video game objectives and mechanics.

4.4.2. Pilot test.

4.4.2.1. Post-game questionnaire.

Given the research objectives, it was necessary to evaluate the game experience and acceptability of the game as a complementary tool in psychotherapy. Several instruments to evaluate some aspects of the game experience were found as part of the research but there was not any instrument that considered the particularities of adventure games for psychoeducational purposes. The idea that a good game experience could influence the mood led to consider as relevant to measure the post-game affect of the players. The PANAS schedule provided a solid based to adapt an instrument to the particularities of the expected impacts of video-games (Watson and Clark, 1994: Moral de la Rubia, 2011; Moriondo, Palma, Medrano and Murillo, 2012; Sandín, 2003). There were a few instruments to evaluate acceptability but they were specifically constructed for educational games. Considering this, part of the work in this study involved preparing instruments to evaluate the acceptability, the post-game affect and the experience of playing a video game with the particular aims as the one here constructed. Information about the development process and the psychometric qualities of the instruments constructed is presented in annex # 5. Information about the characteristics of the final version of the scales that composed the post-game questionnaire is

presented in the following pages (see annex # 6 for the final version of the questionnaire).

4.4.2.1.1. Post-game affect scale

The idea behind preparing this instrument was to obtain information about the emotional state of players immediately after playing a game. The notion was that a positive game experience would have a positive short term emotional impact on the player.

Twenty two items compose the post-game affect scale; each item is one word that expresses an emotional state. The instructions ask to report the emotional state at the moment, marking one of five possible answers ("Very little"; "A little"; "Moderately"; "A lot"; "Extremely") for each word. For information about the development process and the psychometric qualities of the Post-game affect scale see annex # 5.

The post-game affect scale is composed by two main scales: "Negative Affect" (13 items) and "Positive Affect" (9 items). The "positive affect scale" is composed by the following sub-scales: energetic and pride. The "negative affect scale" is composed by the subscales: sadness, fatigue, isolation, restlessness and fear.

4.4.2.1.2. Acceptability scale

Due to the innovative character of the project it was important to evaluate if patients accept the videogame as a complementary tool for psychotherapy. Acceptability evaluations inform about the feasibility of an intervention (de Graaf de Graaf, Huibers, Riper, Gerhards and Arntz, 2009).

The final version of the acceptability scale is composed by seven items; each item is a phrase that expresses an opinion about the value and benefit derived from playing the game. The instructions ask the testers to express their level of agreement for each phrase by choosing one of five possible answers ("Nothing"; "Slightly"; "Moderately"; "A lot"; "Extremely") for each sentence. For information about the development process and the psychometric qualities of the "Acceptability scale" see annex # 5.

4.4.2.1.3. Game experience scale

The idea of using a video game for psychoeducational purposes rest in the premise that

gaming is an intrinsically motivating activity a fun activity that will attract and keep people playing and thus allow the acquisition of information and the development of abilities. For this reason it was important to have the players' opinion about the quality of the gaming experience.

Twenty seven items compose the "game experience scale"; each item is a phrase that expresses an opinion about the game experience. The instructions ask the players to express their level of agreement for each phrase by choosing one of five possible answers ("Nothing"; "Slightly"; "Moderately"; "A lot"; "Extremely") for each sentence. For information about the development process and the psychometric qualities of the "Game experience scale" see annex # 5.

The "game experience scale" is composed by the following sub-scales:

Enjoyment. These are items describe the experience of playing as fun, entertaining and enjoyable. This factor was labeled

Objectives. These items refer to be clear about the objectives of the game.

Engagement. These items refer a flow experience, a state of concentration and immersion in the game.

Control. These items refer to the possibility of making decisions and having control over or affecting the course of the game.

Identification. These items indicate the identification of the player with one of the characters in the game story.

Functioning. These items indicate functional problems of the game.

Progress. These items indicate that the player was aware of her progress in the game.

Competence. These items express a sense of achievement and competence.

4.4.2.2. Therapist interview guide

A set of questions were prepared to guide the interviews of psychotherapists. The questions asked: if it was possible to review the video game during the sessions and, if so, what happened; the opinions of the therapists about the potential of a game like this as a complementary tool in psychotherapy and as a tool for preventive interventions on depression and mental health.

4.5. Data analysis procedure

4.5.1. Video game design phase

4.5.1.1. Focus group

Focus group and interview data were analyzed using qualitative content analysis techniques. Qualitative content analysis seeks to classify the data in the form of text into categories that represent similar meanings. According to Hsieh and Shannon (2005), qualitative content analysis can be defined as a ‘‘research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns’’. In inductive content analysis the categories are derived from the data.

The focus groups were recorded in audio, then the audio was transcribed and the transcriptions incorporated to a qualitative database using the NVIVO software (version 8.0). Each interview was read, analytic categories were emergently created and using these categories the text was coded (annex # 6). The next step was to review the categories and make a descriptive summary, accounting for the commonalities but also taking note of the particularities.

4.5.1.2. Prototype and playability tests

The interviews were recorded in audio; later the researcher reviewed the audio and took note of the most salient problems, observations and suggestions made by the girls.

4.5.2. Pilot test

4.5.2.1. Patients

Patients’ post-game questionnaire data was stored online and later organized in a SPSS format. Mean scores and standard deviations for each patient were calculated for the “Acceptability” scale and “Game experience” scale and subscales. Using as a normative sample the data (mean and standard deviation) obtained during the pilot test of the affect

questionnaire, standard deviation scores were obtained for each patient.

The data was arranged in tables and graphs for a descriptive interpretation.

4.5.2.2. Psychotherapists

One or more interview with each of the therapist was arranged a few weeks after the patients played to explore the use of the video-game with their patients. The interviews were transcribed and are presented or summarized in the following section of this report. The reports constructed were sent by e-mail to the therapist to sanction them or to make modifications according to their criteria. An inductive content analysis was performed on the opinions of the therapist.

5. Results

5.1. Web page and video game

5.1.1. Web page.

In July of 2011, during a stay in Germany and with the help of colleagues of the Center for Psychotherapy Research of Heidelberg University, the construction of the website began. The final version of the web page was ready by September of 2012.

From a design point of view, the idea was to construct a simple but attractive and functional web site. Several web sites for teenagers were reviewed to inspire the selection of colors. The web page was built integrating HTML, PHP and MySQL databases.

Four sections were accessible through a top horizontal menu:

1. Start. When the user was logged off, this section gave general information about the site and introduced the section with information about mental health, as an alternative of playing. When a user was logged in, here the video-game was found.

2. Information. This section had two sub-sections:

    2.1. Mind your mind. Here there was information and recommendations about the same three areas that were considered in the game: recognition and modification of negative cognitive bias; interpersonal skills and interpersonal problem solving; behavioral and physical activation (annex # 8). A first draft of these texts was written by the researcher and later improved after discussing them with two therapists. Also, these texts were used as a reference to write the post-game feedback text (annex #9).

    2.2. About the project. This section gave general information about the research project.

3. Access.

3.1. Registration. When selecting this option the informed assent text was presented, if patients accepted the conditions, by selecting that option, then they went on to the registration process. A possibility to download a copy of the informed assent was available. The registration required a user code given by the therapist; this code was previously entered by the researcher in a user database that linked each patient code with its respective therapist. The registration asked for a user name, a password and an e-mail address. After the registration an automatic e-mail was sent asking the user to confirm its registration.

3.2. Sign in. "User name" and "password" information was asked in this page in order for registered user to sign in the video game online system. A form to contact the researcher was available in case the user had forgotten her password.

When signed in, the administrator had a special section that allowed him to register new therapists, to create new user codes for patients, to access a list of therapist and patients and to view, for each time a patient played, the value of the variables associated with her decisions on the relevant game points as well as her play time. This interface was PHP-connected with a MySQL database.

4. Questions. This was a section that, in a form of questions and answers, provided information on what to do if the access code was lost or in case that problems to load the game were encountered.

5. Contact. This was a public online form to contact the researcher.

Player activity was logged within the game file, as it described in the "Score system and feedback" section of this report.

The website was hosted in the Heidelberg Center for Psychotherapy Research's

severs. The web address of the web page was: http://www.e-mental-health.eu/game/index.php

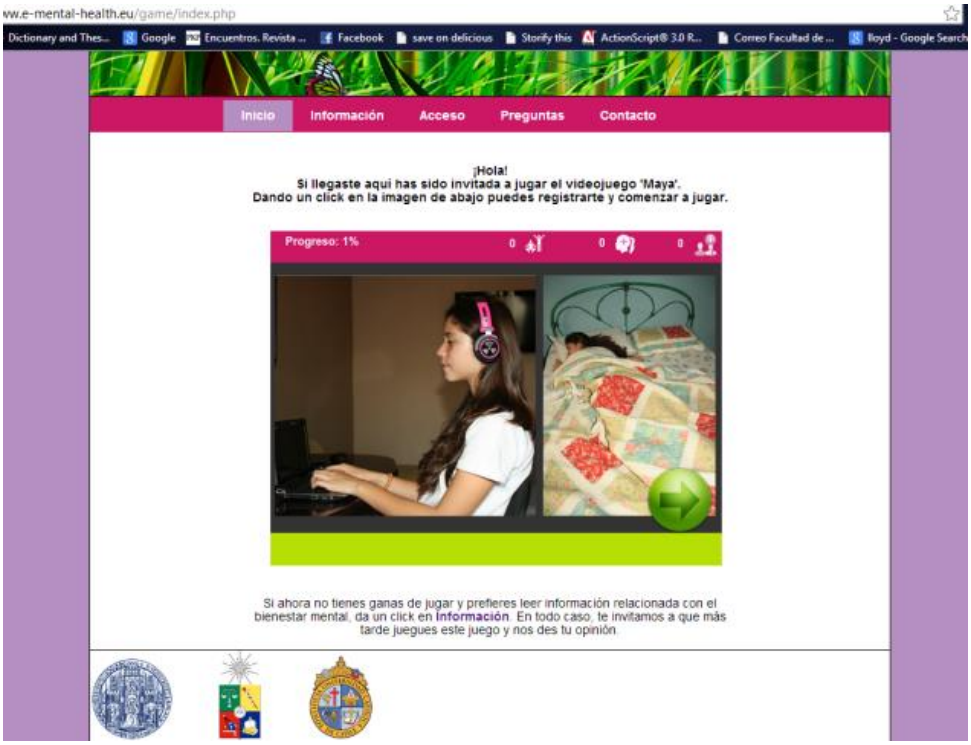

Figure # 3. Web page initial page screenshot.

5.1.1.1. Integration of post-game questionnaires.

According with the research design, once the videogame was finished, players had to respond a questionnaire. When the game ended the feedback page appeared as well as a request to answer the questionnaire and a link to it. Using one of the features of Web-Akquasi (a data management software) the questionnaire was integrated (via PHP) with the web page and the users' information so that when a user answered the questionnaire her registered name identified her responses.

5.1.2. Focus Groups

During the year 2011, three focus groups in two schools (one in Santiago and one in Viña del Mar) were conducted with girls between 14 and 18 years old. The overall objective of these activities was to obtain information for a user centered videogame design.

The specifics objectives for the focus groups were:

- To know some of the types of conflicts that teenage girls experience.
- To describe behaviors of teenage girls when in a depressed mood.
- To describe some of the interests and forms of entertainment of teenage girls.

5.1.2.1. Conflicts.

In a notorious manner, the girls mentioned that the main sources of conflict were parental demands related with the household chores, the school and family responsibilities. Three areas of conflicts were identified:

1. School performance demands - autonomy. Teenagers resent the permanent parental demands of a good school performance. It appears that the conflict is around the juvenile development of autonomy and self-responsibility.
2. Discipline - self-responsibility. When adolescents are not responsible, parents can implement several sanctions; from scold them to punish them.
3. Privacy - protection. Sometimes the growing demands of teenagers for their own spaces and privacy encounter parental curiosity, protection and supervision. Girls experience this situation as an intromission, as a lack of trust and as an annoying parental behavior.

According with the girls interviewed the social expectations about their education, the school demands and routine are other sources of stress.

5.1.2.2. Feeling down

The interviewed described that when they are sad or "feeling down" ("bajoneadas") they tend to isolate themselves, to confine themselves in their rooms; sometimes they cry or become aggressive and irritable. Also when sad they listen to music and watch movies of a melancholic tone.

The girls recognize that sometimes their depressed mood appears without a reason. Some of the girls mentioned that they feel sad when they are frustrated, because there is an external obstacle to obtain or to do something they want or because they are not capable to achieve something that they want; in some cases the frustrations are of an interpersonal nature.

A question for the girls was: "what do you do to try to come out of the depressed mood?". The most common answer was to call a friend (sometimes a brother or sister) to chat or to arrange a meeting and going out. Sometimes, they said that they just wait for the negative mood to go away. Some of the other girls mentioned that they try to distract themselves listening to music or watching TV, one of the girls said that she liked to write and others that they exercised.

5.1.2.3. Forms of entertainment

For the girls interviewed, the most common form of entertainment is to meet with friends and stay at home, to go to a public park or to go to the mall. What happens in these meeting is characterized as spontaneous, they chat, joke, they accompany each other or they "just exist", as one of them expressed it.

They use the computer to go to Facebook; some of them said that even when they do not like it, it is necessary to be in Facebook for social reasons, as an extension of the physical encounters.

They also use the computer to listen to music, watch movies or TV series.

They also watch "soap operas", movies and sitcoms on TV.

Other forms of entertainment are listening to music, watching movies and reading.

Regarding reading, girls said to prefer stories or novels of fiction or with fantastic elements, also they mentioned interest for narratives of suspense and mystery; similar genre preferences were reported for movies but also comedies and science fiction films were mentioned. Visual aspects such as colors and landscapes were appealing to some girls. Emotional loaded contents are present in many of the stories of the movies mentioned.

When asked for suggestions about a story for the videogame, they said that they would prefer a narrative that would not address directly the typical adolescent situations: "it would be boring to see your own life portrayed in a videogame. If it is very similar to your problem instead of improving your mood it would make it worst"; "it would be ridiculous, I would mock that guy and I would choose all the wrong answers…it should not be so obvious". The same girls suggested that the story should present the situations in a metaphorical way: "The problems should appear but in a kind of metaphor"; "It should have fantastic elements…more metaphorically". When it was commented to them that the idea of the game was to present options that imply solving problems, some of them mentioned that it would only work if the player takes the decisions to achieve a better outcome within the game:

"It would be obvious if you are talking about decision making. Even if it is a completely magical world, one could notice it. …

I have had girl friends that go to the psychologist and that they do not want to go. When the psychologist asks you, sometimes you say the opposite. Many times I did not know why I had to tell my problems to a stranger. If the questions are too obvious, they would not answer or they will give the opposite answers and by doing that the purpose would be lost.

That would work if the best decision is taken for the sake of the game.

You have to take a good decision within the game".

Regarding videogames some of the girls mentioned that they play videogames (in one interview it was asked, who played videogames at least once a week, 6 of 11 responded positively). Different games and genres were mentioned, one of the most popular was "The Sims", which is a social simulation game. Other genres mentioned were sports games (in consoles such Wii), shooting games (Call of Duty), adventures games (Grand Theft Auto,

which also includes elements of actions, driving and role-playing games) and puzzles games (Tetris). When asked for adventure videogames, several mentioned that they liked them. When asked if they preferred games with or without a story, several opinions arose, while some liked to play on free mode, without a story, in other moments they preferred games with narrative. In conclusion, at least half of the interviewed girls played videogames of different kinds, it was not clear a predilection for a specific kind of game, they recognized adventure videogames and they reported to liked them, they appreciated games with and without narrative.

5.1.3. Game story

Some initial ideas for the story were:

a) The story should include situations of interpersonal nature in a manner that would allow the integration of the theoretically relevant psychological elements (recognition and modification of negative cognitive bias; interpersonal skills and interpersonal problem solving; behavioral and physical activation).
b) The main character of the story should be a teenage girl.
c) The story should be written mainly from a first person point of view. In order to provide relevant information a third person and omniscient narrative point of view could also be used in some situations.
d) The story should follow the hero's journey structure.
e) The story should not portrait, as a central element, the everyday routine nor the usual problems of teenage girls.
f) The daughter-parents conflicts should be removed from the story in such an extreme way that it would become notorious.
g) Story events should occur in a fantastic world. The creation of a dystopian society could be a good way to present a fantastic world and, at the same time, address relevant situations in an indirect way.
h) The story should make use of paradoxes and metaphors to convey or provoke psychological relevant messages.

The complete version of the story and the different story paths can be found in annex #1, a diagram of the story that shows also the "Hero's journey" structure is in Table # 5 and in

Figure # 4. In the following paragraph a condensed version of the story is presented:

Maya was an average teenager but she was feeling a little sad. During a walk in a park where she uses to go, she meets Izel, a girl about her age. Izel is a vivacious girl and after a small talk, Izel invites Maya to participate in an ecological movement and to go to a protest to stop the destruction of the park. Here the story can take one of two paths:

(1) Maya accepts the invitation.

(2) Maya rejects the invitation. The story introduces Aria, a friend that reiterates the invitation; this time Maya accepts.

Maya realizes that the day of the protest she has an exam at her school, so she goes to talk to her teacher, who denies the permit to go. Maya must ask another teacher to intercede to obtain authorization. She goes to the protest and unexpectedly she runs into her father, a lawyer who is representing the ecological movement. Then the story shows Izel who has information that could stop the destruction of the park. Izel asks Maya if she has a camera and that if she dares to take a risk helping her. Both girls go to photograph a government bureaucrat taking a bribe from an employee of the company that wants to destroy the park to build an industry. The girls are discovered so they flee with the evidence that later Maya passes to her father and that, in the end, it helps him to win the case and to save the park.

5.1.3.1. Mapping the hero's journey narrative structure.

The creation of the story followed the narrative structure of the hero's journey as originally stated by Joseph Campbell (1949) and later adapted by Chistopher Vogler (1998). In the table below, the hero`s journey stages and the its corresponding episodes in the video game story are presented.

Table # 5

The hero's journey structure (Vogler's version) in the game story

Stage	Video game
1. **The ordinary world.** The player first meets the hero and is introduced to the hero's	Maya`s backstory and everyday activities. This part describes Maya as being depressed which symbolically can be matched with "the belly of the

Stage	Video game
background, typically via the back story.	whale" phase in Campbell's model.
2. **The call to adventure.** A hint that the hero will be leaving the ordinary world to begin a new adventure. This stage acts as a catalyst that triggers off the main storyline.	Izel invites Maya to join the movement to stop the destruction of the park.
3. **The refusal of the call.** In the traditional structure of the monomyth, the hero will turn down the initial offer to leave the ordinary world to begin a quest, usually as a moment of doubt or uncertainty.	Maya can refuse Izel`s invitation; if the player choose this option, a friend of her, Aria, makes the second call.
4. **The meeting with the Mentor.** When the hero decides to take on the quest, the mentor provides her with the information needed to choose what action to take. Mentors can be anything which provides information—a bearded old man, hub, robot, library, past experiences, and so on.	Maya asks her teacher Uli to intercede in her favor to obtain permission to go to the protest against the destruction of the park.
5. **Crossing the first threshold.** The hero crosses from the safety of the ordinary world to a new, dangerous, and unknown world of the quest.	Maya reaches the park; there she meets Izel who would lead her into an adventure.
6. **Tests, allies, and enemies.** This	Allies: Izel (in the beginning of the story she is in the

Stage	Video game
phase is usually the largest part of the game story, as the player is introduced to all the major characters.	role of a herald, she makes the calling, but then she turns into Maya's sidekick), Aria (she adopts the same two roles that Izel), teacher Uli (representing a helpful resource in the form of a mentor), the father. Enemies: the company that wants to destroy the park to construct houses and buildings. Test: Maya must obtained permission to go to the park from her teacher. She must look for help.
7. **The approach to the innermost cave**. This is where the hero finds the reward she seeks—such as gaining the essential skill, weapon, or mastery of everything she has come across up to this point. Typically, this is situated toward the end of the game. The main objective of this part of the story is to prepare the hero for the final battle.	• The backstory tells that: "Maya was feeling a little down, it was difficult to get up and find motivation to do anything….". • During the protest Maya finds her father, chats with him and realizes that he is the lawyer representing the movement to stop the destruction of the park.
8. **The ordeal.** This is where the hero faces the final battle with her nemesis or ''final boss.'' The nemesis can appear as either a physical (person or object) or nonphysical (time, intensity, or difficulty) entity.	Maya goes to the protest where she makes the bold decision to photograph the villain. She takes the pictures and then she and Izel have to escape quickly ("The magical flight" in Campbell's model).
9. **The reward.** Many games end at this point, when the enemy is defeated and the reward is usually an ending cut scene detailing what	Izel and Maya obtained the pictures that help to stop the destruction of the park and they give them to Maya's father.

Stage	Video game
happens to the hero after her triumph.	
10. **The road back.** Some games will allow the player to return to the ordinary world after the reward but it may not be possible for the hero to integrate successfully into the old world.	This phase was not included. Interestingly, when testing the game story, all the girls in the prototype and playability tests said that they wanted the story to go further, like if they perceived that the narrative pattern was not complete.
11. **The resurrection.** This part of the story addresses any unanswered questions, such as the consequences from the quest, potential conflicts that may arise for future sequels, or any tests the hero must face before the end. It can also be in the form of a final plot twist, as something unexpected by the audience.	In the end, a brief epilogue tells the outcome of the story and the situations of the main characters.
12. **The Return with the reward.** This is the last stage of the story, where the hero finally returns to the ordinary world and sees the benefits of her reward. The hero can compare her life before and after the quest to see how things have changed.	This phase was not included.

The next figure (# 4) is similar to the previous table but here the parallel follows the flow of the story.

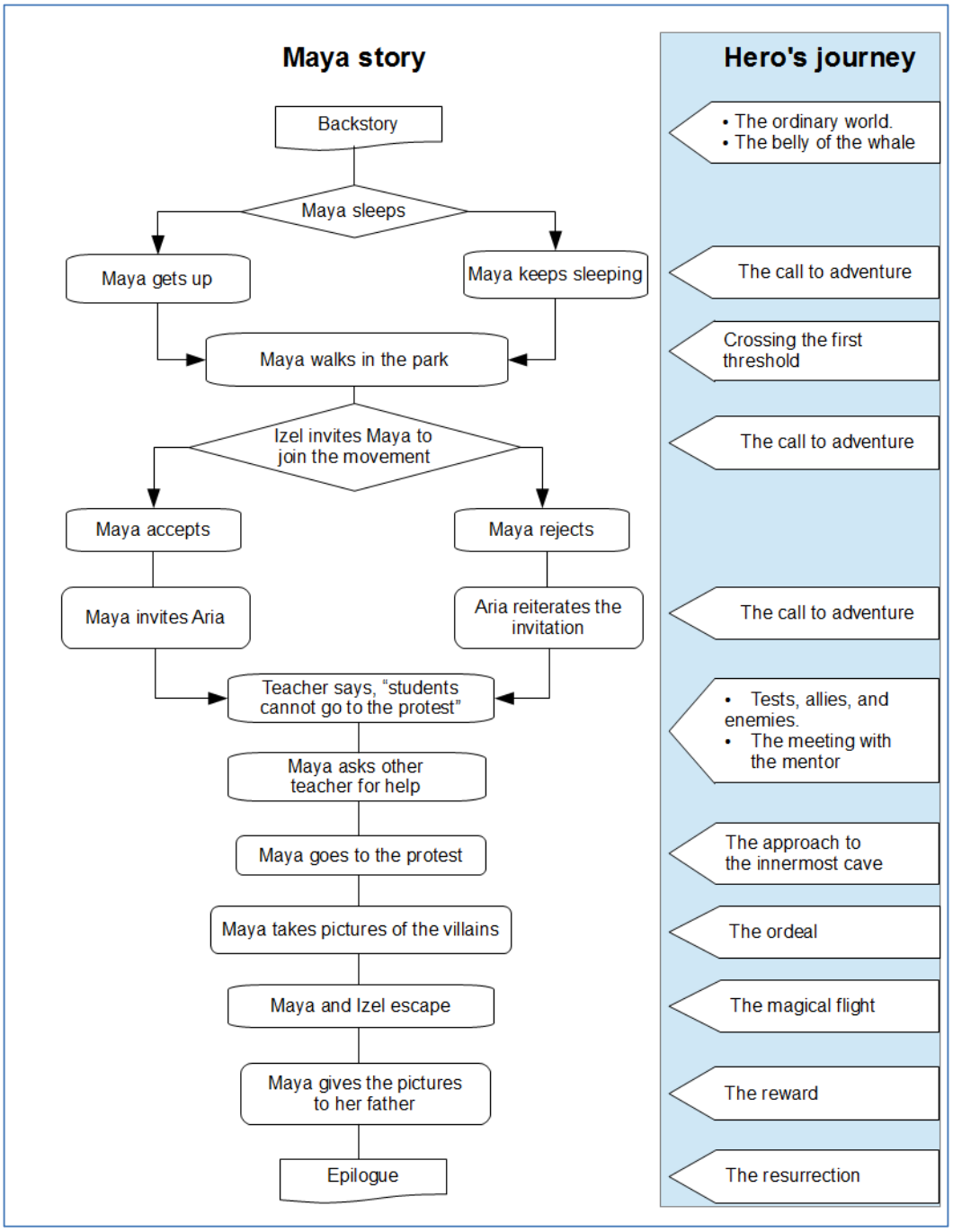

Figure # 4. The Maya game story and the hero's journey stages.

