Design of a Web-Based Therapist Tool to Promote Emotional Closeness

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Abstract
We describe progress using a user-centered design process to migrate a family therapy game to a web-based therapist tool, called FamilySense, that supports therapists creating part of the therapeutic game. Using cards with questions about players' daily life and alternative answers considering their cultural context, the game gives parent and child awareness of each other. Online design of different elements for the board, cards and communication provide an effective online therapy tool. Four user-centered design process stages are presented including: design strategies, design questions, stakeholders, prototype and evaluation for each stage. The process has been successful for the migration, achieving an online game environment that shows strong potential for a family therapy tool.

Keywords
Therapeutic game, family, closeness

ACM Classification Keywords
H5.m. Information interfaces and presentation

General Terms
Design, Documentation, Experimentation

Introduction

Games have been shown to be useful to support child therapy, for example, games such as: ***The Ungame; Do I really know you?***; and ***Funny Face*** have different therapeutic objectives, such as talking about feelings, overcoming traumas, promoting physical affection, improving feelings of solidarity, friendship, tolerance and other values [3, 5, 6, 7]. Historically, these therapeutic games are intended for use in the therapist's office where the clients are collocated with the therapist, however, information and communication technologies (ICT) enables these games to be web-based, opening new challenges and opportunities due to clients not necessarily being at the same place. We describe our design process for migrating an existing therapeutic, collocated game intended to support therapists improving family relationship through physical contact to a web-based tool named ***FamilySense***.

We chose the game, ***Do I really know you?*** [5], to migrate to the web. It is a collocated board game that is played by a therapist, a parent and a child that is focused on promoting getting to know each other better and physical contact between parent and child [5]. Shklovski [10] has shown using ICT may lead to closer relationships as there are no physical barriers in contrast to collocated scenarios. However, for therapy focused on physical closeness, as is our situation, it is not obvious how this translates to online settings including which elements will be useful versus needing to be abandoned. Through our user-centered design experience reported here, we discover that transforming a collocated game to a web-based game can promote emotional closeness rather than physical closeness and help bring up feelings that may be useful for therapists in the therapeutic process. Our design process uncovered many critical elements leading to an effective design of a web-based therapist tool. It also led to a refocusing on the game's role in therapy that was unexpected but valuable to the therapists.

RELATED WORK

There are a number of therapeutic games intended for children to express their emotions or to have some kind of physical contact with their family, other children or even with the therapist. Table 1 shows a classification with some games along two dimensions: location of therapy and the channels of expression.

		Therapy Location	
		Collocated	Web-based
Channel of expression	Emotional Expr.	***The Ungame***; ***Talking, Feeling and Doing Game***	***Funny Face; Bruce's Multimedia Story; Say No with Donny***
	Physical Expr.	***Do I really know you?***	none at this time

Table 1: Therapeutic games classification according to location and channel of expression.

In the upper left cell of the table, are examples of collocated games that intend to give children the chance of expressing emotions using collocated verbal communication. ***The Ungame*** is a board game for sharing feelings and values. It fosters the skills of listening and self-expression with squares on the board having questions such as 'What are the four most important things in your life?' and 'What do you think

Figure 1. *Do I really know you* board

life will be like in 100 years?' so that when players answer them, they are describing their feelings related to those situations [6]. ***Talking, Feeling and Doing Game*** has cards addressing teasing, good behavior, anger, shyness, and divorce that enable children to talk about themselves in certain situations, especially those that may cause psychological pain, anxiety, shame, or guilt, in the context of therapy [3].

In the upper right cell, are computer games that promote the expression of feelings. ***Funny Face*** is a shareware used to allow children to create faces expressing a feeling. ***Bruce's Multimedia Story*** is a computer based counseling tool for use in childcare that helps children to talk about life experiences by relating to Bruce, a dog that has to leave his home to start a new life [7]. ***Say No with Donny*** is a colorful software program that engages and holds a child's attention to teach drug prevention [7].