5.1.4. Maya: an adventure video game.

5.1.4.1. Adventures games for mental health

As previously stated, play is a characteristic phenomenon in human psychology, it has an important role in learning, in the development of mental capacities and it has been use for psychotherapeutic purposes. Although the field of serious games is just a few decades old, there are enough experiences to sustain that video games are a valid medium to implement educational and psychological interventions. It was estimated that adventure video games have characteristics that suit the aims of this project. Adventure video games allow the possibility to create narratives in which embed situations and problems relevant to the psychological aims. Besides, this project relies in the pedagogical function of myths and stories. The anthropological and psychological research of the myth of the hero and its narrative structure influenced the creation of the story. The digital medium offers the possibility of adding interactivity to the story as a way to stimulate the involvement of the "digital natives". Also the interactivity on an electronic device allows to record the activity and to gather information that can be used for diagnosis and research.

5.1.4.2. Theoretical basis for the treatment of depression

Based on the review of prevention and treatment programs for depression, aspects of the cognitive behavioral model and the interpersonal model served as the fundaments to guide the video game design. Three topics were considered: recognition and modification of negative cognitive bias; interpersonal skills and interpersonal problem solving; behavioral and physical activation. These aspects were included in four ways: as decisions that the player should make as part of the unfolding story; as a score system that tracks and provides immediate feedback cues about the three areas; as a post-game feedback text; as an information text in the "Mind your mind" section of the hosting website. A description about how these ideas were incorporated in the game follows next:

Recognition and modification of negative cognitive bias.

The story of the game presents two situations referred to cognitive bias:

a) When Maya's request to her teacher is rejected, she thinks: "…It was another dumb idea of mine to think that he would allow us to go". Aria, her friend, corrects her thinking and encourages her by saying: "It is not a dumb idea. It is a good idea but it is not easy that this "negativitron" allows us to go. We have to keep trying".

Figure # 5.

b) In one of the branches of the story, Maya tells Aria that she is thinking about joining a movement to try to stop the destruction of the park; Aria responds: "You are so naïve, how can you think that we could to anything to stop it!". Then Maya faces two alternative ways of thinking: i) "Aria is right. I always think dumb things". ii) "Aria is a pessimist. I think that we can do something.".

Figure # 6

Interpersonal skills and interpersonal problem solving.

The story of the game presents four situations referred to the interpersonal area:

a) Maya received an invitation to participate in a social movement that is trying to stop the destruction of the park. Maya must decide whether she participates or not.

Figure # 7.

b) Aria's boyfriend is sending e-messages that Maya considers inappropriate. Maya must choose one of three options: i) ignore him once more; ii) confront him; iii) talk to Maya about the situation.

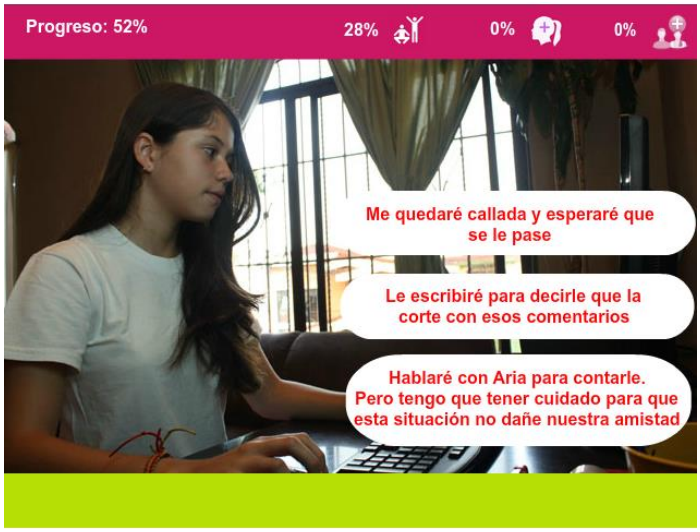

Figure # 8

c) When asked, the teacher refuses to change the date of the test. Maya can react in two ways: i) Upset, saying "You understand nothing"; ii)

Thinking diplomatically and insisting politely.

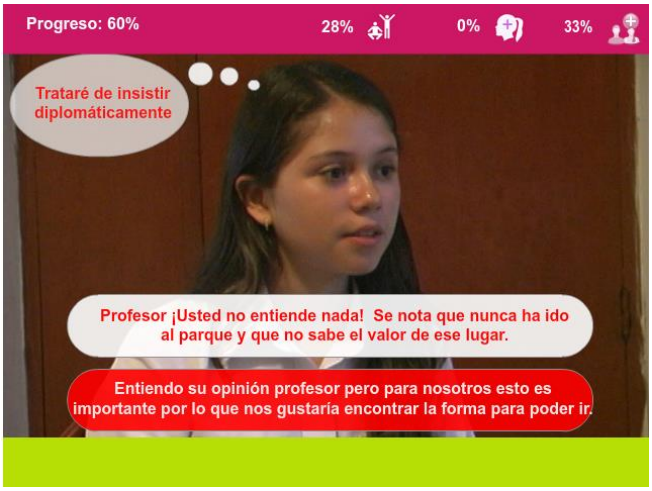

Figure # 9

d) After the refusal and the encouragement from Aria, Maya considers how to persevere on her intention: i) "I have to find a way to solve this problem. I will go to talk with teacher Uli. Maybe he can help us"; ii) "I does not matter what this guy says. I am going anyway with or without his authorization".

Figure # 10

Behavioral and physical activation.

The story of the game presents two situations referred to physical activity:

a) The story starts showing Maya waking up and presents the players with two options: 1) Maya keeps sleeping; ii) Maya gets up.

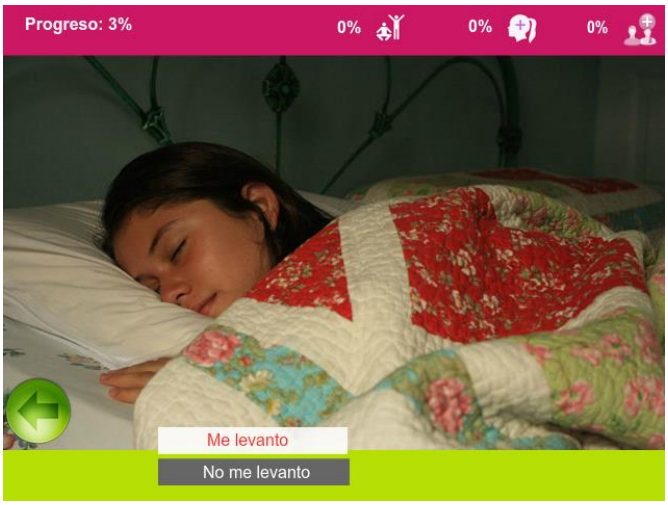

Figure # 11

b) When Maya wakes up, there is a scene where she can prepare to go out by: i) brushing her hair; ii) having a healthy breakfast; iii) brushing her teeth; iv) dressing up.

Figure # 12

5.1.4.3. Gameplay design

Gameplay can be understood as "the set of all that can be done by the player in the gaming world" (Fabricatore, Nussbaum and Rosas, p. 317, 2002).

In overall terms for this game, players had to navigate and make decisions to move forward in the game story. This gameplay required to design and program different types of interactions (some samples of the codes written are in annex # 10):

- Navigation. Navigation required making buttons or graphic objects react and take the story to a different point in the narrative timeline. This implied also the arrangement of elements and the writing of scripts to load and control the display of story sequences (pictures, videos, text, and interactive objects).
- Making choices. It was important to allow, at least in some instances, meaningful choices that notoriously affected the course of the game. The presentation of alternatives required to create text boxes with mouse-over effects, that once clicked, moved the story in a certain direction or that presented other graphic element. In some cases it was necessary to write conditional scripts to allow or disallow a particular game functionality when certain condition was met. These logical conditions were also programmed for the dialogue simulation in some scenes.
- Hidden objects. In some of the instances the game challenged the player to find a

hidden object; this required that the player explored the scenes with the computer mouse and click to make the object appear.

- Drag and drop functionality. In one of the moments, the player had to take a picture within the game. For this, a camera viewfinder was simulated, it was possible to move it with the mouse cursor until certain position that allowed the player to take the picture and that, in turn, it triggered a sequence of images and sounds.

The playability tests suggested that it was important to include some brief instructions and to make explicit the objective of the game; these elements were presented at the start.

5.1.4.4. Score system and feedback

In the beginning of the project, the idea was to design a system that rewarded the decisions considered as positives in terms of the psychological theory and punished, subtracting points, the negative ones. After a discussion with the colleagues at the Heidelberg Center of Psychotherapy Research and considering that the game was aimed at girls with symptoms of depression it was decided not to punish the players' scores. Thus the game only provided cues about the positive game behavior in the areas of "Recognition and modification of negative cognitive bias", "Interpersonal skills and interpersonal problem solving" and "Behavioral and physical activation". This form of immediate feedback was presented by means of: a) an audio sound; b) an increase in the percentage value next to the icon that represented the three areas already mentioned. No especial instructions on how to obtain a higher score were given to the players; this decision was made considering that providing explicit information about the positive behaviors could cause oppositional attitudes that affected the spontaneous play and the game experience. Thereby the score system just gave hints and a more explicit feedback was left to the end of the game.

To allow the score system it was necessary to create, via code within the main game file, variables that could take different values. Besides the decisions made by the player, the play time was also registered. These variables were then used to calculate the score and to personalize the end feedback. Moreover, automatically after a player finished the game their values were stored in a database and sent via e-email to the researcher and to each player's respective therapist. It is worth mentioning that the in-game decisions could be considered performance data that could be analyzed for research purposes.

Using the same method of variables, information about the game progress was calculated and presented in the top bar of the game interface.

Immediately after ending the game, each player had a personalized feedback based on her decisions. The feedback reinforced the positive behavior, presented questions for self-reflection and provided information related with the three areas of interest (annex #8). The options of feedback text were stored in a MySQL database and called depending on the variable values obtained by the player. The number of feedback alternatives for the three areas were: “Recognition and modification of negative cognitive bias, 3; “Interpersonal skills and interpersonal problem solving” 6; “Behavioral and physical activation”; 2.

5.1.4.5. Playability test

The only problematic aspect detected was that, at start, the girls were not sure on how to proceed or what to do; preliminary instructions were added.

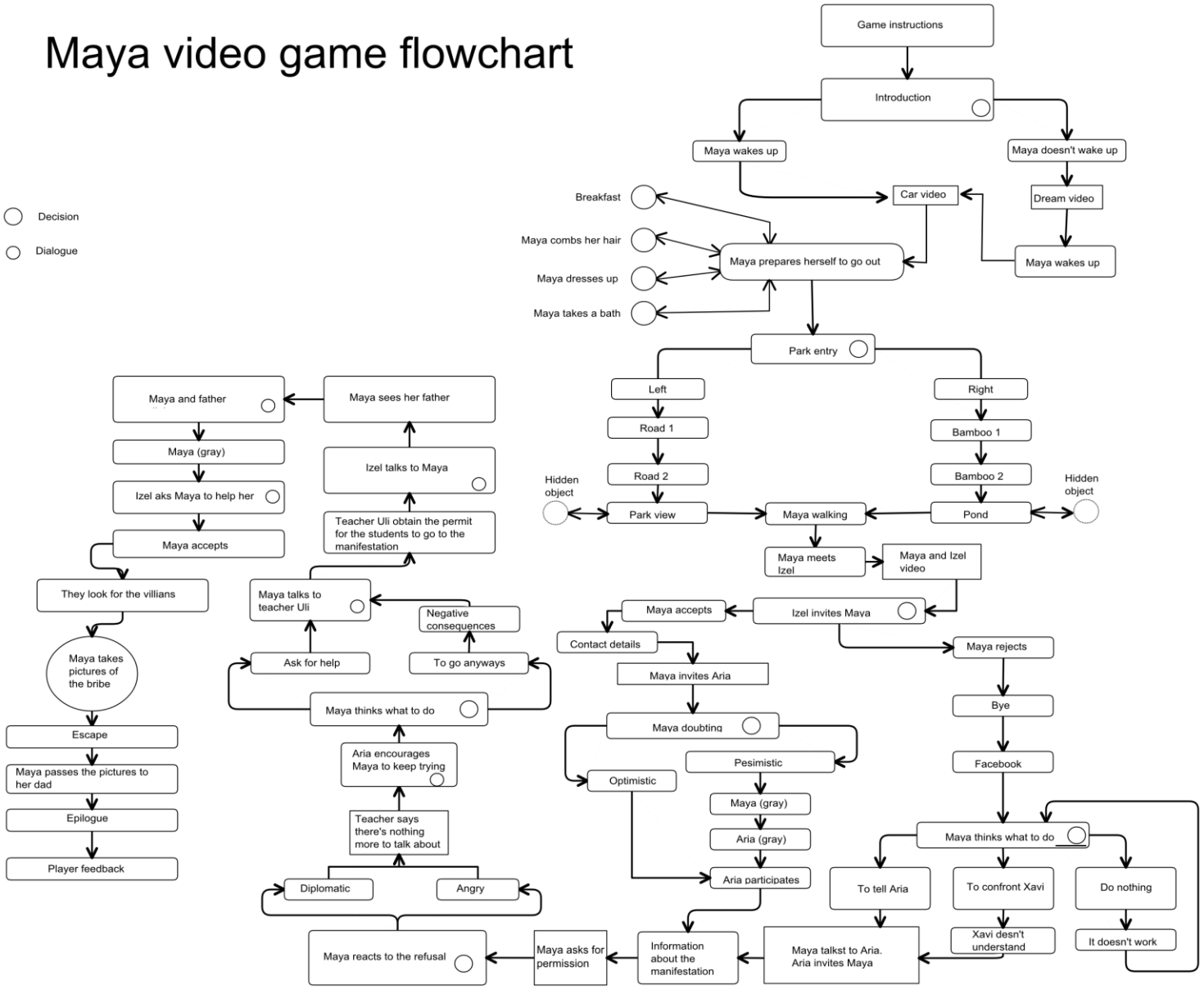
Maya video game flowchart
Decision
Dialogue
Game instructions
Introduction
Maya wakes up
Maya doesn't wake up
Car video
Dream video
Maya wakes up
Breakfast
Maya combs her hair
Maya dresses up
Maya takes a bath
Maya prepares herself to go out
Park entry
Left
Road 1
Road 2
Park view
Right
Bamboo 1
Bamboo 2
Pond
Hidden object
Hidden object
Maya walking
Maya meets Izel
Maya and Izel video
Izel invites Maya
Maya accepts
Contact details
Maya invites Aria
Maya doubting
Optimistic
Pesimistic
Maya (gray)
Aria (gray)
Aria participates
Maya rejects
Bye
Facebook
Maya thinks what to do
To tell Aria
To confront Xavi
Do nothing
Xavi desn't understand
It doesn't work
Maya talkst to Aria. Aria invites Maya
Information about the manifestation
Maya asks for permission
Maya reacts to the refusal
Diplomatic
Angry
Teacher says there's nothing more to talk about
Aria encourages Maya to keep trying
Maya thinks what to do
Ask for help
To go anyways
Maya talks to teacher Uli
Negative consequences
Teacher Uli obtain the permit for the students to go to the manifestation
Izel talks to Maya
Maya sees her father
Maya and father
Maya (gray)
Izel aks Maya to help her
Maya accepts
They look for the villians
Maya takes pictures of the bribe
Escape
Maya passes the pictures to her dad
Epilogue
Player feedback

Figure # 13

5.2. Pilot study results. Patient-Therapist dyads data

5.2.1. General results

5.2.1.1. Functioning of the video game system

The game system was always available when visited. Only one patient reported problems to register and she needed the assistance of her therapist. There were not e-mails coming from the platform reporting problems or questions about the game system. Some of the patients and therapists reported that some videos that were part of the game did not play smoothly, which negatively affected the overall play experience. This was more troublesome when the internet connection was slow.

5.2.1.2. Game path

The data used to generate this graph comes from 15 patients. There were 19 game path records because 4 patients played twice.

The average of play time was 11:57 minutes (SD= 03:42 minutes). Table # 6 presents the individual playing time .

Table # 6

ID	Time	Deviation from mean
M1	19:45	7:48
M3	17:08	5:11
M5_1	8:12	-3:45
M5_2	8:18	-3:39
M6	12:51	0:54
M8	12:14	0:17
M9	10:51	-1:06
M10	18:03	6:06
M12	13:55	1:58
M13	13:24	1:27
M14	6:20	-5:37
L1_1	9:07	-2:50
L1_2	7:48	-4:08
L2	20:24	8:03
A1	11:15	-0:42
N1	14:06	2:09
C1	8:45	3:12
Mean	11:57	
SD	3:42	

Figure # 14 shows that most of the patients followed a common path:

Maya wakes up. The hidden object is not found. She decides to participate in the movement to stop the destruction of the park. She reacts optimistically when confronted with Aria's negative remark. She politely insists to her teacher. In the final game decision and facing an obstacle, she asks for help.

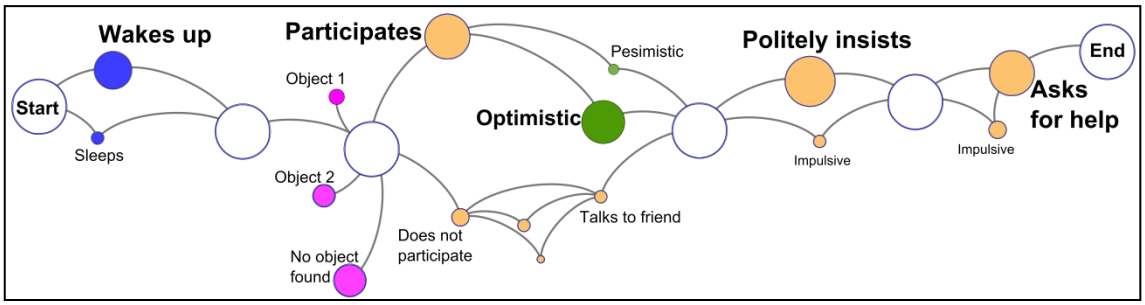

Figure # 14. Maya video game path analysis. Group choices.

5.2.1.3. Post-game affect

Taking as a normative sample the data for the 147 respondents used to validate the post-game affect scale, standardized scores for the patients were calculated (Z scores; $Z = \frac{x-\bar{x}}{SD}$).

Four patients report negative affect scores two standard deviations above de normative sample mean, other four have scores between the mean and Z =2 and six scores are slightly below the normative mean (Figure #15). The patients negative affect Z scores mean is 0,86 (SD=1,35), which indicates that negative affect predominates in this group, as reported after playing the game. In contrast the report of positive affect is low ($\bar{x}$ = -0,92; SD= 0,96), with most of the scores below the normative mean.

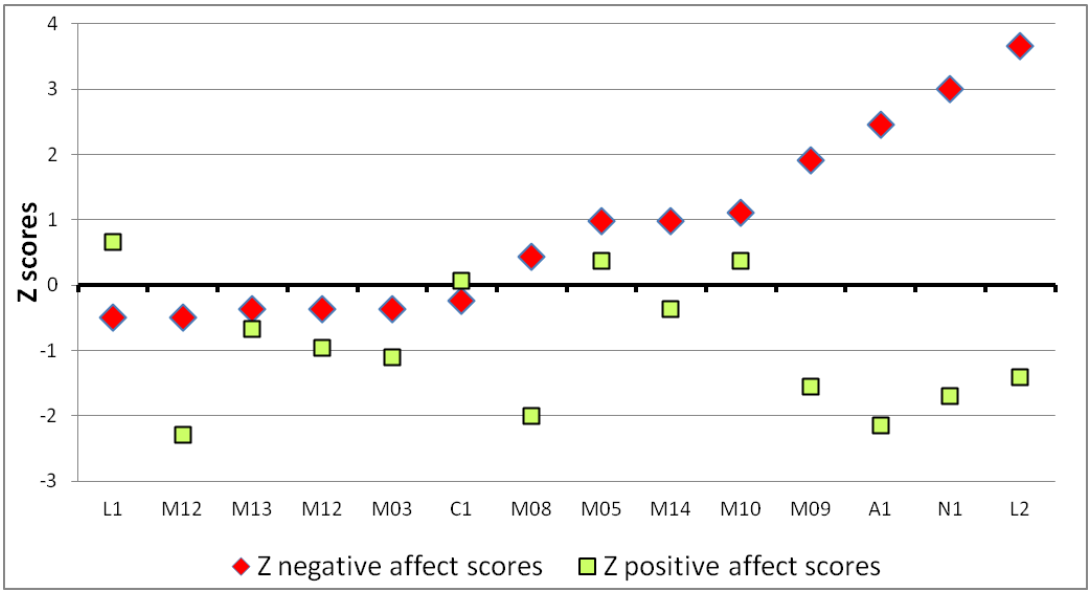

Figure # 15. Patients Positive and Negative affect. Z scores.

The analysis of the negative affect subscales show that "Fatigue" ($\bar{x}$ = 0,91; SD= 1,09) and "Sadness" ($\bar{x}$ = 0,84; SD= 1,47) have the higher Z score means.

Table # 7

Patients Positive and Negative affect

Z scores

	Negative affect subscales					Positive affect subscales	
ID	Sadness	Fatigue	Restlessness	Fear	Isolation	Energetic	Pride
N1	2,74	1,76	1,28	3,96	2,43	-1,71	-1,37
M05	0,4	0,39	0,88	0,44	1,41	0,58	0,04
M03	-0,07	-0,06	-0,7	0,44	-0,62	-1,2	-0,8
M09	1,34	1,76	1,28	3,08	0,39	-1,46	-1,37
M10	0,87	1,76	0,09	0,44	0,9	0,07	0,61
A1	3,67	2,21	0,09	-0,44	2,94	-1,97	-1,93
M12_1	-0,07	0,85	-1,09	-0,44	-0,62	-1,2	-0,52
M12_2	-0,53	0,85	-1,09	-0,44	-0,62	-2,22	-1,93
M08	-0,53	-0,97	2,07	1,32	-0,11	-1,71	-1,93
C1	-0,53	-0,52	-0,3	-0,44	0,9	0,58	-0,52
M13	-0,07	-0,52	0,09	-0,44	-0,62	-1,2	0,04
M14	1,34	2,66	0,09	-0,44	-0,62	0,32	-1,08
L1	-0,53	0,85	-1,09	-0,44	-0,62	0,58	0,61
L2	3,67	1,76	1,67	3,96	3,45	-1,46	-1,08
Mean	0,84	0,91	0,23	0,75	0,61	-0,86	-0,80
SD	1,47	1,09	1,02	1,62	1,40	1,00	0,85

High negative affect and low positive affect are not surprising considering that this was a clinical sample in which depressive symptomatology was an inclusion criterion.

The affect measure tries to evaluate the short impact of the game on the post-game affect. The observed data would suggest that the video-game had a negative impact on affect or that the game was not capable to radically modify the *a priori* state; of course the research design of this study cannot sustain any of those stances.

5.2.1.4. Game experience

The "Game experience" and "Acceptability" questionnaires are based on Likert scales. The instructions asked the testers to express their level of agreement for each phrase by choosing one of five possible answers (0="Nothing"; 1="Slightly"; 2="Moderately"; 3="A lot"; 4="Extremely"). To interpret the data, scores below 1,5 are considered as indicating a negative evaluation of the game experience and above 1,5 a positive evaluation.

Two of the patients report values equal or below 1, which can be interpreted as an unsatisfactory game experience (Figure #16). Most of the patients report values between 1,5 and 2,5, which can be understood as moderately good game experiences and two patients reported a very good positive experience.

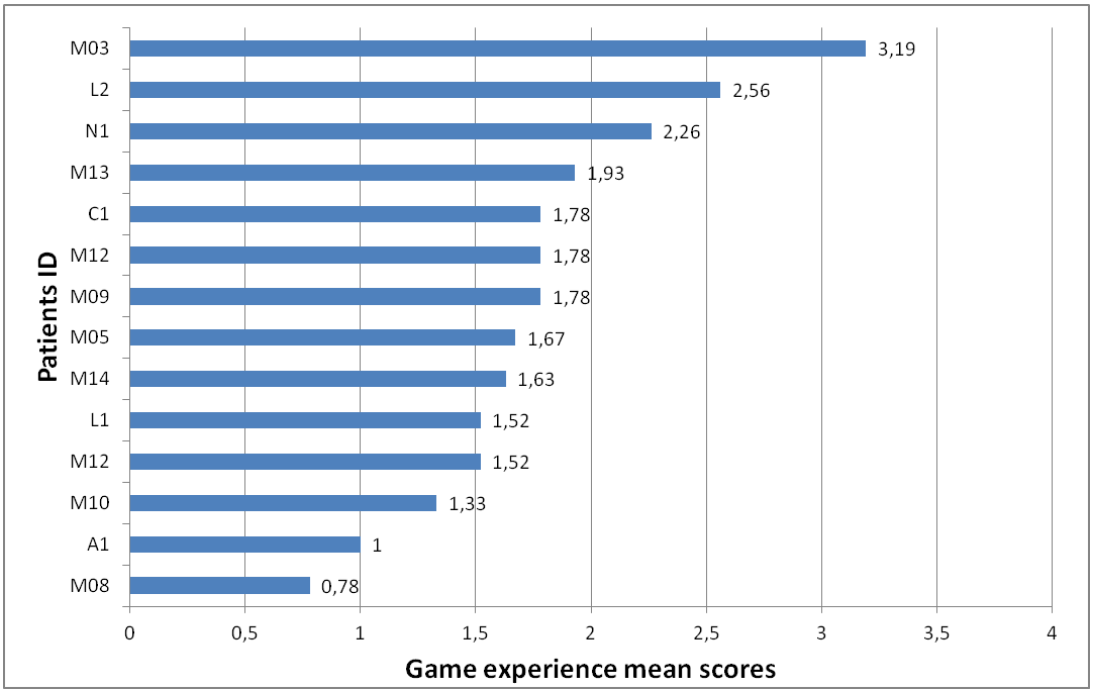

Figure # 16. Patients' game experience mean scores (0-4).

A good functionality was reported. The subscales with mean values between 1,5 and 2,5, were: "Competence", "Objectives", "Enjoyment", "Progress" and "Control. Subscales with mean values below 1 were: "Engagement " and "Identification".

Table # 8

Game experience scale and subscales patients' mean scores (0-4)

ID	Game Exp.	Enj.	Comp.	Ctrl.	Eng.	Ident.	Obj.	Funct.	Prog.
N1	2,26	2,86	1	2,43	1,33	2	1,50	4	1,5
M05	1,67	0,29	4	1,29	0	1	4	4	4
M03	3,19	4	4	2,86	2,67	2	1	4	4
M09	1,78	2,14	2	2,86	0	0	2,5	2	0
M10	1,33	2,57	1,5	0,43	0,33	1	1	3,5	0
A1	1	0	2,5	1,29	0	0	1,5	3	2
M12	1,78	3	1,5	1,57	0,67	0,5	1	3	1
M12	1,52	2	2,5	1,29	0	0	1,5	4	1
M08	0,78	0,86	1	0	0	0	2	2,5	2
C1	1,78	1,43	2	1,86	0	1,5	3	4	2
M13	1,93	1,71	3	1,57	0,33	2,5	3	3,5	2
M14	1,63	1,57	3	1,43	0,33	1	2	4	1
L1	1,52	1,71	1	1,71	0,33	0	0,5	4	2,5
L2	2,56	2,71	2	3	2,67	1,5	3	1	3
Mean	1,71	1,80	2,17	1,64	0,58	0,93	1,97	3,27	1,83
SD	0,60	1,11	0,96	0,84	0,89	0,81	0,94	0,89	1,20

Notes. ID= Patient identification; Game Exp. = Game Experience; Enj. = Enjoyment; Comp.= Competence; Ctrl. = Control; Eng.= Engagement; Ident.= Identification; Obj.= Objectives; Funct.=Functioning.; Progress; SD = Standard deviation.

5.2.1.5. Acceptability

Four of the patients report acceptability mean scores values below 1; which suggests that they estimated that the game was not beneficial for them (Figure #17). Five patients reported mean values between 1,5 and 2,5, this implies that these patients have favorable opinions about the benefit of the game. Five patients had mean acceptability values above

2,5, which indicate strong opinions regarding the potential benefit of the game.

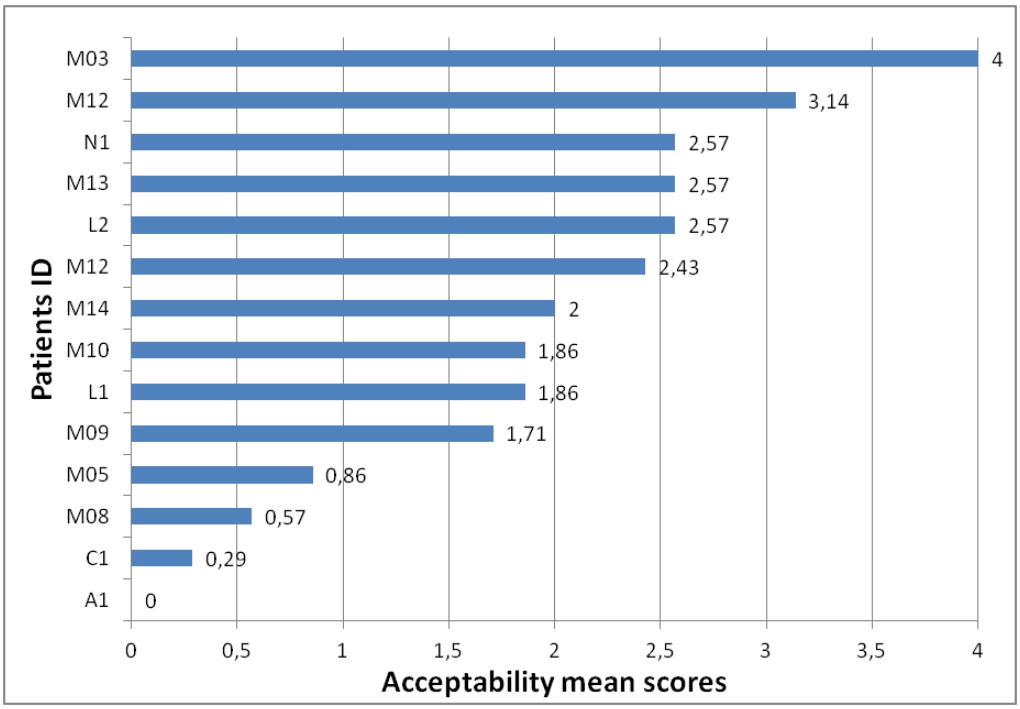

Figure # 17. Patients' acceptability mean scores (0-4)

The group acceptability mean score was 1,88 (SD=1,09).

5.2.1.6. Affect and Game Experience

The graph below shows the relation between positive and negative affect scores with game experience scores in the patient sample (Figure #18). Dividing the horizontal axis in the 1,5 value, it can be seen that a high negative affect is not necessary related with the quality of the game experience. However a report of low negative affect is associated with a better game experience. There is no discernable pattern between positive affect and game experience.

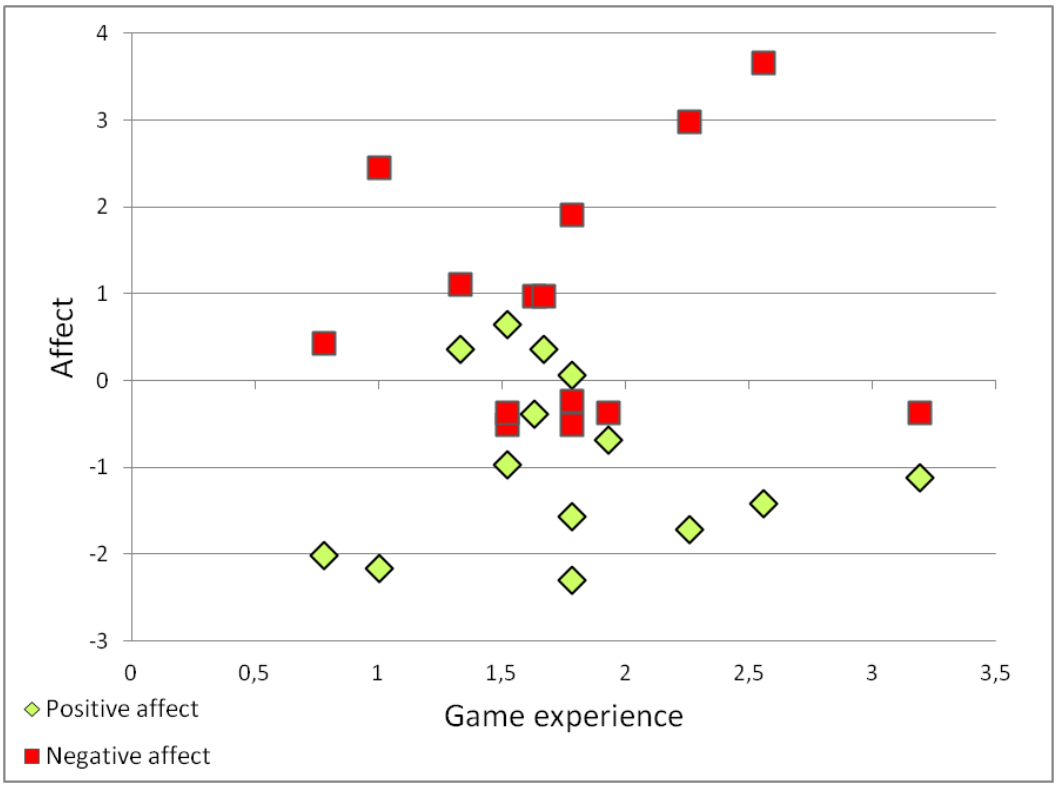

Figure # 18. Affect Z scores and Game experience mean scores.

A similar situation is observed when relating affect and acceptability (Figure #19). Only low negative affect scores appear to be associated with a better game experience.

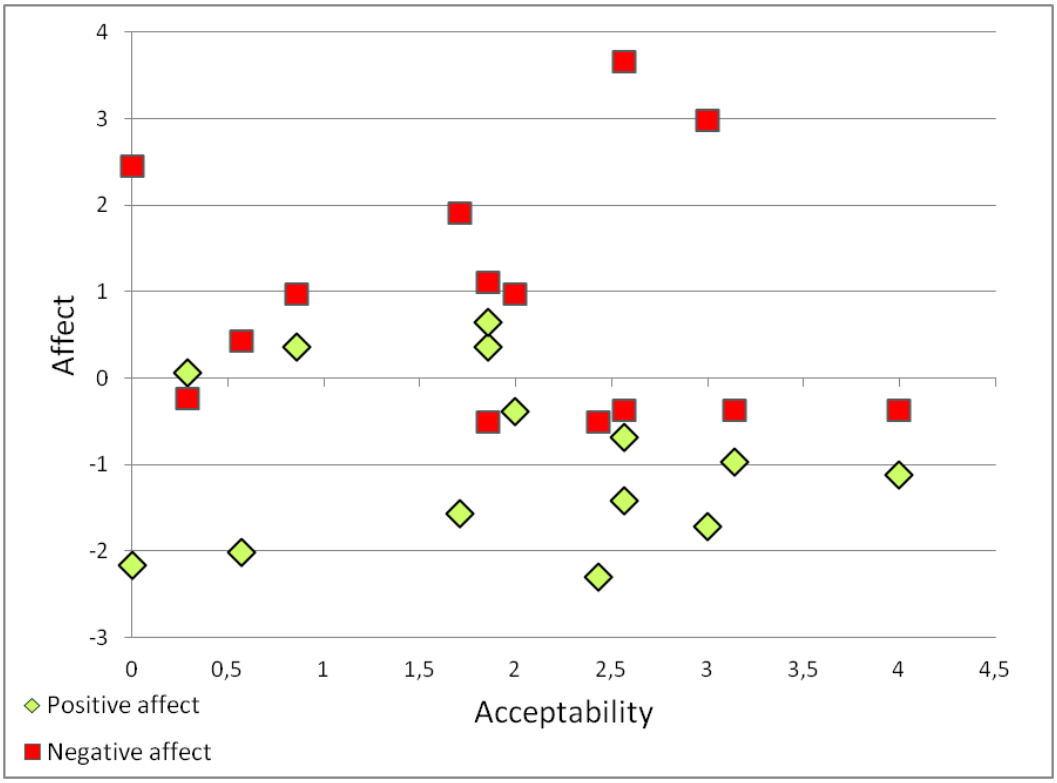

Figure # 19. Affect Z scores and Acceptability mean scores.

When relating game experience with acceptability a pattern appears; acceptability scores increase as game experience scores increase (see Figure #20).

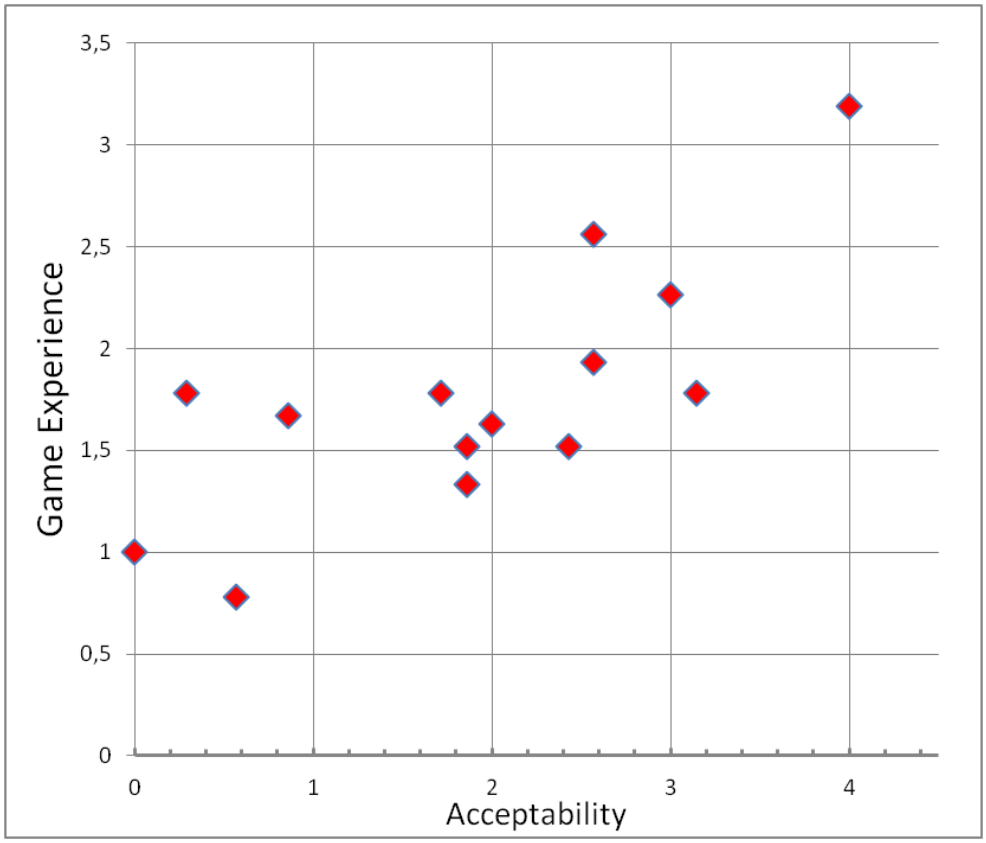

Figure # 20. Game experience and Acceptability. Mean scores.

5.2.2. Individual information

In this section, individual information is presented for the cases in which it was possible to have a post-game session. A brief description of the cases and the therapists' reports and comments about the post-game session are presented. Individual information for patients that played the game but dropped therapy or patients that had not had a post-game session by the time this report was written is presented in annex # 11.

When the therapist had more than one patient taking part in the research, her patients share the same pseudonym plus a number.

Marta5

Marta5 was a patient in a public health center. She was 16 years old, the only daughter in a middle class single-parent family. She was derived for her psychiatrist with a diagnosed of depression; she was under pharmacological treatment. Mart5 was obese, she was being supervised by a nutritionist, she had socialization difficulties, she was apathetic and doing little physically activity. At schools, she repeated two grades. Marta5 and her mother changed their place of residence and Marta5 was having problems adapting to her new school. Her psychotherapist considered that Marta5 could suffer some cognitive deficit.

Marta5 was invited to play during her first psychotherapy sessions.

Post-game sessions

Marta5 told her therapist that the game was boring. She said that she thought the game was for younger girls. Marta5 thought to be unrealistic that Maya asked her teacher for permission to go out and go to the protest.

The therapist mentioned that she explored if Marta5 made connections between the content of the game and her own social difficulties; Marta5 did not make any link. The psychotherapist noted that Marta5 did not recall details of the game; this made the therapist think that Marta5 played just to comply with her without paying attention to it. The

therapist led Marta5 to explore the three areas that the game refers and they evaluated in which aspects Marta5 had more difficulties, recognizing her little physical activity. This acknowledgement allowed a conversation about the importance of being active and some behavioral objectives were set.

Marta6

Marta6 was a patient in public health center. Marta6 was 18 years old. She was diagnosed with depression. She suffered the dead of two family members in a few years, her brother moved to another country and her daughter moved out of the house. A few years before, she was diagnosed with anorexia nervosa.

She was invited to participate in the first sessions.

Post-game session

The psychotherapist's notes about this session were:

"Therapist: Did you like the game? Would you change something?

Marta6: More or less, it was a little boring for girls of my age. I would make it more interactive, more didactic; I would add something that would allow you to keep your attention in the game. Another thing I would change is that it could pose in a clearer manner the symptoms that one has, or what can be happening. Sometimes when one is depressed, one feels lonely and unique in this.

Therapist: Is there a message in the game?

Marta6: Yes, it motivates you to propose things to yourself and to be able to achieve them and to do things the best that you can.

Therapist: Did you identify with the character?

Marta6: With Maya? A little because I would have done the same that she did, to try to conserve something that it was good to me, for example if someone tells me that someone is going to destroy a plaza in which I had played when I was little , I would do the same, I would try to save it.

Therapist: Was there something particularly interesting in the game?

Marta6: When she asked help from her teacher. That of going to an external and older person that motivates you to do something, that orients you, that external support is always good. I had a teacher like that, he motivated us. It was good that character appeared, it is novel and interesting".

No further exploration between the game and Marta14's personal situation was reported.

Marta8

Marta8 was a patient in a public health center. She was 15 years old. She was diagnosed with depression and social phobia and she was under pharmacological treatment. With permission of her mother, Marta8 decided to quit school. The schools authorities reported to the "Office of Protection of the Children Rights" that Marta8 had dropped out. She was sent to psychotherapy by the court. She was and intelligent girl. According to the psychotherapist, it was very difficult to relate to her, she had an oppositional attitude. Maya8 spent her time reading; she said that she imagined herself in the adventures of her books.

Post-game session

The psychotherapist thought that the bad evaluation of the game on the questionnaire had to do with Marta8's oppositional attitude.

About the post-game session, the therapist reported:

"Following the game, we planned behavioral tasks for the week. I indicated to her the three areas that needed attention. This was a good session in which we evaluated the three aspects".

Marta8 commented: "Who is going to pay attention to me if I am ugly". The therapist said that they explored the cognitive aspect.

Regarding socialization, the therapist reported the following dialogue:

"Marta8: 'There is no reason to interact with other people if I am self-sufficient. I do not go out because I do not want to, it is boring'.

Therapist: 'But I saw you happy when you told me that you went out'.

Marta8: 'Yes– she said – when I go out I have good time'.

Therapist: You see, that is what happens when one is depressed."

Marta10

Marta10 was patient in public health center. She was 18 years old. She had been in therapy previously with the same therapist. She returned and she was diagnosed with an adjustment disorder.

Post-game session

Marta10 played during the psychotherapy session. Evaluating the experience the psychotherapist said:

"We were able to relate the game with her socialization difficulties. She has a boyfriend and that is her life, she is focused on him. I explained to her that there are several tasks during the adolescence that should be attended for a good development. How are you socializing? Are you meeting new people? Do you meet with your female friends? We began to see in which areas she had deficits that needed to be improved".

Marta12

Marta12 was a patient in a public health center. She was 12 years old. The psychiatrist derived her to psychotherapy with a diagnostic of depression. Marta12 was under pharmacological treatment. She was very anxious at school. She had an overprotective mother.

Post-game session

The therapist said that Marta12 liked the game. She liked the idea of protecting nature. Marta12 said that she had preferred that it were easier to find the hidden objects in the park. She said that she did not identify herself with Maya, that she was different. The therapist believed that the game interested her because it portrays an adventure, an aspect that it was absent in her life.

The psychotherapist reported:

"Without addressing the game directly, we worked on the beginning of her school year; we evaluated that she is relating better. We also worked in the area of self-care, about the fact that she is old enough now to take care of her body hygiene".

Marta13

She was a patient in a public health center. Marta13 was 17 years old. She was in treatment for six months with a different therapist that had to refer her when he got a new job. The situation that triggered her depression was the ending of a relationship with a boyfriend. She was diagnosed with depression and she was under pharmacological treatment. Her mood had improved when she began therapy with the new therapist. She went to therapy once a moth.

She had been in treatment with her new therapist for two months when she was invited to participate.

Post-game sessions

According to the therapist during the post-game session they talked about the importance of interpersonal relations. Marta13 was satisfied because she interacted more with her classmates. She recognized that she became encapsulated in the relationship with her ex- boyfriend. Marta13 mentioned that she realized that being dependent of one person was not healthy.

Marta14

Marta14 was a patient in public health center. She was 13 years old. Marta14's school derived her for treatment. She was unmotivated, inattentive and defiant with her teachers. The results of an intelligence evaluation place her in the slow-normal category.

She was invited to participate in the first psychotherapy sessions.

Post-game session

The psychotherapist's notes about this session were:

"Therapist: Did you like the game? What did you like and what you did not?

Marta14: More or less. I liked that she wanted to save the park. I did not like it because there were things I did not understand, like finding those objects.

Therapist: Is there a message in the game?

Marta14: To do the right thing, because I believe that protecting nature is the right thing to do.

Therapist: Dou you think that this game could be useful to other girls that have felt like you have?

Marta14: Yes it could help to make young people more conscious, more respectful with nature.

Therapist: Yes, to make it more entertaining I would add a final message, something like a reflection, and encouragement for young people in general".

No further exploration between the game and Marta14's personal situation was reported.

Therapist's general remarks

Below are the opinions of the psychotherapist:

"All the girls were interested in participate in the research. The invitation to play a video game generates a different engagement with the girls, one enters the relationship from a dimension that is more common in their daily lives...it is like showing them that their world is valuable, that we want to rescue that and work with it. The parents also received the invitation very well, almost as a privilege…one mother said to me: '…well at least all the hours that she spends in front of the computer can be of some use for her'.