In the lower left cell of the table, the collocated board game ***Do I really know you?*** (Figure 1) is used in therapy with a child in joint sessions with a parent that uses physical expression (i.e. kissing and hugging). Cooperatively moving a piece around a board selects question and answer (Q/A) cards that allow the parent and child to be aware about how much they know each others' thoughts, feelings, and preferences . When they agree on an answer to a question about what they know about each other they get to celebrate with physical contact [5] such as a hug or a kiss specified by a celebration card. The game has a fixed number of Q/A cards that may lead to the game ending before getting to the end of the board. This can be a problem for the players as they do not feel a sense of completion and accomplishment. Four elements of this game suggest that computer support for the therapist and making it web-based can be beneficial. Specifically, they are: 1. the computer can assist the therapist to generate questions and answers (Q/A) to reflect the specific cultural context of the family; 2. computer assisted generation of Q/A can provide a nearly infinite supply of questions as needed; 3. computer support can allow the therapist to adjust the dynamics of the game while it is being played to match the progress of the therapy session; and 4. a web-based approach allows the game to be played with families that are physically separated. Interpreting the physical contact specified by the celebration cards as part of the web-based game is a challenge that we address using web multimedia.

In the lower right cell of table 1 are web-based games that intend to promote direct physical expression among the players such as providing tele-touch or tele-kisses. These types of games seem not to be available yet, but could be created using tangible interfaces, wearable computing or tele-robotics which are expensive and have limited access at the moment.

DESIGN OF FAMILYSENSE

Our design process uses a design, prototype, analysis cycle for each stage where we begin with design strategies (**DS**), followed by the questions to be addressed in that cycle (**QT**), then a prototype that incorporate the strategies to answer the questions (**PT**), and then the evaluation/analysis (**EA**). Stakeholders (**ST**) were involved in each cycle to help on answering the questions. At this point in our research, we incorporate feedback from one stage to the next when appropriate, however, we are primarily studying each of the elements in isolation. Our design

Figure 2. Interface for the players (PT2)

Figure 3. The participants mark-up the final picture

decomposed the migration problem into three main elements: board, cards and communication. The following sub-sections describe each stage done using this structure to address the elements. The cards have two sub-types (Q/A and celebration) and there are three types of communication (voice, face and gesture, physical contact) that require design effort.

Stage *1:* We began with the design strategy (**DS1**) to migrate the collocated game ***"Do I really know you?"*** to the web. We interviewed the author (**ST1**) of the game to get her input on the critical parts of the game from a therapeutic perspective and how they may be implemented on the web. We did not have a prototype (**PT1**) other than the original board game and a verbal description of how parts could be done on the web. We had four primary questions (**QT1**): 1) is it feasible to create a web based version?; 2) would culturally sensitive questions be useful?; 3) how can virtual contact be done over the web-based for the game?; and 4) is it possible to maintain both goals of knowing each other better as well as promoting physical closeness? (**EA1**) She commented: 1) that the idea is sound; 2) having more cards would be good, but is not critical as the therapist can control the dynamics if they run out; 3) using culturally contextualized cards with Q/A created for each family is exciting and would be useful, 4) multimedia communication (video and voice) could be used effectively, and 5) believed other ways to express physical closeness could be done using web-based methods.

Stage 2: We focused on the physical closeness in the web-game context. Based on feedback from the first stage, our design strategies (**DS2**) were: 1) use a representation of the board distance to show how well they are getting to know each other; 2) use a mock-up of the player interface, 3) assume the same card types and use a collaborative web task to represent the physical celebration. We worked with a second therapist to evaluate the prototype (**ST2**). The questions we addressed were (**QT2**): 1) what is a good way to indicate the celebration times?; and 2) what type of celebration to use? For evaluation, we created a mock up (**PT2**) of the game with an interface for the players with four types of cards (from the original game - parent and child question variations and celebration cards), video and text chat indicators, a board where the players walk towards each other when they get the same answer (Figure 2), and a space where the parent and child can build a sliding puzzle where the picture is of the two together that is created by joining a picture of the parent with one of the child. The idea is that each time the parent and child agree, they receive a piece of the puzzle that they can play with together as the celebration. The therapist provided the following feedback (**EA2**): 1) the Q/A cards migrate well; 2) there should be a different type of *final* celebration than the puzzle, and recommending that the child and parent should collaboratively mark-up the final picture as this will help them feel closer by sharing the same task at the end (Figure 3). As well, she suggested that the final picture (with edits) should be printed since younger children are in a concrete phase and so bond to physical objects; 3) the interface aesthetics should be simple using basic colors, shapes and content; 4) the game could be useful for first contact between a parent and child or when a new situation arises for the family such as the first time going to school for the child.; 5) provided a number of drawings for improving the parent and child interface.