With several girls we were able to connect the content of the game with their lives. The three areas of the game are a reminder for the work with the patients. Since here at the Center we have a big demand and little time available for each patient, it is very important to focus the intervention, and the three areas of the game are pertinent to many of the problems that depressive patients bring into therapy. The work we do at the Center has a psycho-educational orientation, very behavioral and the game is a contribution in that line by signaling the aspects that are important to attend to. Besides, since the sessions are every two weeks or once a month, the game can be useful for the girls to keep thinking in subjects that are relevant to them; it is like taking the psychologist home.

Several girls mentioned that they liked the game and several others that they did not; although the majority recognized a value in the game.

Based on my participation in the research, I think that this particular game can be more appropriate for younger girls, pre-teen and until 14 years old. In my experience younger depressive girls have less severe problems and better prognosis. In adolescents the peak of depression is between 14 and 16 years old, that coincides with a cognitive change, the teenagers become more reflexive an introverted.

I also think that this game can be a preventive tool, for a program in schools, it can be a resource that shows certain areas that area relevant for mental health".

Luz

She was a patient in public center. Ana was 15 years old. Ana`s parents are divorced; the father is in a new relationship and Ana experienced that situation as a loss. She was mourning the dead of her grandmother. Ana was socially withdrawn, irritable and

anhedonic. Luz was diagnosed with an adjustment disorder.

She was invited to play in the third session.

Post-game psychotherapy sessions

The psychotherapist's report was:

"Luz thought that the game was moderately fun and that it could be beneficial for her.

In affective terms Luz is very stable, she does not fluctuate much between sessions and session. I do not think that the game affected her mood.

She has an ambivalent relationship with her father. The game shows the relationship of Maya with her father. About this, during the session we could deepen in the relationship with the father and from there link it to the relationships with other relatives and with her peers. There are moments when the father is present and then she is fine and then the father disappears and she feels insecure. In the game a father-daughter encounter is shown, what we reflected about this is that although there are tense moments with her father, when she meets him she should exploit the moment. She has come to see that she is very demanding because she wants him just for herself; she has understood that he can rebuild his life.

In the other hand, she is also a little compliant in her relations, given this characteristic she said that the game was easy in the sense of choosing the desirable alternatives according to her".

Luz2

Luz2 was 15 years old when she was invited to participate; she is from a middle-low social class family. Luz2 was a patient in a public health center. She was initially diagnosed with an anxiety disorder, as therapy advanced, other information appeared and she showed depressive symptoms. She was a very good student which allowed her to be accepted in a better but more demanding school. Her new classmates began to made fun of her so she

withdrew socially in her school. Her family had high expectations for her when she changed to a better school but her performance was not as good as expected.

Post-game psychotherapy sessions

According to the therapist Luz2 commented that the game should address more directly the depression symptomatology and that it would be desirable that it portrayed a social context more similar to her reality.

The therapist said that they were able to make connections with Luz2's issues. Luz2 had problems relating with their peers. She mentioned that she liked a friend but she was not communicating with him; she was not expressing her feelings. So the therapist said that they considered how to communicate with him. "That part of the interpersonal problem solving was very useful for her", said the therapist.

Luz's therapist general remarks

The psychotherapist thinks that a video game like this can be beneficial as a resource for prevention and treatment of depression. According to her opinion, video games are a way used by teenagers that spent a lot of time in the internet, especially the depressed adolescents that tend to socially withdraw themselves, and in this case, video games are a way to stay in contact with the external world. As a preventive strategy, a game like this could contribute to maintain the adolescent in contact with someone who monitors her and who gives her some feedback. The therapist commented:

"Other relevant aspect, is that one psychotherapeutic strategy of depression is to promote behavioral activation and to play implies that one has to focalize and to do a task that allow the mobilization not only in the behavioral level but in the emotional also, associated to the relational content that appears in the video game. The video game is a good way to start the reactivation; it is a beginning to be followed with other type of activities not in the virtual world, but in real world".

Ana

She was a patient in a private practice. Ana is 15 years old, from a family of high socioeconomic status. Ana asked her parents to take her to therapy in order to know herself better. In the beginning of the process she appeared very introverted and reserved in front of her parents and she expressed to be unmotivated. Ana said that she was not pleased with her life situation and with the social expectations of her. She had a good school performance and a group of friends.

Ana was invited to participate one month after starting her psychotherapy in 2012. Ana played on January 2nd of 2013. She was a patient in private practice.

Post-game psychotherapy sessions

The psychotherapist said "I was interested in working with your project because I thought that it was a good tool to help her to find ways of communication". The therapist reported that she could not talk directly about the game during the post-game session because Ana brought a new problem that it should be attended. The therapist recounted the events reported by Ana:

"In a trip to another country she realized that a friend of her suffered from anorexia. When she got back, Ana's brother confronted her saying that he knew that she induced herself to vomit; she denied it. During these days, a group of friends also confronted her about the same problem and then she recognized it. Ana informed that she was vomiting since a year ago and that she understood that it was a risky behavior; she recognized that she might suffer from bulimia. Ana seemed very scared when telling about her problem. Ana asked me not to tell her parents".

The therapist told Ana that this problem cannot be kept secret and she convinced her to tell their parents. In the following session, with the mother present, Ana expressed her anger in an unusual manner. The psychotherapist informed the problem to the mother and she recommended psychiatric treatment. The first reaction of the parents was denial but then they contacted a group of specialists in eating disorders and informed that the

psychotherapy would be assumed by professionals of that group.

When the researcher informed to the therapist that Ana was one of the few girls that decided not to participate in the movement to stop the destruction of the park, the therapist recounted a recent experience of Ana related with this subject. Ana, with an ecological sensitivity and an interest in working with children, joined a group of Scouts. The scouts told her that she had to remain with the younger members before going on with her age appropriate group. Around this time, Ana had to travel with her parents and the Scouts told her that if she interrupted her time in the younger group she could not be promoted. This was very disappointing for Ana. In opinion of the therapist the video game story touched a similar subject and, at least in the game, she could express her annoyance.

Regarding the sequence of events, the evaluation of the psychotherapist was:

"With therapy Ana began to express her problems at home. She had a conversation with her closest friends, immediately after, she played the game and the following day she came to the session when she revealed her problem. Ana saw her anorexic friend, she was confronted by her friends and she saw herself reflected in the video game, all these situations contributed to the externalization of her conflicts. The game talks about situations that are related to her longings, her personal motivations, especially those related with the protection of nature; although apparently she showed and oppositionist attitude, between lines one can notice the identification with her ideals, that indicate the hard work to differentiate and to validate herself in a family system that privilege status and a behavior that complies with external expectations. The video game feedback message, in my opinion, came in the right moment, reinforcing what was already happening in her close environment; in fact the message corresponded to the initial symptoms that motivated her therapeutic work. The session before the game, our conversations were about the exigencies of her mother for Ana to go to the gym to lose weight, we talked about the restrictions about food, about her lack of motivation in general, which motivated her mother to accept to give her antidepressants following the recommendation of a nutrition specialized physician. Several factors came together in a way that she could saw herself in something external. I think that the video game contributed to the activation of the emotional life of the patient. In Ana the anger was internalized and self-destructive, then it was externalized and the focus was the family conflict. The psychotherapy was brief but a changed was

achieved and the fact of playing the game influenced on the change. It has been a very interesting experience in view of the fact that we are increasingly relating ourselves with this virtual world".

The therapist general opinion of a video game like Maya as tool in psychotherapy was:

"In my experience, teenagers most frequently are sent to therapy by the schools or their parents bring them to therapy; because of that, one has to look for resources that are attractive to teenagers. As a therapist of young people one has to be close to their worlds and their language. I think that the game is a good tool because is something that is part of their worlds… technology and internet. Sometimes teenagers have difficulties talking to their parents or other authority figures; in these cases, a video game could provide opportunities for simulated interactions where adolescents could find useful information.

I think that a video game like this is a tool that could be developed more extensively."

About the use a video game like this for prevention, this therapist mentioned:

"I have seen a role playing game in a work with adolescents in social risk. The video game is similar in the sense that teenagers can rehearse life situations, enriching the personal outlook. Ideally it would be good that there were interactions with other people in a collective configuration. When working with vulnerable teenagers having other role models of behavior or different perspectives is very beneficial to them. And also a game like this can provide an opportunity to try out undeveloped personality aspects in non-threatening environment.

It is always important the observation, the monitoring of a resource like this. If you let the video game by itself there is chance that the meaning goes unnoticed. Also a feedback with negatives statements could affect to someone who is already very depressed".

Nora

This is a patient in private practice. Nora is a 14 years old teenager from a middle class family; her mother took her to psychotherapy and to psychiatric treatment. The psychotherapist informed that Nora reported episodes of bulimia, self-injury and impulsive behavior. Given her emotional problems Nora had to quit school one month before the

official end of the school year (2012). In opinion of her therapist Nora has high-average intelligence. Her diagnosed was atypical depression; she was taking antipsychotics and drugs to help her sleep. As therapy progressed, Nora reported past episodes of being sexually abused, after this her conditioned deteriorated thus her mother sought an intensive psychiatric treatment, after some time, when Nora stabilized, she returned to her psychotherapist (May of 2013). Initially the psychotherapist hypothesized that Nora had a personality disorder, in time when the more acute symptoms were attenuated, the diagnostic was changed to post-traumatic stress disorder.

Nora was invited to participate in her seventh psychotherapy session in November of 2012.

Post-game psychotherapy sessions

The psychotherapist considered that the video game, as a psychoeducational activity between sessions, could be beneficial to Nora. However given the complexity of Nora's problems, her psychotherapist estimated that it was not convenient to explore the content of the game during the sessions. According to the therapist the priority was to attend to the emergent problems that the patient brought to the sessions. Regardless of that consideration, the psychotherapist reported that in an occasion, referring to one of her decisions in the game, Nora commented that she took the option that implied a pessimistic view of herself and of her intentions and that she recognized that a more optimistic outlook and a more perseverant attitude would be more beneficial in her real life. The therapist said that she replied noting that Nora was very capable of good judgments but that she was not strong enough yet.

Post session reports and general remarks content analysis.

The comments reported in the post-game sessions and other general remarks of the therapists and patients were analyzed. An in inductive content analysis was conducted.

Comments about the use of the video game as complementary tool in therapy

Model. One therapist said that the three areas in the video game (interpersonal relations, activity and cognitions) provided a reference, a useful model to explore with their patients. For this therapist, this model is a pertinent, concrete, psycho-educational and behavioristic treatment approach that fits well the psychotherapeutic work that can be done at her center, given the patients' problems, as well as the resource and time constraints.

Therapeutic relationship. One of the therapists mentioned that proposing to the girls to play a video game as part of the therapy contributed positively to the relationship since it was way of connecting with their interests.

Links between the video game and patients' lives. Two therapists reported that, during some of the sessions, they and their patients were able to relate aspects of their lives with some of the aspects of the game.

When asked, some of the girls were not able, on their own, to establish connections between the game and their realities. They said that the game was not related to them or they focused on the manifest content of the story game: the protection of nature. Some of the girls were not aware that the situations that demanded their decisions were related with behaviors relevant to their mental health. At least in one of the cases, it was reported that the intervention of the therapist was necessary to call the attention to some relevant aspects of the game.

In several cases, it was not possible to explore the relation between the game and the patients' difficulties because either the patients interrupted their treatment, no post-game sessions occurred in the period of the research or because the therapist considered that there were other emergent priority problems brought into therapy by the patients that needed to be attended. In one of these cases, the game was viewed as a complementary psycho-educational resource.

The story game mirrors reality. According to some of the therapist and patients, the content of the game story or the feedback mirrored life situations, concerns or interests of the patients. Some common themes were: father-daughter relationship, student-mentor relationship, eating behavior, body image, social engagement, ecological sensitivity.

A therapist said that the game, by means of reflecting some aspects of the patient (A1),

contributed to the externalizations of the patient's emotions and, in that way, it contributed to emotional activation. In this context, this patient revealed that she was bulimic.

Other opinions of the potential of video games as tools in therapy and prevention of depression.

Communication. With a reserved or inhibited patient her therapist considered that the game could help her to establish a line of communication.

Virtual world. One of the therapist said that the project was interesting because it refers to the incorporation in therapy of the increasingly present virtual world.

Productive use of the web. One of the therapists said that parents were very well disposed to allow the participation of their daughters in the research; one of the mother said: "…well at least all the hours that she spends in front of the computer can be of some use for her'.

For prevention. Three of the therapists expressed that they consider that the game could be a tool for a depression prevention program. One therapist said that, as a preventive strategy, a game like this could contribute to maintain the adolescent in contact with someone who monitors her/him and provides feedback.

Suggestions for improving the game. Some of the therapist and girls gave some suggestions to improve the game:

- The target population for this actual Maya game is preadolescent girls and until 15 years old.
- Two of the girls suggested that the part of the game where the player looks for a hidden object should be easier.
- The game or the web page should include more information about depression; a girl suggested a "final message, something like a reflection, and encouragement for young people in general".
- A patient suggested that to make the video game more engaging, "it should be more interactive".

6. Conclusions.

6.1. About the design objectives.

Aspects of the cognitive behavioral model and the interpersonal model served as the fundaments to guide the video game design. Three topics were considered: recognition and modification of negative cognitive bias; interpersonal skills and interpersonal problem solving; behavioral and physical activation. These aspects were included in four ways: as decisions that the player should make as part of the unfolding story; as a score system that tracks and provides immediate feedback cues about the three areas; as a post-game feedback text; as an information text in the "Mind your mind" section of the hosting website. The narrative aspect of the game presented interpersonal situations that required psycho-social reasoning and that allowed the integration of theoretically relevant elements.

A web page was created: to host online the video game; to create a private online environment for patients and therapist that participated in the research; to deliver complementary information about depression; to log the players' activities; and to deploy instruments of evaluation. Also an automatic email was sent to the respective therapist and the research informing the game decisions of the players. It could be said that the web platform and the game were integrated in an online game system that met the requirements of access limited to participants of the research, of confidentiality, of online access and that made possible to obtain part of the information for the pilot evaluation.

The focus groups conducted with adolescent girls provided information that influenced the development of the game. The girls mentioned that the main sources of conflict were parental demands related with the household chores, the school and family responsibilities. According with the girls interviewed the social expectations about their education, the school demands and routine were other sources of stress. Regarding reading as a form of entertainment, girls said to prefer stories or novels of fiction or with fantastic elements, also they mentioned interest for narratives of suspense and mystery; similar genre preferences were reported for movies but also comedies and science fiction films were mentioned. When asked for suggestions about a story for the videogame, they said that they would prefer a narrative that would not address directly the typical adolescent situations. Some of

the girls suggested that the story should present the situations in a metaphorical way. When it was commented to them that the idea of the game was to present options that imply solving problems, some of them mentioned that it would only work if the player takes the decisions to achieve a better outcome within the game.

This information and the suggestions of the girls were interpreted in the following manner by the designer-researcher:

a) The story should not portrait, as a central element, the everyday routine nor the usual problems of teenage girls.

b) The story should make use of paradoxes and metaphors to convey or provoke psychological relevant messages.

c) Story events should occur in a fantastic world. The creation of a dystopian society could be a good way to present a fantastic world and, at the same time, address relevant situations in an indirect way. When trying to implement this idea it became evident that the creation of a fantastic world would require the design of visual elements that were too complex or expensive to produce for this project. Therefore a more realistic narrative approach was taken.

d) The daughter-parents conflicts should be removed from the story in such an extreme way that it would become notorious.

These considerations were combined with the idea of adapting the narrative structure of the hero´s journey to the interactive format of an online adventure game for the treatment of depression. It was possible to create an interactive story based on the hero's journey narrative structure that, at the same time, included elements intended to foster mental health. This elaboration integrates the pedagogical value of the widespread narrative pattern of the hero, as a metaphor for transformation, and theoretically relevant psychological elements. As mentioned in the first part of the report, although the use of the hero's journey structure is very common in commercial games is much less common in education and even less common in games for mental health. The video game constructed as part of this research provide a functional prototype and, hopefully, a good starting point for more complex and sophisticated future initiatives of this sort in the field of mental health.

The writing of the game story had particularities related with the interactivity. Since the actions of the player affect the course of the narrative, several alternatives had to be written.

Given the resources needed to create fantasy worlds, interactive stories in text could allow more freedom to create fictional worlds. Text-only interactive stories could also be used for education and mental health.

When trying to create the story, several considerations related with the literary gender and narratives devices aroused. For example, girls mentioned that they liked dystopian films and that they did not want to see their lives reflected in the game. Dystopian narratives use the device of displacement (Cziganyik, 2004). This method provides dystopias with a distorting mirror that can magnify an aspect of the present and show a possible, sometimes paradoxical, scenario with negative tones. In this way a relevant aspect of reality can be presented to a critical revision without providing an answer and presenting an opportunity for intellectual and moral considerations for the emergent faculties of adolescents. This could be a useful resource for adolescent to review the values and lessons that adults offer them. This experience suggest a line of research that could explore which narrative devices can serve best not only the enjoyment of reading but the psychological and educational objectives.

An overview of the design process clearly shows the need of a multidisciplinary approach when developing projects like this and to advance science in this intersection. For one parte the psychological aspect is fundamental and also knowledge coming from the narrative field and from game studies. Of course this must all be sustained by information technologies.

6.2. About the pilot test objectives.

As part of the research process an instrument to evaluate the game experience was constructed. Based on the pilot data of 147 respondents in the pilot test of this questionnaire, the game experience construct was composed by the following sub-dimensions: enjoyment, objectives, engagement, control, identification, functioning, progress and competence.

Based on the responses of the patients to the game experience questionnaire, it can be concluded that although not all patients reported a positive game experience most of them did. The answers suggest that most of the patients had a moderate good game experience.

Some of the patients reported an unsatisfactory game experience and some a very good game experience.

The functionality of the video game was the aspect best evaluated. This means that technical aspects of the game worked very well. This can be explained by the fact that the game design was very simple. Since the game was online this report also implies that patients had connections that were good enough to allow a good performance of the system. There were some problems related with the online streaming of the videos that were part of the game.

Other aspects with positive evaluations were: competence, objectives, enjoyment, progress and control. The objectives and progress subscales were positively evaluated. This indicates that the game was easy to understand and to navigate.

Following the theory of self-determination, the positive evaluation of the enjoyment, competence and control are indicators that the game was intrinsically motivating for most of the patients. This is a relevant finding (especially considering the limited resources of this project) since the objective of this game was not only being a form of entertainment but it had also a psycho-educational aim.

According to aforementioned theory, the good indicators of competence and control could be related to a short term feeling of psychological wellbeing. In the other hand, the post-game data was negatively skewed in terms of the reported affect. This data would suggest that the video-game had a negative impact on post-game affect or that the game was not capable to modify the *a priori* state; however, the research design of this study cannot sustain any of those stances. Of course it is also important to consider that these patients constituted a depressive clinical sample and that the average play time was only 11:57 minutes, a time maybe too short to have a detectable impact on affect.

The low negative post-game affect appears to be related with a better game experience. This could be explained by the fact that one of the symptoms of depression is a negative cognitive schema. This would imply that a game like this could be more useful for patients with less severe depression symptomatology and, in that sense, it could be part of a prevention arsenal.

The majority of the patients reported positive or very positive acceptability rates. This indicates that most of the patients valued the video game and that they considered that they

could obtain benefits from playing it; in terms of learning how to relate better and/or learning helpful behaviors.

Looking at the data, it appears that the acceptability rates are higher when the reported post-game negative affect is lower. Again, the low acceptability could be influenced by a depressive cognitive style. Although acceptability might be relate with low negative affect, it is interesting that there are some cases with very high negative affect and high acceptability rates. This could suggest that besides affect there are other variables that could influence the acceptability of a video game for mental health purposes.

The video game presented information in a text format so it required at least a basic reading comprehension skill. For a game like this, cognitive difficulties can interfere with the game experience or the acceptability in the context of psychotherapy.

A very clear pattern appears showing that game experience is positively related with acceptability. Since the acceptability and the game experience items were part of the same questionnaire, using the same response scale, the association could be determined by a response pattern. But it could also be the case that a better game experience influences the players' acceptance of the video game as psycho-educational resource.

The analysis between affects, game experience and acceptability are made in the context of a pilot study and a very small sample therefore there are no pretentions of drawing any definite conclusion; instead, the idea is to show possible lines of future inquiry.

According to the opinions expressed by the therapists a video game like Maya could be a useful complementary tool in psychotherapy of adolescent girls. All therapists expressed positive evaluations and they gave different reasons about why the game could be useful.

The model of the video game, based on cognitive behavioral and interpersonal traditions, provides a psychotherapeutic frame that fits well with the psycho-educational and behavioristic oriented work that is done in a high demanded public mental health service. Also, in such environment, it is frequent that sessions are every two weeks or even once a month, so an online video game could be a resource to keep the patient in an virtual extension of the therapy; as one therapist said "it is like taking the therapist home" or as another putted it "it is like and extension of the therapist".

The invitation to play a video game as part of the therapy was well received by the patients and it provided a positive element to the therapeutic relationship, insofar as, in this

act, the therapist recognizes and validates an aspect that is common in adolescents' lives.

The video game also provides an indirect, mediated line of communication that can be useful, especially, in cases or in phases of the therapy when patients are not verbally expressive. The opinions here about the contribution to the therapeutic relationship and of mediated communication support previous reported experiences (Ceranoglu, 2010).

But it is important also to note that since the game can be perceived by the patient as an extension of the therapist, the state of the therapeutic relationship or the transferential condition can be factors that influence the game experience and the acceptability. For example, an oppositional attitude can negatively predispose patients when playing. This means that although the act of inviting to play could help to build the therapeutic relationship the benefit that players obtain from playing depends, in part, on the state of the therapeutic relationship.

There is evidence in the reports of some cases that the video game was useful to stimulate reflections about the patients' lives and these considerations were relevant for their problems.

Even when the game presented some aspects of adolescent life and problems in an indirect way, it was isomorphic enough to mirror some key aspects of reality. This was sufficient for some girls to make the connection with their lives. Other girls focused on the manifest content of the story, unaware of the procedural learning aspect of the interactive narrative.

The importance of the post-game assisted reflection, or metaplay, should be noticed. Sometimes the connection was not a self-realization of the patients but it needed the therapist to call the attention on the link and on the pertinence for the patients' problems. In this same aspect, it is also important to note the characteristics and function of the score system and the pre-defined post-game feedback, especially in cases of depressive players. For one part these game elements must provide information in such a way that effectively stimulate self-reflection but with the precaution of not sending messages that could easily be negatively interpreted by depressive players.

Other aspect positively evaluated by some therapists was the fact that this project recognizes the virtual reality and tries to deal with it in the context of psychotherapy. The internet, the different ways of connecting and communicating are realities that enter the

space of psychotherapy especially, but not exclusively, in the cases of adolescents.

There were opinions that a video game like Maya could be a tool in online prevention programs for depression. This type of video game, in the context of a wider preventive program, could help as a first step in the emotional and behavioral activation of depressive patients and it could provide a way to stay in contact with the external world, with a therapist for example, especially in cases of socially withdrawn depressive people. From this perspective, a following research project could explore the acceptability of the game, the game experience and the relationship with depressivity in a non-clinical sample.

In other aspect derived from this research, it is interesting to highlight the fact that play activity can be recorded (the game path analysis in this study); this performance data could be associated with other variables of interest (e.g. different levels of depressivity and different disorders) or as form of assessment. This could be another subject for future explorations.

The Maya video game was specifically constructed for female teenagers; a similar game based on the same principles and using the lessons from this reported experience could be constructed for male teenagers, providing also the opportunity for a similar research.

In this study the information about the pertinence of the game in psychotherapy was based on therapists' reports, for this reason, future research could use a different methodology that allows to obtain more detailed information on how this device or a similar one affects the process of psychotherapy.

In conclusion, it was possible to design an adventure video game, sustained in psychological theory that provided a positive game experience for some depressive patients and that it was useful in the context of their psychotherapies. This video game was an innovation in the field of mental health and it shows possible courses of development and inquiry. Probably one of the most important contributions of this work is that the video game prototype and the experiences presented provide evidence that future developments of video games for mental health are worthwhile. This was a very simple game, built during the early developments of information technology and that it recognizes a future in which interactive devices and artificial intelligence will offer vast possibilities for education and mental health.

7. Literaturverzeichnis (References)

Aburto, B., Rubilar, C., Sepúlveda, M., & Silva, M. (2005). Diseño y aplicación piloto de un programa de prevención de depresión y ansiedad en adolescentes. . Seminario para optar al grado de Licenciado en Psicología. Universidad de Concepción.

Adimark; Fundación Chile; VTR. (2008). Índice de Generación Digital. 2004-2008. Estudio, Santiago, Chile.

Alford, B. & Beck, A. (1997). The integrative power of cognitive therapy. New York: Guilford Press.

Alonqueo, P., & Rehbein, L. (2008). Usuarios Habituales de Videojuegos: Una Aproximación Inicial. Última Década (29), 11-27.

Amanita Design. (2007). The quest for the Rest. http://amanita-design.net/thequestfortherest/

Baranowski, T., Buday, R., Thompson, D., & Baranowski, J. (2008). Playing for Real: Video Games and Stories for Health-Related Behavior Change. Am J Prev Med, 34(1), 74-82.

Batista, B., & Cornachione, E. (2005). Learning Styles Influences On Satisfaction and Perceived Learning: Analysis of and Online Business Game. Developments in Business Simulation and Experiential Learning, 32, 22-30.

Beck, A.T., Rush, A.J., Shaw, B.F., Emery, G. (1979). *Cognitive Therapy of Depression*. New York: Wiley

Bierman, K., & Welsh, J. A. (2000). Assessing social dysfunction: The contributions of laboratory and performance-based measures. Journal of Clinical Child Psychology, 29, 526–539.

Bleichmar, H. (2003). Algunos subtipos de depresión, sus interrelaciones y consecuencias para el tratamiento psicoanalítico. Aperturas Psicoanalíticas. Revista Internacional de Psicoanálisis(14).

Bloom, B. S. (1956). Taxonomy of educational objectives. Handbook 1: Cognitive domain. New York: David McKay.

Bloom, B. S., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners. Handbook I:Cognitive domain. New York: Longman.

Bradway, K. &. (1997). Sandplay. Silent Workshop of the Psyche. New York: Brunner-Routledge.

Brewin, Chris R. (1996). Theoretical Foundations of Cognitive-Behavior Therapy for Anxiety and Depression. Annual Review of Psychology, 47, pp. 33-57.

Brezinka, V. (2008). Treasure Hunt – a serious game to support psychotherapeutic treatment of children. Studies in Health Tecnology and Informatics (136), 71-76.

Brockmyer, Jeanne H.; Fox, Christine M.; Curtiss, Kathleen A.; McBroo, Evan; Burkhart, Kimberly M.; Pidruzny, Jacquelyn N. The development of the Game Engagement

Questionnaire: A measure of engagement in video game-playing, Journal of Experimental Social Psychology, Volume 45, Issue 4, July 2009, Pages 624-634, ISSN 0022-1031, http://dx.doi.org/10.1016/j.jesp.2009.02.016.

Campbell, J. (1988/1991). The Power of Myth. (B. Moyer, Ed.) U.S.A.: Anchor Books.

Campbell, Joseph (1949/1973). The Hero with a Thousand Faces, Princeton/Bollingen.

Cárdenas, M., Carrasco, Á., Cornejo, R., & Galdámez, M. (1995). Evaluación de la técnica del juego aplicada a una educación en derechos humanos que enfatice la promoción de actitudes y comportamientos prosociales. Tesis para obtener la Licenciatura en Psicología, Universidad Centroamericana "José Simeón Cañas", Psicología, San Salvador.

Carrasco, Álvaro. (2007). Exploración teórica para la conceptualización del arquetipo del juego. Tesis para optar al grado de Magister en Psicología Clínica Junguiana, Universidad Adolfo Ibáñez, Santiago, Chile.

Carter, Stacy L. (2007). Review of Recent Treatment Acceptability Research. Education and Training in Developmental Disabilities, 2007, 42(3), 301–316

Ceranoglu, T. A. (2010). Video Games in Psychotherapy. Review of General Psychology , 14 (2), 141-146.

Champagnat, R., Delmas, G., & Augeraud, M. (2010). A storytelling model for educational games: Hero's interactive journey. International Journal of Technology Enhaced Learning , 2 (1-2), 4-20.

Chaplin, T., Gillham, J., Reivich, K., Elkon, A., Samuels, B., Freres, D., y otros. (2006). Depression prevention for early adolescent girls. A pilot study of all girls versus co-ed groups. Journal of Early Adolescence (26), 110-126.

Compas, B., Connor-Smith, J., Saltzman, H., Harding, A., & Wadsworth, M. (2001). Coping with stress during childhood and adolscence: problems, progress, and potential in theory and research. Psychological Bulletin, 127(1), 87-127.

Conley, C., & Rudolph, K. (2009). The emerging sex difference in adolescent depression: Interacting contributions of puberty and peer stress. Development and Psychopathology, 21(2), 593-620.

Córdoba, F., Aburto, B., Sepúlveda, M., & Silva, M. (2006). Potencialidades y Obstáculos de la Prevención de la Depresión an Niños y Adolescentes. Psykhe , 15 (1), 57-65.

Cova, F., Rincón, P., Valdivia, M., & Melipillán, R. (2008). Prevalencia de Trastonos Depresivos e Impedimento Asociado en Adolescentes de Sexo Femenino. Revista Chilena de Pediatría , 79, 607-613.

Coyle, D., Doherthy, G., & Sharry, J. (2009). An evaluation of a solution-focused computer game in adolescent interventions. Clinical Child Psychology and Psychiatry (14), 345-360.

Coyle, D.; Matthews, M.; Sharry, J.; Nisbet, A.; Doherty, G. (2005). Personal Investigator: A Therapeutic 3D Game for Adolescent Psychotherapy. Journal of Interactive Technology & Smart Education, 2(2), 73-88.

Crawford, C. (2005). On Interactive Storytelling. Berkeley: New Riders.

Csikszentmihalyi, M. (1991). Flow. The Psychology of Optimal Experience. . New York: Harper Perennial.

Czigányik Zsolt. (2004). Satire and Dystopia: Two Genres?. In *HUSSE Papers 2003 (Literature and Culture)*. University of Debrecen, (305-309). Retrieved on September of 2013 from: http://seas3.elte.hu/coursematerial/CziganyikZsolt/dystopia0001.pdf

D'Zurilla TJ, Goldfried MR (1971) Problem solving and behavior modification. Journal ofAbnormal Psychology, 78: 107–126.

D'Zurilla TJ, Nezu AM (2001) Problem-solving therapies. In Dobson KS (Ed) Handbook ofCognitive-Behavioral Therapies, 2nd edn. New York: Guilford Press.

Davidson, K., Rieckmann, N., & Lespérance, F. (2004). Psychological Theories of Depression: Potential Application for the Prevention of Acute Coronary Syndrome Recurrence. Psychosomatic Medicine(66), 165-173.

de Graaf, L. Esther; Huibers, Marcus J.H.; Riper, Heleen; Gerhards, Sylvia A.H.; Arntz, Arnoud. (2009). Use and acceptability of unsupported online computerized cognitive behavioral therapy for depression and associations with clinical outcome. Journal of Affective Disorders 116 (2009) 227–231.

De Grove, F., Van Looy, J., & Courtois, C. (2010). Towards a Serious Game Experience Model: Validation, Extension and Adaptation of the GEQ for Use in an Educational Context. Playability and player experience – Proceedings of the Fun and Games 2010. Leuven, Belgium.

Delmas, D., Champagnat, R., & Augeraud, M. (2007). Bringing Interactivity into Campbell's Hero's Journey. En M. Cavazz, & S. Donikian, Lecture Notes in Computer Science (págs. 187-195). Berlin / Heidelberg: Springer.

Desurvire, Heather; Wiberg, Charlotte. (2009) Game Usability Heuristics (PLAY) For Evaluating and Designing Better Games: The Next Iteration. HCI Conference, 2009, San Diego, California USA. http://www.behavioristics.com/downloads/DesurvireFinalHCI09PLAY.pdf

Dickey, M. (2006). Game Design Narrative for Learning: Appropriating Adventure Game Design Narrative Devices and Techniques for the Design of Interactive Learning Enviroments. Educational Technology Research and Development (54), 245-263.

Dondlinger, M. J. (2007). Educational Video Game Design: A Review of the Literature. Journal of Applied Educational Technology , 4 (1).

Enfield, G., & Grosser, M. (2008). Picking Up Coins: The Use of Video Games in the Treatment of Adolescent Social Problem. En L. C. Rubin (Ed.), Popular Culture in Counseling, Psychotherapy, and Play-Based Interventions (págs. 181-196). New York: Springer Publishing Company.

Everitt B. (2006). Medical Statistics from A to Z: A Guide for Clinicians and Medical Students. Cambridge University Press: Cambridge, 2 2006.

Fabricatore, C., Nussbaum, M., & Rosas, R. (2002). Playability in action videogames: A qualitative design model. Human–Computer Interaction, 17(4), 311–368.

Fernández Vara, C. (2009). The Tribulations of Adventure Gmes: Integrating Story into Simulation Trough Performance. In Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in Digital Media, Georgia Institute of Technology, School of Literature, Communication and Culture.

Fernández-Vara, C., & Osterweil, S. (2010). The Key to Adventure Games Design: Insight and Sense-making. Meaningful Play 2010 Conference Proceedings.

Freud, S. (1926). Inhibición, síntoma y angustia. Obras

Garber, J. (2006). Depression in Children and Adolescents. Linking Risk Research and Prevention. American Journal of Preventive Medicina(31), 104-116.

Gladstone, T., & Beardslee, W. (2009). The Prevention of Depression in Children and Adolescents: A Review. La Revue canadienne de psychiatrie , 54 (4).

Goh, D. H., Ang, R. P., & Chern Tan, H. (2008). Strategies for designing effective psychotherapeutic gaming interventions for children and adolescents. Computer in Human Behaviour , 2217–2235.

González, José; Montero Simarro, Francisco; Padilla Zea , Natalia; Gutiérrez, Vela, Francisco Luis. (2009) Playability as Extension of Quality in Use in Video Games. Proceedings of the Second International Workshop on the Interplay between Usability Evaluation and Software Development, Uppsala, Sweden, August 24, 2009. http://ceur-ws.org/Vol-490/paper_06.pdf

Gould, M. S., Munfakh, J., Lubell, K., Klienman, M., & Parker, S. (2005). Seeking Help form Internet During Adolescence. Journal of the American Academy of Child and Adolscent Psychiatry , 41(10), 1182-1189.

Griffiths, M. (2003). The Therapeutic Use of Videogames in Childhood and Adolescence. Clinical Child Psychology and Psychiatry , 8(4), 547-554.

Hollon, S., Thase, M., & Markowitz, J. (2002). Treatment and Prevention of Depression. Psychological Science in the Public Interest, 39-77.

Horowitz, J., & Garber, J. (2006). The Prevention of Depressive Symptoms in Children and Adolescents: A Meta-Analytic Review. Journal of Consulting and Clinical Psychology, 74(3), 401-415.

Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res 2005;15:1277–88.

Hsu S, L., & M., W. (2005). Designing action games for appealing to buyers. Cyberpsychol Behavior, 8, 585-591.

Huizinga, J. (1938/1968). Homo Ludens. Buenos Aires: Emecé Editores.

IBM. Second order factor analysis: http://www-01.ibm.com/support/docview.wss?uid=swg21479182

Ip, B. (2010a). Narrative structures in computer and video games: Part 1: Context, Definitions, and Initial Findings. Games and Cultures, 6, 103-134.

Ip, B. (2010b). Narrative structures in computer and video games: Part 2: Emotions, Structures, and Archetypes. Games and Cultures, 6, 203-244.

Järvinen, A. (2007). Games without Frontiers. Theories and Methods for Game Studies and Design. Doctoral dissertation study for Media Culture, University of Tampere, Finland.

Jung, Carl. (1991). The archetypes and the collective unconscious (The Collected works of C. G. Jung) (2nd ed.). London: Routledge.

Kandel, E. (2001). Psychotherapy and the Single Synapse: The Impact of Psychiatric Thought on Neurobiological Research. The Journal of Neuropsychiatry & Clinical Neurosciences (13:2), 290-300.

Kato, P. M. (2010). Video Games in Health Care: Closing the Gap. Review od General Psychology , 14 (2), 113-121.

Kazdin, Alan. (1980). Acceptability of Alternative Treatments for Deviant Child Behavior. Journal of Applied Behavior Analysis. 19801, 13, pp. 259-273

Kercher, A., Rapee, R., & Schniering, C. (2009). Neuroticism, Life Events and Negative Thoughts in the Development of Depression in Adolescent Girls. *Journal of Abnormal Child Psychology*(37), 903-915.

Kirkpatrick, J. (1998). Evaluating Training Programs. The four levels. San Francisco, CA: Berrett-Koehler Publishers.

Knox, Jean. (2001). Memories, fantasies, archetypes: an exploration of some connections between cognitive science and analytical psychology. *Journal of Analytical Psychology*, 2001, 46, pp. 613-635.

(1997). Internal objects – a theoretical analysis of Jungian and Klenian models. *Journal of Analytical Psychology*, 1997, 42, pp 653-666.

(1999). The relevance of attachment theory to a contemporary Jungian view of the internal world: internal working models, implicit memory and internal objects. *Journal of Analytical Psychology*, 1999, 44, pp. 511-530.

Laurel, B. (2003). Muscular Design. En B. Laurel, Design Research. Methods and Perspectives (págs. 16-19). Cambridge; London, Massachusetts; England: The MIT Press.

Lemma, A., Target, M., & Fonagy, P. (2010). The development of a brief psychodynamic protocol for depression: Dynamic Interpersonal Therapy (DIT). Psychoanalytic Psychotherapy, 24(4), 329-346.

Leon, Andrew; Davis, Lori; Kraemer, Helena. (2011). The Role and Interpretation of Pilot Studies in Clinical Research. J Psychiatr Res. 2011 May ; 45(5): 626–629. doi:10.1016/j.jpsychires.2010.10.008.

Lewinsohn, P., Hops, H., Roberts, R., Seeley, J., & Andrews, J. (1993). Adolescent Psychopathology: I. Prevalence and Incidence of Depression and Other DSM III-R Disorders in High School Students. Joournal of Abnormal Psychology , 102, 133-144.

Lindley, C., Nacke, L., & Sennerten, C. (2008). Dissecting Play - Investigating the Cognitive and Emotional Motivations and Affects of Computer Gameplay. CGAMES08. Wolverhampton, UK.

Luyten, P., Blatt, S., Van Houdenhove, B., & Corveleyn, J. (2006). Depression research and tretament: Are we skating to where the puck is going to be? Clinical Psychology Review (26), 985-999.

Martínez, V., Rojas, G., & Fritsch, R. (2008). Programas de Prevernción de la Depresión en Adolescentes en el Sistema Escolar: Una revisión de la Literatura. Gaceta de Psiquiatría Universitaria , 206-213.

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 60,*48-58.

McFarlane, A., Sparrowhawk, A., & Heald, Y. (2002). Report on theeducational use of games. Cambridge: TEEM.

McGonigal, J. (2010). TED Ideas Worth Spreading. Recuperado el 10 de Julio de 2010, de Gaming can make a better world: http://www.ted.com/talks/jane_mcgonigal_gaming_can_make_a_better_world.html

McGuire, J. (2001). What is problem solving? A review of theory, research and applications. Criminal Behaviour and Mental Health, 11, 210-235.

McKeown, A. (2009). Computerised cognitive behavioural therapy for prevention and early intervention in anxiety and depession. The Newsletter of the UK Health Informatic Society. UK Health Informatics Today (59), págs. 5-6.

McKeown, A., & Potts, H. (2009). Realist literature review of computerised cognitive behavioural therapy (cCBT) for prevention and early intervention in anxiety and depression. First International E-Mental Health Summit. Amsterdam.

Ministerio de Salud de Chile. (2003). *I Encuesta Nacional de Salud.* Satiago, Chile.

Monighan, P.; Scales, B.; Van Hoorn, J.; Almy, Millie. (1987). Looking at Children Play. A Bridge between Theory and Practice. Teachers College Press, Columbia University, New York, Estados Unidos.

Moral de la Rubia, José (2011). La escala de afecto positivo y negativo (PANAS) en parejas casadas mexicanas . CIENCIA ergo sum, Vol. 18-2, julio-octubre 2011. Universidad Autónoma del Estado de México, Toluca, México. Pp. 117-125. http://ergosum.uaemex.mx/pdfs/pdf_vol_18_2/4_moral_de_la_rubia.pdf

Moras, K. (2006). Twenty-five years of psychological treatment research on unipolar depression in adult outpatients: Introduction to the special section. Psychotherapy Research , 16 (5), 519-525.

Moriondo, M., Palma, P., Medrano, L. A. & Murillo, P. (2012). Adaptación de la Escala de Afectividad Positiva y Negativa (PANAS) a la población de adultos de la ciudad de Córdoba: análisis psicométricos preliminares. Universitas Psychologica, 11 (1), 187-196.

http://revistas.javeriana.edu.co/sitio/psychologica/sccs/articulo.php?id=699&PHPSESSID=c293fa9e85cd5e9a6e66b3e3fb6768d9

National Institute for Clinical Excellence, Appraisal Committee. (2002). Final Appraisal Determination: Computarised cognitive behavioural therapy for enxiety and depression.

National Institute for Health and Clinical Excellence. (2008). Computerised cognitive behaviour therapy for depression and anxiety. Review of Technology Appraisal 51.

Neill Broderick. (2007). JavaScript countdown timer. Obtenido 23/02/13 http://www.bespoke-software-solutions.co.uk/downloads/downjs.php

Newman DL, M. T. (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. Journal of Consulting and Clinical Psychology , 552-562.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. Behavior Research Methods, Instrumentation, and Computers, 32, 396-402. https://people.ok.ubc.ca/brioconn/nfactors/nfactors.html

Overholser, J. (2003). Cognitive-Behavioral Treatment of Depression: A Three-Stage Model to Guide Treatment Planning. Cognitive and Behavioral Practice(10), 231-239.

Parnell, M. (2009). Playing with Scales: Creating a Measurement Scale to Assess the Experience of Video Games. Project report submitted in part fulfilment of the requirements for the degree of Master of Science (Human-Computer Interaction with Ergonomics), University College London, Faculty of Life Sciences

Perry, D. (2006). TED Ideas Worth Spreading. Recuperado el 10 de Julio de 2010, de Dave Perry on Videogames: http://www.ted.com/talks/david_perry_on_videogames.html

Poels, Karolien; De Kort, Yvonne; Ijsselsteijn , Wijnand. (2007). "It is always a lot of fun!": exploring dimensions of digital game experience using focus group methodology. Proceedings of the 2007 conference on Future Play Future Play 07 (2007). Volume: 77, Publisher: ACM, Pages: 83-89

Prensky, M. (2005). Computer Games and Learning: Digital Game-Based Learning. En J. Raessens, & J. Goldstein, Handbook of Computer Game Studies (págs. 97-122). Cambridge, Massachusetts: The MIT Press.

Proudfoot, J. G. (2004). Computer-based treatment for anxiety and depression: is it feasible? Is it effective? Neuroscience and Behavioral Reviews (28), 353-363.

Rebetez, C., & Betrancourt, M. (2007). Video Game Research in Cognitive and Educational Sciences. Cognition, Brain and Behavior , XI (1), 131-142.

Rieber, L., & Matzko, M. (2001). Serious design of serious play in physics. Educational technology , 41 (1), 14-24.

Rieber, L., Tzeng, S., & Tribble, K. (2004). Discovery Learning, representation, and explanation within a computer-based simulation: finding the right mix. Learning

and Instruction (14), 307-323.
Ritter, C., Göbel, S., & Steinmetz, R. (2010). A Critical Reflection on the Use of Storytelling and Game Technology to Motivate Children to Deal with Socio-Critical Issues. Workshop Interactive Storytelling for Children. Barcelona.
Robinson, J. A., & Hawpe, L. (1986). Narrative thinking as a heuristic process. In T. R. Sarbin (Ed.), Narrative psychology: The storied nature of human conduct. (pp. 3–21). New York: Praeger.
Roth, A., & Fonagy, P. (2005). Depression. En A. Roth, & P. Fonagy, What works for whom? (págs. 66-149). New York: The Guilford Press.
Rovai, A. W. (2008). Development of an instrument to measure perceived cognitive, affective, and psychomotor learning in traditional and virtual classroom higher education settings. Internet and Higher. (12), Internet and Higher Education.
Ryan, R., Rigby, C., & Przybylski, A. (2006). The motivational pull of video games: A self determination theory approach. Motivation & Emotion, 30, 344-360.
Sandín, Bonifacio. (2003). Escalas PANAS de Afecto Positivo y Negativo para Niños y Adolescentes (PANASN). Revista de Psicopatología y Psicología Clínica. 2003, Volumen 8, Número 2, pp. 173-182. http://www.aepcp.net/rppc.php?id=366
Scheibmair, Rebecca. (2010). The Acceptability and Effectiveness of Computarised Cognitive-Behavioral Self-Help for Depression in Primary Care. A thesis presented in partial fulfillment of the requirements for the degree of Doctor of Clinical Psychology at Massey University.
Schell, J. (2008). The Art of Game Design. A book of lenses. Burlington, MA, USA: Morgan Kaufmann.
Seeley, J., Stice, E., & Rohde, P. (2009). Screening for Depression Prevention: Identifying Adolescent Girls at High Risk for Future Depression. Journal of Abnormal Psychology , 161-170.
Shedler, J. (2010). The Efficacy of Psychodynamic Psychotherapy. American Psychologist, 65(2), 98-109.
Skigen, D. (2008). Taking the Sand Tray High Tech: Using The Sims as a Therapeutic Tool in the Treatment of Adolescents. En L. C. Rubin (Ed.), Popular Culture in Counselilng, Psychotherapy, and Play-Based Interventions (págs. 165-179). New York: Springer Publishing Company.
Spence, S. (2003). Social Skills Trainin with Children and Young People: Theory, Evidence and Practice. Child and Adolescent Mental Health, 8, 2, 84-96.
Squire, K. (2008). Video-Game Literacy. A Literacy of Expertise. En J. Coiro, M. Knobel, C. Lankshear, & D. J. Leu, Handbook of research on new media literacies. Routledge.
Sweetser, P., Wyeth, P. (2005). GameFlow: a model for evaluating playerenjoyment in games. Computers in Entertainment, 3(3), 1-24.
Taylor, D. (2008). Psychoanalytic and psychodynamic therapies for depression: the

evidence base. Advances in Psychiatric Treatment, 14, 401-413.
Thabane, L.; Ma, Jinhui; Chu, Rong; Cheng, Ji; Ismaila, Afisi; Ríos, Lorena; Robson, Reid; Thabane, Marroon; Giangregorio, Lora and Goldsmith, Charles. (2010). A tutorial on pilot studies: the what, why and how. BMC Medical Research Methodology 2010, 10:1
Thompson, D., Baranowski, T., Buday, R., Baranowski, J., Thompson, V., Jago, R., Griffith, M. (2010). Serious Video Games for Health: How Beavioral Science Guides the Development of a Serious Game. Simulation & Gaming , 41(4), 587-606.
USAB, H. A., & Gesellschaft, Ö. C. (2007). HCI and Usability for Medicine and Health Care: Third Symposium of the Workgroup Human-Computer Interaction and Usability Engineering of the Austrian Computer Society. New York: Springer.
Väätäjä, H., Roto, V. (2009). Questionnaires in User Experience Evaluation. In workshop on User Experience Evaluation Methods, in conjunction with Interact'09 conference, August 24-28, 2009, Uppsala, Sweden. http://research.nokia.com/files/public/VaatajaRoto-Questionnaires.pdf
Vitiello, B. (2009). Treatment of adolescent depression: What we have come to know. Depression and Anxiety , 393-395.
Vogler, C. (2007). The writer's journey: Mythic structures for storytellers and screenwriters (Third edition ed.). London: Boxtree.
Watson, David and Clark Lee. (1994). The PANAS-X: Manual for the Positive and Negative Affect Schedule - Expanded Form. http://ir.uiowa.edu/psychology_pubs/11 22/02/2013
Wilkinson, N., Ang, R. P., & Goh, D. H. (2008). Online Video Game Therapy For Mental Health Concerns: A Review. International Journal of Social Psychiatry , 54(4), 370-382.
Wolf, M. J. (2002). The medium of the video game. Austin: University of Texas Press.
Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. Journal of Applied Behavior Analysis, 1978, 11, 203-214.
World Health Organization. (2002). Prevention and Promotion in Mental Health.
World Health Organization. (2004). Prevention of Mental Disorders. Effective interventions and policy options. Department of Mental Health and Substance Abuse & Prevention Research Centre of the Universities of Nijmegen and Maastricht. World Health Organization.
Young, J. (1990). Cognitive Therapy for Personality Disorders: A Schema-Focused Approach. Sarasota, Fl.: Professional Resource Exchange.
Zimmerman, E. (2003). Play as Research. The iterative design process. En B. Laurel, Design Research. Methods and Perspectives (págs. 176-184). Cambridge; London, Massachusetts;

Zvelc, Gregor. (2009). Between Self and Others: Relational Schemas as an Integrating Construct in Psychotherapy. Transactional Analysis Journal; Jan 2009; 39, 1; pp. 22-38.

8. Annexes

Annex # 1. Maya story script

<table>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">* Inicio *

Maya era una adolescente muy parecida al resto de sus compañeras de colegio. En el colegio no le iba mal ni bien, le gustaría pololear, pensaba en qué iba ser cuando terminara el colegio…ese tipo de cosas. Algo en que su vida era un poco distinta era que no tenía a su madre, quien murió cuando Maya era muy pequeña. Además su padre era un abogado muy exitoso que como trabajaba mucho para darle todas las cosas que Maya quería, no tenía mucho tiempo para compartir con ella. Últimamente Maya se sentía un poco bajoneada, le costaba levantarse y motivarse por cualquier cosa hasta que……

Lugar: Una pieza.

Se ve a Maya durmiendo. Despierta sin levantarse y piensa que no quiere levantarse...

(Opciones)
a) Me levanto {punto por actividad} (Activación conductual)
b) No me levanto</td></tr>
<tr><td>a) * En la pieza *

Para poder salir debe vestirse y lavarse los dientes, Puede interactuar con algunos objeto. Activación conductual.

M: Sería bueno levantarse y salir a caminar al parque.</td><td>b) * No se levanta *

Luego de un tiempo.....si no se levanta el canto de un pájaro llama su atención y la hace pensar:

M: Sería bueno levantarse y salir a caminar al parque.</td></tr>
</table>

Luego de elegir la ropa y lavarse los dientes puede salir	

* Traslado *

Maya sale de la pieza y se la ve subirse a un auto. Su chofer la lleva al parque. Se observan lugares del trayecto.

* Parque *

En el parque se ve a Maya caminando. Se presentan opciones de caminos por tomar y se da la posibilidad de interactuar con algunos objetos (árboles, flores) se encuentra con Izel

* Encuentro *

Izel está con su mascota y Maya se le acerca.

M: Que lindo.

I: Se llama .... . Yo me llamo Izel.

M: Yo soy Maya. ¿Vienes seguido?

I: Sí trato de traerla por lo menos una vez a la semana. Y tu, ¿vienes con frecuencia?

M: Sí me encanta caminar por aquí....me alegra

I: ¡A mi también! ¿Sabías que van a destruir el parque?

M: ¡¿No?! No tenía idea.

I: Una corporación lo quiere comprar para hacer casas y una industria.

M; Sería terrible.

I: ¡Sí! Pero hay un grupo de personas que estamos tratando de impedirlo.

M; ¡Qué bien!

I: ¿No quisieras ayudar en algo?

M: (Opciones)

a) Si puedo, yo ayudo.

c) No gracias. Les deseo buena suerte pero prefiero no involucrarme.

* Ayuda *	* No ayuda *
I: ¡Genial! Mientras más mejor. Si además puedes invitar a más gente a apoyar sería de gran ayuda. M: Ok. Trataré. I: Ahora ya me tengo que ir pero ¿Cómo te puedo contactar? M: Puedes escribirme a maya@correo.sv I: Ok. maya@correo.sv Registrado. Te escribo. Mientras tanto, si quieres más información puedes ver el sitio:	I: Está bien. En todo caso, si luego te interesa puedes ir al sitio www.salvemoselparque.org. Adiós M: Ok. Adiós.

www.salvemoselparque.org M: Bien. Estamos en contacto Izel. I: Adiós.	
* Aria * Aria: ¿Y tú qué hiciste ayer? M: Nada....ah...sí, salí a caminar un rato al parque... A: Tanto que te gusta ir a caminar allí. ¿Sabías que lo van a destruir? M: No tenía idea hasta hace poco.... justo ayer en el parque me encontré con una niña que me contó. También me dijo que hay un grupo que está intentando detener esto. Yo creo que voy a apoyarlo. ¿Te gustaría participar? A: Tu eres tan ingenua...cómo crees que nosotras vamos a poder hacer algo para detener esas construcciones. Le suena el teléfono a Aria, toma la llamada y se aleja. Se ve a Maya esperando pensativa y a Aria hablando por teléfono. Aparecen opciones de pensamientos.	* novio * Maya lee un mensaje en el computador: "Maya, linda. Espero tengas un lindo día. Un beso. Xavi" M: Ay este descarado. Ya no lo aguanto más. Siempre con sus comentarios desubicados a espaldas de Aria. Resolución de problemas (detallar). OPCIONES: a) No decir nada y esperar que se le pase. *Derivado de a) aparece el siguiente pensamiento:* Pero bueno, ya he intentado esto y no resulta. Además si me dice estas cosas a mi que soy amiga de Aria que no le dirá a otras. b) Escribirle o hablar a Xavi para que se ubique. Maya le escribe y recibe una respuesta igualmente desubicada lo que la lleva

(Opciones) a. Aria tiene razón yo siempre pienso tonteras, no hay nada que pueda hacer para detener esas construcciones.*(Sesgo cognitivo negativo)* b. b. Qué pesimista es Aria. Yo creo que puedo ayudar. Si todos ayudáramos tal vez se puede salvar el parque. Se registra la respuesta y se resta o suma puntos en función de pensamientos negativos o positivos. Aria: ¿En qué estábamos?...A sí, bueno Maya, no si servirá de algo pero...tal vez...quien sabe y si es importante para ti, yo apoyo y le voy a decir también a Xavi.	a considerar otra opción. M: Bueno, lo intenté y no resultó. Este no entiende. Haré una copia de los mensajes y se los llevaré a Aria. c) Hablar con Aria para contarle la situación. Pero tengo que tener cuidado para que esta situación no dañe nuestra amistad.
Se vea Maya revisando información, percatándose que es el día de la manifestación tienen prueba y que tienen que pedir permiso.	* Aria B * M: Aria quería conversar contigo por una situación poco agradable. A: ¿Tienes algún problema Maya? M: No...bueno sí. Resulta que ya son varias veces que Xavi me hace comentarios un poco desubicados que no debería hacerme siendo él tu novio. Al

	principio no dije nada para no armar problemas y esperando que como no le contestaba dejara de hacerlo. Yo sé que tú lo quieres pero creo que es bueno que lo sepas para que hables con él. A: Gracias Maya. Ya me día cuenta que ese payaso no me respeta. Ayer terminé con él. Así es que no te preocupes. Mejor hablemos de otra cosa. ¿Y tu qué hiciste ayer? M: Nada....ah...sí, salí a caminar un rato al parque... A: Tanto que te gusta ir a caminar allí. ¿Sabías que lo van a destruir? M: No tenía idea hasta hace poco.... justo ayer en el parque me encontré con una niña que me contó. También me dijo que hay un grupo que está intentando detener esto. A: Sí he visto la página web. Yo creo que voy a apoyarlo. ¿Te gustaría participar? M: Eres la segunda persona que me invita...ayudemos. A: Hay una protesta frente a los

	tribunales el... averigüemos cuando es. M: Ok yo lo veo y te cuento. Se vea Maya revisando información, percatándose que es el día que tienen prueba y que tienen que pedir permiso.
* No pueden ir * M: Entonces profesor, varios estudiantes estamos apoyando esta iniciativa y nos gustaría ir a una manifestación pacífica el próximo jueves para apoyar el juicio para detener la construcción. Será el jueves de la próxima semana a las 9 de la mañana, por lo que queríamos ver si pudiera usted cambiar la fecha de la prueba. P: No Maya. En primer lugar lo que propones es ir en contra del desarrollo y, segundo, no se puede cambiar el día la prueba para que tu y algunos de tus amigas puedan ir . M: a) Profesor ¡Usted no entiende nada! Se nota que nunca ha ido al parque y que no sabe el valor de ese lugar. *(Esta opción quita puntos)* b) Entiendo su opinión profesor pero para nosotros esto es importante por lo que nos gustaría encontrar la forma para poder ir. *(Esta opción suma puntos)*. P: No hay más que decir. * Maya pensando *	
* Inténtalo *	

M: No nos dio permiso. Fue otra tonta idea mía pensar que nos iba a dar permiso. *(quita puntos. Una tenue cubierta negra sobre la imagen)*

Aria: No es una idea tonta Maya. Es una buena idea pero no es fácil que ese "negativitrón" te diera permiso a la primera. Tenemos que seguir intentando.

M: Gracias amiga. Pensemos.

* Resolviendo el problema *

(Maya de frente pensando)

M: ¿Qué puedo hacer ahora? (*Resolución de problemas*)

a) Bueno...no podré ir. Otra idea mía que fracasa.(Quita puntos. Una leve cubierta negra sobre la imagen)

b) No importa lo que diga este tipo. Voy a ir de todas formas con o sin su permiso y le diré a los otros que hagan lo mismo. *(quita puntos. Una leve cubierta negra sobre la imagen)*

b) Tengo que pensar la forma de resolver este problema. Iré a conversar con el profe Uly. Tal vez él puede ayudarnos. *(Suma puntos)*

* Consejero *

Varias imágenes muestran a Maya hablando con el profesor explicándole la situación.

M: Entonces profe, la idea es que recopilemos las firmas y usted nos ayude presentándose a la profesora.

U: Buena iniciativa y buena idea Maya. Pero déjame conversar a mi primero

con el profesor. Si no resulta vemos que otra cosa podemos hacer. Pero para ir conversar con el profesor de Biología que se te ocurre que le podríamos ofrecer de parte de ustedes?

M: No se....que ya no lo molestaremos tanto...jaja...o tal vez que haremos nuestro mejor esfuerzo para estudiar para la prueba.

U: Me parece bien. Veré qué dice y te cuento.

......Varias imágenes donde se ve a los profes conversando.

U: Ok Maya. Les dio permiso con las condiciones de que estudien bien para la prueba y que los que vayan hagan un trabajo extra que él les indicará.

M: ¡Gracias profe!

* Manifestación *

Mostrar a través de una serie de imágenes la manifestación. Noticias de diario, carteles, manifestantes. Se ve a Maya. Se ve a Izel. Se encuentran.

I: ¡Maya!

M: ¡Izel! (se saludan)

I: Que bueno que pudiste venir.

M: Claro y traje a varios de mis compañeros. Nos costó un poco pero aquí estamos.

I: ¡Genial! Y me acaban de dar un dato que puede detener definitivamente la construcción....

M: ¿¡Papá!? ¿Qué estás haciendo aquí?

Papá: Yo trabajando Maya. ¿Y tú qué estás haciendo aquí? Deberías estar en el colegio.

M: Pedimos permiso en el colegio para venir a protestar por la destrucción del parque.

P: Aahh. Yo soy el abogado que está ayudando para detener la destrucción del parque.

M: No tenía idea que tú estabas trabajando en esto papá.

P: Sí bueno, tal vez deberíamos conversar un poco más. En todo caso me alegra que estés apoyando. Ahora ya debo irme, Cuídate, regresa a casa pronto y conversamos más tarde.

M: Está bien papá.

I: Así es que tu papá es el abogado de nuestra causa. ¡Que bien!

M: Sí, yo no sabía. Pero me alegra.

I: ¡Sí! Como te estaba diciendo tenemos información que la compañía quiere sobornar al juez para que autorice la construcción. Si podemos conseguir evidencia podríamos entregársela a tu papá para que los hunda. ¿Te atreves a acompañarme? ¿Tienes una cámara.

M: Sí. Vamos.

* soborno *

Maya y Izel ven desde lejos a los hombres en un café.

I: Tómales fotos juntos.

M: Vale. El juego muestra la escena amplia, con una cámara para tomar fotos. Luego de tomar varias fotos.... I: ¿Las tomaste? M: Sí. ¡Nos vieron! I: Rápido, vámonos.
Hída
* evidencia * Se ve a a Maya entregando las fotos al padre e imágenes del parque. ---fin-

Annex # 2. Suggestion for debriefing session.

Algunas consideraciones y sugerencias para la sesión de análisis post-juego

Álvaro Carrasco G.

Le invitamos a que lo visite el sitio web, lo explore y juegue el video-juego; jugarlo toma unos 10 minutos. Es conveniente que usted conozca el juego para facilitar el análisis conjunto con su/s paciente/s. No es necesario que usted responda el cuestionario pero, si le interesa, por favor hágalo.

A continuación se presenta alguna información, ideas y preguntas que se espera puedan servir de referencia para la/el psicoterapeuta en la deconstrucción o análisis del video-juego en la sesión post-juego con su paciente.

Importancia de la sesión post-juego. El juego fue intencionalmente creado de forma tal que los elementos psico-educativos o los estímulos para la psicoterapia no resultaran obvios para el jugador al momento de jugar. De allí que, en muchos casos, se estima que es necesario llamar la atención a estos aspectos al jugador o, dicho de otra forma, promover la meta-cognición. Al final del juego, tomando en cuenta las decisiones hechas por el jugador, se entrega una retroalimentación respecto al nivel de actividad del personaje, los pensamientos positivos, y la resolución de problemas interpersonales. Además se propone que, en una sesión de psicoterapia inmediatamente posterior a la que el paciente haya jugado, se deconstruya o analice el juego en relación con la situación real del paciente.

Fundamentos. El juego se fundamenta en conceptos derivados de diversos estudios sobre el juego y su rol en la cultura, la ontogenia y la psicoterapia. Relacionado con lo lúdico, se tuvieron en cuenta teorías de la motivación. Por otra parte también se tuvo presente la investigación sobre los factores que influyen en la depresión, así como de estrategias preventivas y psicoterapéuticas de este trastorno. En particular se trataron de incorporar estrategias derivadas de la teoría cognitivo conductual e interpersonal para el tratamiento de la depresión.

Estrategias psicoterapéuticas. En el juego se presentan situaciones que están vinculadas con conductas que son consideradas saludables. Estas conductas se registran en el sistema de puntuación del juego y se consideran en la retroalimentación final. También en el sitio web hay información sobre estos aspectos bajo la opción “Información > Cuida

tu mente".

a) Activación conductual. Se ofrecen estímulos para estimular el monitoreo de la actividad, promoviendo la actividad cotidiana normal para una joven saludable.
b) Sesgos cognitivos. Se incorporan situaciones en las que se enfrenta al jugador a opciones de pensamientos optimistas y pesimistas. La idea es invitar a la paciente a revisar sus cogniciones, identificando sesgos negativo disfuncionales.
c) Resolución de problemas inter-personales. Se introducen situaciones en las cuales el personaje se enfrenta a algunas dificultades de índole inter-personal y debe tomar decisiones para resolver estos problemas. Se intenta promover una reflexión en torno a los patrones relacionales, sus causas, consecuencias, modos alternativos de relacionamiento y de resolución de problemas interpersonales.

Estrategias narrativas. Además de los aspectos teóricos, en el desarrollo de la historia del juego se tuvo en cuenta información derivada de focus groups y pruebas preliminares con niñas adolescentes.

d) **Situación ajena a lo cotidianeidad.** Las niñas entrevistadas dijeron que al jugar buscan distraerse de sus problemas cotidianos. Se decidió presentar una situación que no fuera muy cercana a la vida cotidiana real de las niñas.
e) **Minimización de la presencia de los padres.** Las niñas reportaron que sus principales conflictos tenían que ver con sus padres en relación a las exigencias y disciplina en relación a la responsabilidad de las jóvenes, sus deseos de autonomía, confianza y privacidad. En la historia se optó por exagerar la ausencia de los padres a modo de convertirlo en un tema de conversación en relación a sus consecuencias, la importancia de la comunicación y la situación de transición hacia la independencia de los adolescentes.
f) **La estructura del viaje del héroe.** Subyace a la historia una estructura bien estudiada, común en mitos y narraciones a lo largo de la historia. En términos muy generales, el viaje del héroe comienza con un llamado a una aventura en un mundo ajeno, para enfrentar pruebas de las que se sale fortalecido. Esta estructura resulta exitosa narrativamente porque refleja situaciones típicas a las que nos enfrentamos la mayoría de los seres humanos y que dan cuenta de los recursos personales que hacen posible el desarrollo y la superación de las dificultades. Mencionar este aspecto del juego puede servir para estimular una disposición simbólica y llamar la atención a ejemplos de superación en la cultura popular (cine, deporte y literatura, por ejemplo).

Preguntas o temas para la sesión post-juego. A modo de sugerencia, se proponen algunas preguntas para estimular una conversación en torno al video-juego. Tal vez, si usted lo considera adecuado, puede facilitar esta sesión el presentársela a la paciente como una lista de temas que se solicita revisar como parte de la investigación en que acordó

participar:

- ¿Qué te pareció el juego? ¿Te gusto? ¿Por qué sí/no?
- ¿Crees que el juego tiene un mensaje?
- ¿Por qué crees que este juego podría servir a jóvenes que estén en psicoterapia? ¿Cómo podría ayudar?
- ¿Cambiarías algo del juego para hacerlo más entretenido? ¿Cambiarías algo para que fuera más útil para niñas que estuvieran en psicoterapia?
- Tú, ¿crees que el juego puede servirte para algo? ¿hay algo que tú puedas rescatar para ti?
- En el juego se mostraban distintos niveles de actividad. ¿Cómo estás durmiendo? ¿Duermes mucho/poco, tienes problemas para dormir? ¿Cómo está tu nivel de energía por estos días? ¿Dirías que últimamente estás más bien activa o pasiva?
- Te fijaste que en el juego se mostraba un par de situaciones en que Maya se mostraba pesimista; y tú, ¿eres optimista o pesimista? Dame ejemplos. (Explicar la influencia de las cogniciones, en la conducta y en los sentimientos)
- En el juego Maya se enfrentaba a problemas con otras personas (su profesor, su amiga, el pololo de su amiga). ¿Cómo tú resuelves tus problemas? ¿Te peleas mucho o tienes muchos amigos? ¿Dirías que este es una forma usual para ti de resolver tus problemas? Explicar la noción de patrón de relación. ¿Cuáles eran los pasos que se sugería seguir al enfrentar un problema? ¿Tienes buenas amigas? ¿Cómo es una buena amiga?

Una de las hipótesis de esta investigación es que el video-juego puede ser un estímulo a partir del cual se genera una conversación útil en psicoterapia. Sus registros y reflexiones sobre esta sesión son muy importantes por lo que me pondré en contacto con usted para poder conversar al respecto cuando usted disponga de tiempo; si antes usted tiene alguna duda, comentario o recomendación en relación a estas ideas o a cómo desarrollar la sesión post-juego, por favor, hágamela saber a: athos@mi.cl. Gracias.

Annex # 3. Focus groups guide.

GUÍA

Explicación de la investigación: lectura de consentimiento.

Descripción del procedimiento del Grupos de discusión.

¿Nombres?

¿Qué disfrutas hacer en tu tiempo libre?

¿Qué película te ha gustado?

¿Qué ves en la TV?

¿Qué libros has disfrutado leyendo?

¿Qué tipo de música prefieres?

¿Preferencias estéticas?

¿Para qué usan la computadora?

¿Alguna página web?

¿Cuáles son los principales conflictos/problemas y formas de enfrentarlos?

Cuando estás triste, ¿cómo te comportas?

¿Qué haces para recuperar el buen ánimo cuando has estado triste o bajoneada?

Si te gustan los videojuegos, ¿qué videojuego te ha gustado?

¿Tienes alguna sugerencia de temas para la historia del videojuego?

Annex # 4. Prototype test interview.

Instrucciones

Verás una historia que servirá de base para un juego de aventura o una narración interactiva que jugaran niñas adolescentes que estén en psicoterapia. Te pido que mientras vayas viendo y leyendo la historia, todo lo que pienses lo digas en voz alta. La idea es conocer tu opinión sobre la historia y la forma en que se te presenta. Todas tus ideas, pensamientos y críticas son muy valiosas para el desarrollo del videojuego y serán bienvenidas. Una vez termines de ver la historia, yo te haré algunas preguntas para complementar la información.

¿Qué te pareció la historia?

¿Hubo algo que no te gustó? ¿Por qué?

¿Hubo algo que te gustó? ¿Por qué?

¿Cambiarías algo?

¿Tienes alguna idea o sugerencia?

Annex # 5. Post-game questionnaire development process and psychometric qualities

Pilot instrument test procedure

A search on the internet was made to obtain a freely available online game. The selection criteria were: that it could be classified under the adventure videogame genre, that it showed no violence, nor content that could be considered offensive or inappropriate even for children, and that it were easy and fun to play. The game "The Quest for the Rest" (QFR) (Amanita Design, 2007) was selected.

Via e-mail, social networks and video game forums people were invited to play the game and to respond a questionnaire as part of a doctoral research. People interested followed a link to a web page that explained the expected activity. The text indicated to play the game until the end or at least for 15 minutes, when any of these two conditions were met a hyperlink to the questionnaire would appear. The QFR game was embedded in a web page; a small JavaScript program, obtained from the web, was adapted to countdown time and to make the text appear (Broderick, 2007). The questionnaire was made available online using the open source survey application, "Limesurvey".

One hundred and forty-seven forty seven (147) complete answers to the questionnaires were obtained; 50% of the respondents were females. Eighty four percent of the total respondents resided in Chile (Table # 5.1). The average age of the respondents was 25 years old (SD = 8,8 years).

Table # 5.1

Respondents' actual country of residence

Country	Frequency	%
Germany	1	0,7
Chile	124	84,4
Costa Rica	2	1,4
Spain	4	2,7
El Salvador	6	4,1
Mexico	5	3,4
Venezuela	1	0,7

Country	Frequency	%
Argentina	3	2,0
Colombia	1	0,7
Total	147	100,0

Post-game affect scale

The Positive and Negative Affect Schedule Expanded Form (Watson and Clark, 1994) was used as a base for the scale. Several Spanish versions of the PANAS and PANAS-X were reviewed and considered (Moral de la Rubia, 2011; Moriondo, Palma, Medrano and Murillo, 2012; Sandín, 2003); some modifications were made to account for the idiosyncrasies of the Spanish language as used in Chile. This version was applied during the year 2011 to a group of 56 university psychology students as a preliminary pilot evaluation. The factor analysis in this sample showed that some of the items loaded in two main factors that, conceptually, were understood as positive and negative affect. Based on this application some items were eliminated and some modifications were considered for the next version.

Other instruments that measure affect in relation with game playing were also reviewed and some items were translated, adapted and included in the scale (Parnell, 2009; Ryan, Rigby, & Przybylski, 2006; McAuley et. al, 1987; Poels, De Kort, Ijsselsteijn, 2007). A final version of the affects scale was prepared and tested together with the rest of the post-game questionnaires. Thirty two items composed the post-game affects scale; each item was one word that expressed an emotional state. The instructions asked to report the emotional state at the moment, marking one of five possible answers ("Very little"; "A little"; "Moderately"; "A lot"; "Extremely") for each word. As mentioned before, 147 responses were obtained.

Post-game affects scale data analysis

The inspection showed that several of the variables (items) were not normally distributed. The data was screened for univariate outliers, there were no problems detected. A parallel analysis was carried out to determine the number of factors to include in the

factor analysis. A SPSS "Parallel Analysis Program for Raw Data and Data Permutations" was use to obtain the estimates (O'Connor, 2000). The analysis identified 15 factors with raw data eigenvalues higher than the 95 percentile random data eigenvalues.

A Principal Axis Factor Analysis for 15 factors with oblique rotation (Oblimin) was conducted. During several iterations, the model was reduced to 7 factors and 10 items were eliminated because they did not contribute to a simple factor structure and failed to meet a minimum criteria of having a primary factor loading of .4 or above, and no cross-loading of .3 or above.

For the final factor analysis, an examination of the Kaiser-Meyer Olkin measure of sampling adequacy (KMO=0,816) and of the Bartlett's Test of Sphericity ($\chi 2 = 1674{,}599$; $p < 0{,}000$) suggested that the sample was factorable.

The 7 factors explained 62,65% of the total item variance; the first factor explained 28,4% of the variance, the second 16,4%, the third 5,1%, the fourth 3,9%, the fifth 3,3%, the sixth 2,8%, the seven 2,4%. The results of the oblique rotation of the solution are shown in Table # 5.2.

Table # 5.2

Obliquely rotated factor loadings for 22 post-game affects items

		Pattern Matrix(a)						
		Factor						
		1	2	3	4	5	6	7
1.	Bad (Mal)	0,951	-0,023	0,078	-0,065	0,023	0,013	-0,041
2.	Sad (Triste)	0,549	0,043	0,083	0,083	-0,006	0,106	0,062
3.	Ashamed (Avergonzado/a)	0,452	-0,031	0,004	0,243	-0,019	-0,02	0,175
4.	Guilty (Culpable)	0,407	-0,024	-0,048	0,187	-0,053	0,022	0,358
5.	Determined (Decidido/a)	-0,017	0,811	-0,036	0,105	-0,019	0,033	-0,164
6.	Strong (Fuerte)	0,062	0,81	0,098	0,028	-0,034	0	-0,022
7.	Active (Activo/a)	-0,051	0,566	-0,13	-0,136	0,233	0,156	0,049
8.	Happy (Contento/a)	-0,136	0,534	0,087	-0,102	0,174	-0,139	0,18
9.	Energized (Energizado/a)	-0,034	0,522	-0,184	-0,11	0,096	0,06	0,104
10.	Tired (Cansado/a)	0,024	0,051	0,927	0,008	-0,009	0,052	-0,069
11.	Exhausted (Exhausto/a)	0,031	-0,016	0,759	-0,011	0,016	-0,037	0,1
12.	Isolated (Aislado/a)	0,076	-0,013	0,043	0,878	0,086	-0,036	0,005

		Pattern Matrix(a)						
		Factor						
		1	2	3	4	5	6	7
13	Solitary (Solitario)	-0,022	0,074	-0,007	0,826	-0,066	0,114	0,059
14.	Victorious (Victorioso/a)	0,002	-0,126	-0,004	0,049	0,925	0,021	-0,085
15.	Satisfied (Satisfecho/a)	0,006	0,064	-0,084	-0,059	0,615	-0,152	0,093
16.	Enthusiastic (Entusiasmado/a)	-0,15	0,356	-0,005	-0,066	0,517	0,018	0,104
17.	Proud (Orgulloso/a)	0,027	0,194	0,071	-0,003	0,491	0,155	-0,059
18.	Restless (Inquieto/a)	-0,122	-0,059	0,073	0,231	0,026	0,716	0,079
19.	Alert (Alerta)	0,106	0,111	-0,045	-0,057	0,03	0,572	0,016
20.	Disoriented (Desorientado/a)	0,128	-0,124	0,122	0,029	-0,11	0,49	0,132
21	Scared (Asustado/a)	0,014	-0,093	0,087	0,011	-0,054	0,153	0,746
22.	Fearful (Temeroso/a)	0,196	0,056	0,051	0,167	-0,017	0,049	0,566

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 14 iterations.

Four items loaded in Factor 1. These items refer to negative affect, such as: as feeling bad, sadness, guilt and shame. This factor was labeled “Sadness”.

Five items loaded in Factor 2; these items are: determined, strong, active, content, energized. This factor was labeled “Energetic”.

Two items loaded in Factor 3; these items report a feeling of tiredness. The factor was labeled “Fatigue”.

Two items loaded in Factor 4; these items refer to feelings of isolation or loneliness. The factor was labeled “Isolation”.

Four items loaded in Factor 5; these items refer to feelings of victory, satisfaction and pride. The factor was labeled “Pride”.

Three items loaded in Factor 6; these items refer to feelings of restlessness, alertness and disorientation. The factor was labeled “Restlessness”.

Two items loaded in Factor 7; both items reported fear. The factor was labeled “Fear”.

Following the PANAS-X model, a second order factor analysis was conducted on the correlation matrix of the first order factors (Table # 5.3).

Table # 5.3

Factor Correlation Matrix first order factors

Factor	1	2	3	4	5	6	7
1	1,000	-,169	,408	,500	-,235	,340	0.415
2	-,169	1,000	-,096	-,194	,568	,148	,007
3	,408	-,096	1,000	,342	-,174	,206	,213
4	,500	-,194	,342	1,000	-,255	,383	,305
5	-,235	,568	-,174	-,255	1,000	-,011	-,019
6	,340	,148	,206	,383	-,011	1,000	,294
7	0.415	,007	,213	,305	-,019	,294	1,000

A Principal Axis factor analysis for 2 factors with oblique rotation (Oblimin) was conducted (Table # 5.4). As expected the scales "Sadness", "Fatigue", "Isolation", "Restlessness" and "Fear" loaded on the first factor, named "Negative affect", while Energetic and Pride loaded on the second factor named "Positive affect".

Table # 5.4

Obliquely rotated factor loadings for the first order post-game affects factors

Pattern Matrix		
	Factor	
	1	2
Sadness	-0,7262785	-0,1380304
Energetic	-0,0676948	0,868963
Fatigue	-0,4636654	-0,1030441
Isolation	-0,6466398	-0,1690679
Pride	0,1059059	0,6531687
Restlessness	-0,5673108	0,1943201
Fear	-0,526342	0,0800855

Internal consistency for each of the sub-scales was examined using Cronbach's alpha (see Table # 5.5).

Table # 5. 5

Cronbach's alpha for post-game affects sub-scales

Scale	Cronbach's Alpha
Sadness (4 items)	0,83
Energetic (5 items)	0,84
Fatigue (2 items)	0,84
Isolation (2 items)	0,87
Pride (4 items)	0,8
Restlessness (3 items)	0,7
Fear (2 items)	0,79

No substantial increases in alpha for any of the sub-scales could have been achieved by eliminating more items. All the scales showed good reliability.

For the "positive affect" scale Cronbach's Alpha was 0,88 and for the "negative affect" scale it was 0,89.

A negative but no significant weak correlation between the positive and negative affects scales was found (r_s = - 0.106; p=0,2)

Affects, gender and age

Composite scores were created for each of the seven first order factors and for the two second order factors, based on the mean of the items which had their primary loadings on each factor. Higher scores indicated a higher intensity in the affect.

The normality of the scores was evaluated using the Shapiro-Wilk Test in SPSS. According to this test only the "Positive affects scale" was normally distributed (p > 0,05).

For the "Positive affects scale" the mean for women was 2,58 (SD = 0,73) and for men 2,87 (SD = 0,74). The t-test showed that the scores were significantly different between male and females; *t* (145) = -2,34, p = 0,02. For the rest of scales and sub-scales scores Mann-Whitney tests were conducted to compare differences between men and women. Significant differences were only found for the "Pride" sub-scale (U = 2146.5, Z = -2,156,

p = 0,031) where the mean rank was higher for men (81,6) than for women (66,41).

The correlations (Spearman) between age and the scales and subscales scores were explored and no significant correlations were found.

Acceptability scale

According to Kazdin (1980, p. 259):

> "Acceptability refers to the judgments about the treatment procedures by nonprofessionals, lay persons, clients, and other potential consumers of treatment. Judgments of acceptability are likely to embrace evaluation of whether treatment is appropriate for the problem, whether treatment is fair, reasonable, and intrusive, and whether treatment meets with conventional notions about what treatment should be. In general, acceptability refers to the overall evaluation of the procedures."

One important reason to evaluate acceptability is that a treatment, even when efficacious, might not be accepted because of its intrusiveness and adverse secondary effects (Wolf, 1978, p. 210). Treatments more accepted by patients are more likely to be sought out, initiated and adhered to (Kazdin, 1980, p. 260).

Clinical research methodology in treatment acceptability has involved having clients rate treatment acceptability prior to, during, and/or after implementation of a treatment (Carter, 2007). Instruments to research acceptability have often relied on Likert rating scales that include items regarding specific treatment procedures (Carter, 2007).

It has been observed that self-help approaches in the treatment of mood disorders could be acceptable options, as they can be completed at the patient's own convenience (Scheibmair, 2010).

The related construct, "perceived learning" (Batista & Cornachione, 2005; Rovai, 2008), used in the field of education, was also reviewed, particularly the scale developed by De Grove, Van Looy, & Courtois (2010).

A version of the acceptability scale was prepared and tested together with the rest of the post-game questionnaires. Seven items composed the acceptability scale; each item was a phrase that expressed an opinion about the value and benefit derived from playing the

game. The instructions asked the testers to express their level of agreement for each phrase by choosing one of five possible answers ("Nothing"; "Slightly"; "Moderately"; "A lot"; "Extremely") for each sentence.

Acceptability scale data analysis

The inspection showed that several of the variables (items) were not normally distributed. The data was screened for univariate outliers, there were no problems detected. A parallel analysis was carried out to determine the number of factors to include in the factor analysis. The analysis identified 1 factor with raw data eigenvalues higher than the 95 percentile random data eigenvalues.

A Principal Axis Factor Analysis for 1 factor. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy (KMO=0,917) and of the Bartlett's Test of Sphericity ($\chi 2 = 842{,}087$; $p < 0{,}000$) suggested that the sample was factorable.

The 1 factor model explained 69,43% of the total item variance.

Table # 5. 6

Factor matrix for 7 acceptability items

Factor Matrix(a)	
	Factor 1
I think that this game could be beneficial to me (Creo que este juego puede ser beneficioso para mi).	0,902
After playing this game, I think that it could be of value to me (Después de haberlo jugado, creo que este juego puede ser de algún valor para mi).	0,855
I think this is an important game (Creo que este es un juego importante).	0,839
I think that playing this game could help me relate to other people (Creo que jugar este juego podría ayudarme a relacionarme mejor).	0,824
I would be willing to play again because it is of value to me (Yo estaría dispuesto a jugarlo nuevamente porque tiene un valor para mi).	0,82
I think playing this game is important because it can help you think about behaviors that help you and behaviors that are harmful (Creo que es importante jugarlo porque te	0,817

Factor Matrix(a)	
	Factor 1
puede ayudar a pensar sobre las conductas que te ayudan y las que te perjudican).	
I think this game is useful to learn how to relate better to other people (Creo que este juego es útil para aprender sobre como relacionarse mejor con las personas).	0,769

Extraction Method: Principal Axis Factoring.

a. 1 factor extracted. 4 iterations required.

Internal consistency was examined: Cronbach's alpha = 0,94. No substantial increases in alpha have been achieved by eliminating any items. The scale showed very good reliability.

Acceptability, gender, age and affects.

Composite scores were created for the acceptability scale. A score of 0 indicates an opinion that no value or benefit is derived from playing; higher scores indicate a stronger positive opinion about the game.

The normality of the acceptability scores was evaluated using the Shapiro-Wilk Test in SPSS. The acceptability scores were not normally distributed ($p < 0,05$).

The acceptability mean score for women was 1,07 (SD = 0,87) and for men 1,31 (SD = 1,05). A Mann-Whitney test was conducted to compare differences between men and women. No significant differences were found (U = 2406, Z = -1,146, p = 0,252) where the mean rank was higher for men (70,01) than for women (78,04).

The correlations (Spearman) between the acceptability scores, age and the positive and negative affects scores were explored. The only positive correlation found was between acceptability scores and positive affects scores ($r_s = 0,56$; $p = 0,000$).

Game experience scale

Self-determination theory offered a conceptual framework to understand intrinsic motivation and served as a guide to develop the game experience scale (Ryan, Rigby, &

Przybylski, 2006; McAuley et. al, 1989). From this model it was considered important to evaluate the experience of autonomy and competence.

Csikszentmihalyi's theory of flow (1991) has been very influential in psychological studies about gaming (Brockmyer, Fox, Curtiss, McBroom, Burkhart, & Pidruzny, 2009). Instruments trying to evaluate the experience of flow, engagement and immersion were considered while preparing this instrument (Sweetser & Wyeth, 2005; Poels, De Kort, Ijsselsteijn, 2007; Jennett, 2010)

Playability is a basic aspect in a good game experience. Playability is a concept that refers to the evaluation of games in terms of technical functioning, quality of the interactivity and the feedback system, clarity of goals and ease of leaning. Fabricatore, Nussbaum and Rosas (2002, p. 317) offer the following definition:

"Playability is the instantiation of the general concept of usability when applied to videogames, and it is determined by the possibility of understanding or controlling the gameplay. Poor playability cannot be balanced by any nonfunctional aspect of the design, because a very good gaming atmosphere by itself means nothing if the player can't understand and play the game".

While reviewing the literature about the subject, several models trying to explain and evaluate game experience were found and influenced the construction of this scale (Parnell, 2009; Desurvire and Wiberg, 2009; Väätäjä and Roto, 2009; González, Montero, Padilla, Gutiérrez y Vela, 2009).

A version of the game experience scale was prepared and tested together with the rest of the post-game questionnaires. Fifty eight items composed the game experience scale; each item was a phrase that expressed an opinion about the game experience. The instructions asked the testers to express their level of agreement for each phrase by choosing one of five possible answers ("Nothing"; "Slightly"; "Moderately"; "A lot"; "Extremely") for each sentence.

Game experience scale data analysis

The inspection showed that several of the variables (items) were not normally distributed. The data was screened for univariate outliers, there were no problems detected.

A parallel analysis was carried out to determine the number of factors to include in the factor analysis. The analysis identified 11 factors with raw data eigenvalues higher than the 95 percentile random data eigenvalues.

A Principal Axis Factor Analysis for 11 factors with oblique rotation (Oblimin) was conducted. During several iterations, the model was reduced to 3 factors and 31 items were eliminated because they did not contribute to a simple factor structure and failed to meet a minimum criteria of having a primary factor loading of .4 or above, and no cross-loading of .3 or above.

For the final factor analysis, an examination of the Kaiser-Meyer Olkin measure of sampling adequacy (KMO=0,898) and of the Bartlett's Test of Sphericity ($\chi 2 = 2516{,}201$; $p < 0{,}000$) suggested that the sample was factorable.

The 8 factors explained 64,57% of the total item variance; the first factor explained 36,2% of the variance, the second 8,4%, the third 5,8%, the fourth 4,5%, the fifth 3,2%, the sixth 2,4%, the seven 1,9% and the eight 1,8%. The results of the oblique rotation of the solution are shown in Table # 5.7.

Table # 5. 7

Obliquely rotated factor loadings for 27 game experience items

	Factor							
	1	2	3	4	5	6	7	8
The game was fun (El juego fue divertido).	0,856	-0,027	0,011	0,086	-0,098	0,004	0,09	0,073
I thought the story was fun (La historia me pareció entretenida).	0,841	-0,034	0,064	-0,142	0,126	0,03	-0,01	0,087
I enjoyed playing this game (Disfruté jugar este juego).	0,817	0,058	0,028	0,104	-0,037	0,036	0,011	0,045
I thought the game was really fun (Me pareció un juego muy entretenido).	0,811	0,009	0,012	-0,022	0,055	-0,045	0,102	0,128
I really enjoyed this game (Disfruté mucho este juego).	0,801	0,039	0,084	0,134	0,026	-0,065	-0,019	-0,027
The game was very interesting (Es un juego muy interesante).	0,677	0,008	0,09	0,126	0,102	0,192	0,024	-0,077
I thought the story behind the game was interesting (La historia del juego me pareció	0,654	0,114	0,087	-0,007	0,264	0,089	0,016	-0,094

	Factor							
	1	2	3	4	5	6	7	8
interesante).								
I knew the game´s objectives (Sabía cuáles eran los objetivos del juego).	-0,049	0,833	0,055	0,007	-0,023	-0,043	0,013	-0,034
I always knew what I was supposed to do in the game (Siempre sabía qué debía hacer en el juego).	0,173	0,543	-0,113	-0,034	0,059	0,051	0,106	0,207
I forgot all about my surroundings (Me olvidé de todo a mi alrededor).	-0,012	0,062	0,921	-0,043	0,069	0,072	-0,033	0,016
I lost connection to my external world (Perdí conexión con el mundo externo).	-0,027	-0,051	0,892	-0,026	-0,023	0,002	0,046	0,075
I lost track of time (Perdí la noción del tiempo).	0,161	0,014	0,503	0,091	-0,083	-0,137	0,062	-0,035
I felt that my actions affected the game (Sentí que mis acciones afectaban el desarrollo del juego).	0,019	-0,006	0,033	0,789	0,044	-0,127	0,06	0,062
I was able to make decisions in the game (Podía tomar decisiones en el juego).	0,031	0,025	0,025	0,605	-0,049	0,046	0,13	0,079
I had to think about which would be the best decision in order to go on successfully with the game (Tenía que pensar cuál era la mejor decisión para avanzar con éxito en el juego).	0,05	-0,032	0,189	0,499	0,191	0,227	0,072	-0,164
I thought the game was challenging (Me pareció que el juego era desafiante)	0,246	-0,083	0,061	0,498	0,095	0	0,04	-0,213
I felt I had control over the main character (Sentí que tenía control sobre el personaje principal)	-0,053	0,026	0,06	0,476	0,171	0,102	0,008	0,137
I noticed when my actions caused something to happen in the game (Me daba cuenta cuando una acción mía causaba que algo pasara en el juego)	0,03	0,227	-0,073	0,461	-0,062	0,167	0,021	0,109
I noticed when my actions had an effect on the game (Me podía dar cuenta de que algunas mis acciones tenían un efecto en el juego).	0,236	0,135	-0,051	0,412	0,133	-0,002	0,005	0,145
I identified with the main character of the story (Me identifiqué con el personaje	-0,057	0,068	0,011	0,104	0,9	-0,011	0,019	-0,043

	Factor							
	1	2	3	4	5	6	7	8
principal de la historia).								
I felt like one of the characters in the story (Me sentí como alguno de los personales de la historia).	0,195	-0,11	-0,003	-0,039	0,635	-0,077	0,104	0,11
The game did not work well (El juego no funcionaba bien).	0,201	0,01	-0,054	0,032	-0,05	0,587	-0,032	0,01
There were technical difficulties that affected the experience of playing this game (Hubo dificultades técnicas que entorpecieron la experiencia de juego).	-0,123	0	0,03	-0,009	-0,002	0,55	0,103	0,092
I always knew what my score or my progress during the game (Siempre podía saber cuál era mi puntaje o mi progreso en el juego).	0,025	0,078	0,02	-0,074	0,03	0,062	0,716	-0,077
I knew when I obtained points or rewards (Sabía cuando obtenía puntos o premios).	-0,016	-0,049	0,016	0,114	0,004	-0,039	0,697	0,078
I was quick to fulfill the objects of the game (Fui rápido en lograr los objetivos del juego).	0,022	0,057	0,035	0,083	5,48E-05	0,06	0,073	0,733
I was good at playing this game (Fui bueno para jugarlo).	0,161	0,082	0,085	0,059	0,069	0,126	-0,025	0,672

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 14 iterations.

Seven items loaded in Factor 1. These items describe the experience of playing as fun, entertaining and enjoyable. This factor was labeled “Enjoyment”.

Two items loaded in factor 2. These items refer to be clear about the objectives of the game. This factor was labeled “Objectives”.

Three items loaded in factor 3. These items refer a flow experience, a state of concentration and immersion in the game. This factor was labeled “Engagement”.

Seven items loaded in factor 4. These items refer to the possibility of making decisions and having control over or affecting the course of the game. This factor was labeled “Control”.

Two items loaded in factor 5. These items indicate the identification of the player with

one of the characters in the game story. This factor was labeled “Identification”.

Two items loaded in factor 6. These items indicate functional problems of the game. This factor was labeled “Functioning”.

Two items loaded in factor 7. These items indicate that the player was aware of his/her progress in the game. This factor was labeled “Progress”.

Two items loaded in factor 8. These items express a sense of achievement and competence. This factor was labeled “Competence”.

Internal consistency for each of the sub-scales was examined using Cronbach’s alpha (see Table # 5.8). All the sub-scales showed good reliability.

Table # 5. 8

Cronbach’s alpha for post-game affects sub-scales

Scale	Cronbach’s Alpha
Enjoyment (7 items)	0,95
Objectives (2 items)	0,69
Engagement (3 items)	0,82
Control (7 items)	0,84
Identification (2 items)	0,8
Functioning (2 items)	0,52
Progress (2 items)	0,69
Competence (2 items)	0,82

No substantial increases in alpha for any of the sub-scales could have been achieved by eliminating items. With the exception of the “functioning” sub-scale, the rest showed good reliability.

For the overall “game experience” scale, Cronbach’s Alpha was 0,92.

Game experience, acceptability, gender, age and affects.

Composite scores were created for the game experience scale and its subscales. A score of 0 indicates that the experience of playing the game was not good at all or unsatisfactory; higher scores indicate a stronger positive play experience.

The normality of the game experience scores was evaluated using the Shapiro-Wilk Test in SPSS. The game experience scores and were not normally distributed ($p < 0,05$).

The game experience mean score for women was 1,6 (SD = 0,7) and for men 1,8 (SD = 0,8). A Mann-Whitney test was conducted to compare differences between men and women. No significant differences were found (U = 2232,5; Z = -1,81; p = 0,069) where the mean rank was higher for men (80,42) than for women (67,7).

The correlations (Spearman) between the game experience scores, age, acceptability and the positive and negative affects scores were explored. Positive correlations were found between the game experience scores and positive affects scores ($r_s = 0,56$; $p = 0,000$) and between the game experience scores and the acceptability scores ($r_s = 0,751$; $p = 0,000$). A negative correlation was found between the game experience scores and the negative affects scores ($r_s = - 0,18$; $p = 0,026$). No correlation between game experience and age was found.

Comments

In this sample, gender appears to be related only with positive affect; men having higher positive affect than women. Positive affect positively correlates with game experience and acceptability while negative affect correlates negatively with Game experience. These findings suggest, at least for this sample, that there is a correlation between the emotional state of a person and his/her reports about game experience. Given that the scales were not tested in the context of an experimental design, just the correlations between the variables can be asserted.

Acceptability and game experience are highly correlated.

Age does not correlate with any of the scales.

When evaluating game experiences, by means of a questionnaire, the genre and the particularities of the game have to be taken into account. For example, if the purpose is to evaluate an adventure game, with a strong story element, it is important to evaluate some narrative related aspects.

Annex # 6. Post-game questionnaire

Post-game affect scale

A continuación se presentan varias palabras que describen diferentes sentimientos y emociones. Lee cada palabra y para cada una elige la alternativa que mejor refleje tu estado actual. Indica en qué medida tu te sientes de esta forma en este momento.

	Muy poco a nada	Un poco	Moderadamente	Bastante	Extremadamente
Animado/a					
Energizado/a					
Asustado/a					
Mal					
Alerta					
Contento/a					
Triste					
Fuerte					
Decidido/a					
Cansado/a					
Victorioso/a					
Temeroso/a					
Solitario					
Activo/a					
Orgulloso/a					
Desorientado/a					
Satisfecho/a					
Inquieto/a					
Culpable					
Entusiasmado/a					
Exhausto/a					
Aislado/a					
Avergonzado/a					

Acceptability and Game experience scales

Para cada afirmación elige una opción que indica cómo te sentiste mientras estabas jugando el juego o cuál es tu opinión del video-juego que jugaste.

	Nada	Levemente	Moderadamente	Bastante	Extremadamente
Sabía cuáles eran los objetivos del juego					
Siempre sabía qué debía hacer en el juego					
Creo que jugar este juego podría ayudarme a relacionarme mejor (A)[3]					
Disfruté jugar este juego					
Perdí la noción del tiempo					
El juego fue divertido					
Hubo dificultades técnicas que entorpecieron la experiencia de juego					
La historia me pareció entretenida					
Me pareció un juego muy entretenido					
Siempre podía saber cual era mi puntaje o mi progreso en el juego					
Perdí conexión con el mundo externo					
Después de haberlo jugado, creo que este juego puede ser de algún valor para mi (A)					
Me podía dar cuenta de que algunas mis acciones tenían un efecto en el juego					
La historia del juego me pareció interesante					
Me olvidé de todo a mi alrededor					
Es un juego muy interesante					
Creo que es importante jugarlo porque te puede ayudar a pensar sobre las conductas que te ayudan y las que te perjudican (A)					
Me pareció que el juego era desafiante					
Tenía que pensar cuál era la mejor decisión para avanzar con éxito en el					

[3] (A): acceptability scale items

juego
Me identifiqué con el personaje principal de la historia
Me sentí como alguno de los personajes de la historia
Yo estaría dispuesto a jugarlo nuevamente porque tiene un valor para mi (A)
El juego no funcionaba bien
Podía tomar decisiones en el juego
Sentí que mis acciones afectaban el desarrollo del juego
Fui rápido en lograr los objetivos del juego
Sabía cuando obtenía puntos o premios
Me daba cuenta cuando una acción mía causaba que algo pasara en el juego
Creo que este es un juego importante (A)
Fui bueno para jugarlo
Creo que este juego es útil para aprender sobre como relacionarse mejor con las personas (A)
Sentí que tenía control sobre el personaje principal
Creo que este juego puede ser beneficioso para mi (A)
Disfrute mucho este juego

Annex # 7. Focus groups codes

Code name	Coded references
1 : Tree Nodes\Focus groups	0
2 : Tree Nodes\Focus groups\Bajoneadas	4
3 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo	0
4 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Aislarse	1
5 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Caminar	1
6 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Deporte	2
7 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Encerrarse en la pieza	2
8 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Escribir	2
9 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Escuchar musica	4
10 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Hablar con amigos	8
11 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Hermanos	2
12 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Que se pase	4
13 : Tree Nodes\Focus groups\Bajoneadas\Levantarse el animo\Ver peliculas	2
14 : Tree Nodes\Focus groups\Bajoneadas\Razones	0
15 : Tree Nodes\Focus groups\Bajoneadas\Razones\Frustracion	3
16 : Tree Nodes\Focus groups\Bajoneadas\Razones\Recordar	1
17 : Tree Nodes\Focus groups\Bajoneadas\Razones\Sin razon aparente	3
18 : Tree Nodes\Focus groups\Conflictos	0
19 : Tree Nodes\Focus groups\Conflictos\Colegio	4
20 : Tree Nodes\Focus groups\Conflictos\Colegio\Autonomia	1
21 : Tree Nodes\Focus groups\Conflictos\Colegio\Convivencia	3
22 : Tree Nodes\Focus groups\Conflictos\Colegio\Exigencia	3
23 : Tree Nodes\Focus groups\Conflictos\Colegio\Para relajarse	1
24 : Tree Nodes\Focus groups\Conflictos\Colegio\Stress	2
25 : Tree Nodes\Focus groups\Conflictos\Compañeras	8
26 : Tree Nodes\Focus groups\Conflictos\Padres	9
27 : Tree Nodes\Focus groups\Conflictos\Padres\Disciplina	2
28 : Tree Nodes\Focus groups\Conflictos\Padres\Falta de confianza	2
29 : Tree Nodes\Focus groups\Conflictos\Padres\Privacidad	2
30 : Tree Nodes\Focus groups\Conflictos\Pololos	1
31 : Tree Nodes\Focus groups\Conflictos\Pubertad	1
32 : Tree Nodes\Focus groups\Conflictos\Resolucion	4
33 : Tree Nodes\Focus groups\Estetica	4
34 : Tree Nodes\Focus groups\Facebook	7
35 : Tree Nodes\Focus groups\Formas de entretencion	0

Code name	Coded references
36 : Tree Nodes\Focus groups\Formas de entretencion\Carretear	3
37 : Tree Nodes\Focus groups\Formas de entretencion\Computador	6
38 : Tree Nodes\Focus groups\Formas de entretencion\Computador\Musica	1
39 : Tree Nodes\Focus groups\Formas de entretencion\Computador\Peliculas y series	3
40 : Tree Nodes\Focus groups\Formas de entretencion\Deporte	1
41 : Tree Nodes\Focus groups\Formas de entretencion\Estar con la familia	4
42 : Tree Nodes\Focus groups\Formas de entretencion\Lectura	7
43 : Tree Nodes\Focus groups\Formas de entretencion\Musica	7
44 : Tree Nodes\Focus groups\Formas de entretencion\Peliculas	7
45 : Tree Nodes\Focus groups\Formas de entretencion\Peliculas\Historias interesantes	8
46 : Tree Nodes\Focus groups\Formas de entretencion\Salir con amigos	12
47 : Tree Nodes\Focus groups\Formas de entretencion\Scouts	1
48 : Tree Nodes\Focus groups\Formas de entretencion\TV	4
49 : Tree Nodes\Focus groups\Formas de entretencion\TV\Novelas	6
50 : Tree Nodes\Focus groups\Formas de entretencion\TV\Peliculas	4
51 : Tree Nodes\Focus groups\Formas de entretencion\TV\Series	3
52 : Tree Nodes\Focus groups\Formas de entretencion\Videojuegos	13
53 : Tree Nodes\Focus groups\Formas de entretencion\Videojuegos\Con historia	2
54 : Tree Nodes\Focus groups\Formas de entretencion\Videojuegos\Sin historia	1
55 : Tree Nodes\Focus groups\Formas de entretencion\Web	3
56 : Tree Nodes\Focus groups\Historia para el videojuego	6
57 : Tree Nodes\Focus groups\Libro que les ha gustado	3

Annex # 8. Web site information section: Mind your mind.

Cuida tu Mente

Mantenerse activa, haciendo cosas, saliendo a pasear, yendo al colegio, juntándose con amigas y haciendo ejercicio es normal y saludable. Además de los beneficios para el cuerpo, el mantenerse activa es bueno también para tu salud mental y, con frecuencia, significa que te estás moviendo hacia tus metas, que tienes intereses, que te cuidas a ti misma y que te estas relacionando con otras personas.

La idea es tratar de encontrar un equilibrio, el ejercicio puede ser positivo para ti si es moderado, si no ocupa todos los momentos de tu vida. También es bueno encontrar momentos para reflexionar, descansar y relajarse.

Si te sientes muy cansada todo el tiempo, sin energías, si tienes problemas para dormir, no te dan ganas de arreglarte ni de salir, es posible que tengas algún problema de salud físico o mental. Igualmente, si sientes que solo estás pensando en hacer ejercicio y en bajar de peso, también puedes tener algunas dificultades de salud. En estos casos, conversa con tus padres o con una profesora u orientadora de tu colegio, con un adulto responsable de tu confianza y, si estás en psicoterapia, conversa lo qué haces y cómo te sientes con tu psicólogo/a.

Casi todo el tiempo uno está pensando, ideas vienen a la mente y hablas en silencio contigo misma. En nuestra mente comenzamos a construir nuestras vidas. Si tenemos pensamientos positivos y somos optimistas, es posible que enfrentemos los problemas de mejor manera y que la gente a nuestro alrededor disfrute de nuestra compañía. Por el contrario, si somos siempre pesimistas y tenemos muchas ideas negativas, uno empieza a sentirse triste y sin ilusión, luego uno deja de esforzarse o reacciona mal con otros, lo cual trae problemas. ¿Y tú cómo piensas? ¿Aparecen en tu mente muchos pensamientos de derrota? ¿En qué situaciones aparecen los pensamientos negativos? ¿Sientes que puedes superar las dificultades? ¿Piensas que eres valiosa?

Trata de reconocer los pensamientos negativos y revísalos con cuidado, tal vez esta forma de pensar te está perjudicando. Conversa con amigas y gente que te estima y escucha las cosas buenas que tienen qué decir de ti. ¡Piensa positivo!

Es importante mantenerse en contacto con otras personas, especialmente con personas que tienen algo bueno que ofrecer. Uno estudia, trabaja y disfruta junto a otras personas, necesitamos a los demás para desarrollarnos. A veces, surgirán problemas en las relaciones y la forma en que los solucionas será muy importante en tu vida. ¿Te peleas con frecuencia?¿Es usual para ti huir de los problemas que surgen con tus amigos? ¿Cómo resuelves tus problemas con otras personas (tus padres, amigas, profesores)?

Frente a los problemas:

- Detente a pensar
- Maneja tu enojo
- Trata de ver la situación desde distintos puntos de vista
- Busca alternativas de solución
- Piensa en las posibles consecuencias de tus acciones
- Piensa en qué necesitas para resolver el problema
- Si sientes que es necesario, pide ayuda

Annex # 9. Feedback text.

	If“optimista = 0” then: Cuando el profesor le negó a Maya el permiso, Aria la ayudó para que persistiera a pesar de la dificultad y también corrigió la forma negativa en que Maya estaba comenzando a pensar respecto a sí misma. ¿Te fijaste? ¡Que buena amiga!, ¿no? La conversación que Aria tuvo con Maya también puede tenerla, mentalmente, uno consigo misma, de modo de tratar de mantenerse optimista a pesar de los problemas y de rectificar auto-percepciones que nos perjudican.
	If“optimista = 1” then: En el juego elegiste la opción en que Maya piensa de forma negativa de sí misma: “Aria tiene razón yo siempre pienso tonteras, no hay nada que pueda hacer para detener esas construcciones”. Aunque este es solo un juego, te ofrece la oportunidad para pensar respecto a cómo piensas de ti misma y sobre tus capacidades. Trata de reconocer tus pensamientos negativos y revísalos con cuidado, tal vez esta forma de pensar te está perjudicando. Conversa con amigas y gente que te estima y escucha las cosas buenas que tienen qué decir de ti. ¡Piensa positivo!
	If “optimista = 2” then: En el juego elegiste la opción en que Maya piensa optimistamente: “Qué pesimista es Aria. Yo creo que puedo ayudar. Si todos ayudáramos tal vez se puede salvar el parque.” ¡Bien! Si tenemos pensamientos positivos y somos optimistas, es posible que enfrentemos los problemas de mejor manera y que la gente a

	nuestro alrededor disfrute de nuestra compañía.
	If "participa =1" then: En el juego inicialmente decidiste no participar en el movimiento para detener la destrucción del parque. Pero en la vida real, ¿formas parte de algún grupo con el que compartes algún interés (como scouts, un grupo musical , deportivo o religioso, por ejemplo)? Es importante mantenerse en contacto con otras personas, especialmente con personas que tienen algo bueno que ofrecer. Uno estudia, trabaja y disfruta junto a otras personas, necesitamos a los demás para desarrollarnos.
	If "participa =2" then: En el juego decidiste participar en el movimiento para detener la destrucción del parque. ¡Estupendo! En la vida real, ¿formas parte de algún grupo con el que compartes algún interés (como scouts, un grupo musical, deportivo o religioso)? Es importante mantenerse en contacto con otras personas, especialmente con personas que tienen algo bueno que ofrecer. Uno estudia, trabaja y disfruta junto a otras personas, necesitamos a los demás para desarrollarnos.
	If "diplomaticaa =1" then: Cuando el profesor le negó a Maya el permiso para ir a la manifestación tu elegiste la opción: "Profesor ¡Usted no entiende nada! Se nota que nunca ha ido al parque y que no sabe el valor de ese lugar". ¡Uuuuuy! ¿Te peleas con frecuencia? ¿Cómo resuelves tus problemas con otras personas (tus padres, amigas, profesores)? A veces, surgirán problemas en las relaciones y la forma en que los solucionas será muy importante en tu vida. Intenta que las palabras que utilices sean respetuosas, amables y justas. Que sirvan para

	tender puentes, no para levantar muros. Piensa bien lo que vas a decir y prevé de antemano las posibles consecuencias en los demás del contenido de tus palabras y del tono en que las pronuncias. No te olvides de cómo es esa persona a la que te diriges.
	If "diplomaticaa =2" then: Cuando el profesor le negó a Maya el permiso para ir a la manifestación tu elegiste la opción: "Entiendo su opinión profesor pero para nosotros esto es importante por lo que nos gustaría encontrar la forma para poder ir". ¡Buena forma de reaccionar! Insististe respetuosamente, fuiste diplomática. Seguro que si en la vida real esta es tu forma de actuar estás construyendo puentes y abriendo puertas hacia un buen futuro.
	If "impulsiva =0" then: Elegiste la opción: "Tengo que pensar la forma de resolver este problema. Iré a conversar con el profe Uly. Tal vez él puede ayudarnos". Un obstáculo no te detuvo en tu intención y buscaste ayuda. ¡Genial! Es bueno recordar que frente a los problemas es recomendable: • Detenerte a pensar • Manejar el enojo • Tratar de ver la situación desde distintos puntos de vista • Buscar alternativas de solución • Pensar en las posibles consecuencias de tus acciones • Pensar en qué necesitas para resolver el problema • Pedir ayuda, si sientes que es necesario.
	If "impulsiva =1" then:

	Elegiste la opción: “No importa lo que diga este tipo. Voy a ir de todas formas con o sin su permiso y le diré a los otros que hagan lo mismo”. Si Maya seguía este camino seguro que le traía más problemas que beneficios. Es bueno que persistas en tus intenciones pero cuando encuentres un obstáculo: • Detente a pensar • Maneja tu enojo • Trata de ver la situación desde distintos puntos de vista • Busca alternativas de solución • Piensa en las posibles consecuencias de tus acciones • Piensa en qué necesitas para resolver el problema • Si sientes que es necesario, pide ayuda.
	If “actividad” is less than 60 then: Lograste cerca de 60% de puntos por actividad en el juego. Si te sientes muy cansada todo el tiempo, sin energías, si tienes problemas para dormir, no te dan ganas de arreglarte ni de salir, es posible que tengas algún problema de salud físico o mental. En estos casos, conversa con tus padres o con una profesora u orientadora de tu colegio, con un adulto responsable de tu confianza y, si estás en psicoterapia, conversa lo qué haces y cómo te sientes con tu psicólogo/a. Mantenerse activa, haciendo cosas, saliendo a pasear, yendo al colegio, juntándose con amigas y haciendo ejercicio es normal y saludable. Además de los beneficios para el cuerpo, el mantenerse activa es bueno también para tu salud mental y, con frecuencia, significa que te estás moviendo hacia tus metas, que tienes intereses, que te cuidas a ti misma y que te estás relacionando con otras personas.
	If “actividad” is more than 60 then:

	Lograste más de 60% de puntos por actividad en el juego. ¡Excelente! Mantenerse activa, haciendo cosas, saliendo a pasear, yendo al colegio, juntándose con amigas y haciendo ejercicio es normal y saludable. Además de los beneficios para el cuerpo, el mantenerse activa es bueno también para tu salud mental y, con frecuencia, significa que te estás moviendo hacia tus metas, que tienes intereses, que te cuidas a ti misma y que te estás relacionando con otras personas. La idea es tratar de encontrar un equilibrio, el ejercicio puede ser positivo para ti si es moderado, si no ocupa todos los momentos de tu vida. También es bueno encontrar momentos para reflexionar, descansar y relajarse.
• Otra cosa…..	If "objeto" = 0 then: En el paseo por el parque no encontraste el objeto escondido; búscalo explorando con el cursor y verás que algo llama tu atención ;)

Annex # 10. Actionscript 3.0. code example.

FRAME 1/75

CREATE VARIABLES TO STORE VALUES FOR THE LOG

```
var theDate:Date = new Date( );
var day = theDate.toLocaleDateString();
var time = theDate.toLocaleTimeString();
import flash.utils.getTimer;
var gameStartTime:uint;
var gameTime:uint;
var tiempo:uint;
gameStartTime = getTimer();
var wakingup:int;
var objeto:int;
var participa:int;
var callada:int;
var writeto:int;
var rproblema:int;
var optimista:int;
var diplomaticaa:int;
var impulsiva:int;
var actividad:int;
var pthinking:int;
var sthinking:int;
```

CODE FOR THE FUNCTIONING OF THE GAME SCORE

```
addEventListener(Event.ENTER_FRAME, fl_EnterFrameSThinking);

function fl_EnterFrameSThinking(event:Event):void
{
    socialThinkingTxt.text = String(sthinking + "%");
}

addEventListener(Event.ENTER_FRAME, fl_EnterFramePThinking);

function fl_EnterFramePThinking(event:Event):void
{
    positiveThinkingTxt.text = String(pthinking + "%");
}


addEventListener(Event.ENTER_FRAME, fl_EnterFrameActividad);
```

```
function fl_EnterFrameActividad(event:Event):void
{
    activityTxt.text = String(actividad + "%");
}

function showCurrentFrame(evt:Event):void
{
    var frame:Number;

    frame = int((currentFrame/76)*100);
    frameTxt.text = (String ("Progreso: " + (frame)+ "%"));

}
```

CODE TO ACTIVATE THE TEXT WITH THE INTRODUCTION TO THE STORY AND THEN TO ACTIVATE THE BUTTON TO ADVANCE

```
frameTxt.addEventListener(Event.ENTER_FRAME, showCurrentFrame);
import flash.text.TextFormat;
import flash.geom.ColorTransform;
import flash.display.InterpolationMethod;

var vsq1:Boolean = false;
var vsq2:Boolean = false;
var fl_MyInstance:nextbtn = new nextbtn();

inst1_boton1.addEventListener(MouseEvent.MOUSE_OVER,
fl_MouseMOUSE_OVERHandler0);
inst2_boton2.addEventListener(MouseEvent.MOUSE_OVER,
fl_MouseMOUSE_OVERHandler1);
inst1_boton1.addEventListener(MouseEvent.MOUSE_OVER,
fl_MouseMOUSE_OVERHandler_2);
inst2_boton2.addEventListener(MouseEvent.MOUSE_OVER,
fl_MouseMOUSE_OVERHandler_3);
fl_MyInstance.addEventListener(MouseEvent.CLICK,
fl_MouseMOUSE_CLICKHandler4);


function fl_MouseMOUSE_OVERHandler0(event:MouseEvent):void
{
    vsq1 = true;

}

function fl_MouseMOUSE_OVERHandler1(event:MouseEvent):void
```

```
{
    vsq2 = true;

}


function fl_MouseMOUSE_OVERHandler_2(event:MouseEvent)
{
    if (vsq2 == true)
    {
            fl_MyInstance.x = 578,95;
            fl_MyInstance.y = 384;
            addChild(fl_MyInstance);

    }
}

function fl_MouseMOUSE_OVERHandler_3(event:MouseEvent)
{
    if (vsq1 == true)
    {
            fl_MyInstance.x = 578,95;
            fl_MyInstance.y = 384;
            addChild(fl_MyInstance);
    }
}

function fl_MouseMOUSE_CLICKHandler4(event:MouseEvent):void
{
    gotoAndStop("durmiendo");
    removeChild(fl_MyInstance);

}
```

PRELOAD A VIDEO AND AN IMAGE TO SHOW IN THE NEXT FRAMES

```
var audiofile_clicked0:URLRequest = new URLRequest("audio/dink.mp3");
var soundDown0:Sound = new Sound();
var soundDownController0:SoundChannel;
soundDown0.load(audiofile_clicked0);

var imageLoaderd8:Loader = new Loader();
var imaged8:URLRequest = new URLRequest("imagenes/mensajeIzel2.jpg");
imageLoaderd8.load(imaged8);
```

Frame 70/75

CODE TO USE A CAMERA TAKE PICTURES (ALLOWS TO DRAG AN OBJECT, FIX IT IN A CERTAIN POSITION AND ACTIVATES A BUTTON THAT ON CLICK TRIGGERS A SEQUENCE OF IMAGES)

```
recbtn_ins.visible = false;

import flash.display.Sprite;
import flash.display.Bitmap;
import flash.events.Event;

var contenedor:Sprite = new Sprite();
var contenedor2:Sprite = new Sprite();
var mascara2:Sprite = new Sprite();

var bd:BitmapData = new BitmapData(clip.width,clip.height);
bd.draw(clip);

var bm:Bitmap = new Bitmap(bd);
contenedor.addChild(bm);
contenedor.scaleX = contenedor.scaleY = 1.00;
addChild(contenedor);


contenedor.mask = mascara;

addEventListener(Event.ENTER_FRAME, renderizar);

function renderizar(evt:Event)
{
    var porcentajeX = clip.mouseX / clip.width;
    var porcentajeY = clip.mouseY / clip.height;

    contenedor.x=-(contenedor.width - clip.width)*porcentajeX;
    contenedor.y=-(contenedor.height - clip.height)*porcentajeY;

    mascara.x = centro.x = stage.mouseX;
    mascara.y = centro.y = stage.mouseY;

}

var ok:Boolean = false;
stage.addEventListener(Event.ENTER_FRAME, hitTest);

function hitTest(event:Event)
{
```

```
        if (mascara.hitTestObject(ancla1) &&(mascara.hitTestObject(ancla2))&&
(mascara.hitTestObject(ancla3)) && (mascara.hitTestObject(ancla4)))
        {


                ok = true;
                var obj_color:ColorTransform = new ColorTransform();

                // setting the new color we want (in this case, blue)
                obj_color.color = 0x00ff00;

                // applying the transform to our movieclip (this will affect the whole object
including strokes)
                centro.rec_ins.transform.colorTransform = obj_color;
                removeEventListener(Event.ENTER_FRAME, renderizar);

                recbtn_ins.visible = true;
        }


    }

    var audiofile_clicked:URLRequest = new URLRequest("audio/fotosclicks.mp3");
    var soundDown:Sound = new Sound();
    var soundDownController:SoundChannel;
    soundDown.load(audiofile_clicked);


    recbtn_ins.addEventListener(MouseEvent.CLICK, fl_MouseClickHandler_recbtn_ins);

    function fl_MouseClickHandler_recbtn_ins(event:MouseEvent):void
    {
        soundDownController = soundDown.play();
        recbtn_ins.removeEventListener(MouseEvent.CLICK,
fl_MouseClickHandler_recbtn_ins);
        recbtn_ins.alpha = 0;
        recbtn_ins.mouseEnabled = false;
        gotoAndStop("fraude6");
    }
```

Annex #11. Individual case information (No post-game session)

Marta1

Marta1 was a patient in a private practice. She was 12 years old. Her parents were separated. She showed depressive symptoms related with problems in her family relations. Her father was absent. Marta1 had difficulties relating with her mother and daughter. Marta1 felt alone and she was inactive. She was very intelligent and doing very well at school. The therapist reported a good rapport with Marta1.

She was invited to play in the first session.

Post-game sessions

Marta1 did not answer the post-game questionnaire. It was not possible to explore relationship between the game and her problems.

Marta3

Marta3 was a patient in a public health center. She was 17 years old, from a low-middle class family. She was diagnosed with depression and she was under pharmacological treatment. The psychotherapist also hypothesized that Marta3 could suffer from anorexia nervosa. Marta3 ended a relationship with a boyfriend and then he harassed her for a while.

Mart3 had been coming intermittently to therapy for six months and her situation had improved when she was invited to play.

Post-game sessions

Marta3 missed an appointment with her therapist. There were no post-game sessions informed at the moment of preparing this report.

Marta9

Marta9 was a patient in a public health center. She was 16 years old. She was diagnosed with depression and she was under pharmacological treatment. She ended a relationship with a boyfriend and then she stop going to school. Her mother took her to therapy despite Marta9's disagreement. According with her therapist Marta9 never engaged in therapy. The therapist hypothesized with a personality disorder.

She was coming to therapy for six months when she was invited to participate in the research.

Post-game session.

There were no post-game sessions reported at the moment of preparing this report.

Carla.

She was 16 years old, from a middle low class family. She was diagnosed with an adjustment disorder. Carla was referred by her school by request of her mother. Her parents asked for help when she runaway for day, they reported family conflicts specially between Carla and his father. Carla had been in treatment previously with depressive symptomatology. According to her therapist, Carla was intelligent and artistic. Carla did not believe there was any reason for her to come to therapy.

Post-game sessions

Carla stopped going to therapy thus no further explorations could be made.

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Promotionsausschuss der Fakultät für Verhaltens- und Empirische Kulturwissenschaften
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Datum, Unterschrift
Date, Signature

Montag, 22. Juni 2015,