Figure 4. Mother and son playing Stage 3 prototype

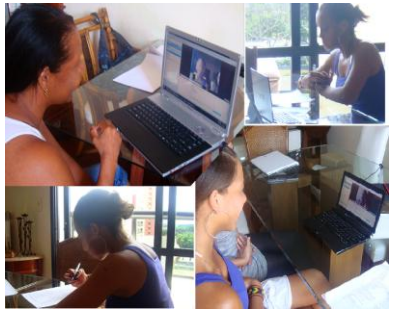

Figure 5. Mother and daughter playing Stage 4

Stage 3: We focused on how the family responds to the game and Q/A card design. Our two design strategies were (**DS3**): 1) to use culturally contextualized question and answers and 2) use minimal communications to focus on the questions. We invited a mother (45, divorced) and son (8, with mother) to participate (**ST3**). Our question was (**QT3**): 1) Will the family like the online version of the game play? We created a text-only prototype using a chat tool's texting environment (**PT3**). The prototype game was played by the mother and child in separated in their home. The experimenter sat with the child and cut and paste prepared questions into the child's chat window that was sent to the mother. The experimenter coordinated the timing of the answers, provided feedback about how well they were doing as well as assisted the child in reading difficult words (Figure 4). After answering 10 questions, their feedback was (**EA3**): from a post-game questionnaire both mother and child answered that they would play the game again suggesting that they liked it, even only using text messaging. Also, the child commented that he wants to play with his father. After the game, mother and child met and hugged and kissed to celebrate. This suggested that a final celebration would be useful as there was a desire to come together to provide a sense of game resolution.

Stage 4: We focused on the communication style between the players. Our design strategy (**DS4**) was to include text, video and voice to see how the players use them. The players (**ST4**) were a mother (40, widowed, remarried) and daughter (17, with mother, step father, two step sisters). The mother and daughter had conflict at the time of the game associated with teenager issues (i.e. boyfriend and curfew), (Figure 5). Our primary question (**QT4**) was: how useful are video, voice and text for the players and the game play? We used Skype ™ for our prototype (**PT4**). The game was the same as in stage 2 except the players could see and hear each other as they texted answers. However, while the controlling experimenter was still with the child another experimenter spent most of the time with the mother to assist as well as video taping parts of the mother and child interaction. This experimenter left the mother twice to video tape the child due to only having one video camera available. We logged the text, voice and video interaction of both players as well as used a video camera to capture question deliberation and post-question reaction. The evaluation of the experiment provided the following insights (**EA4**): 1) based on a post-game questionnaire, both mother and daughter said that video and voice were not necessary for the game; 2) we observed that they did not *directly* talk or look at each other when deciding or answering the question; 3) we observed that players listen and watch what the other one is doing and she is reacting. Some of the activities that were happening included listening to what the other player is talking to the experimenter about, for example, the mother told the experimenter, "I see she is commenting that she has doubts about the answer" and "I knew she was going to choose that answer." 4) the mother sent emoticons twice after two questions which suggests she is using it as a type of celebration. 5) the mother expressed very strong emotions (i.e., crying) during and after the game and the daughter did after the game.; 6) unlike in stage 3, the mother and daughter did not have a spontaneous celebration together and stayed in separate rooms. The main design issues we derived from this stage include: 1) we must have a therapist during the user testing from now on due to the emotionally charged effective-ness of the game at this point; 2) voice and video are

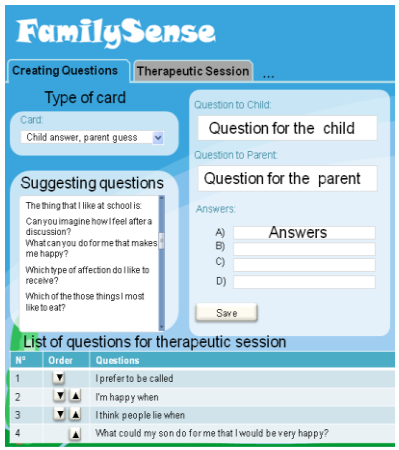

Figure 6. Therapist´s game editor for creating questions

important even though the players do not need it to play the game. The indirect communication appears to foster the emotional development of the relationship and may be important for the therapist to work with; 3) the game may require elements beyond the celebration to help the therapist manage the session since the game seems to elicit strong emotions but does not have any strategies to deal with them. These mechanisms have yet to be identified but could include some second game phase where the players have a new task or the therapist can intervene with a joint session.

CONCLUSION

We have two main contributions from our work-in-progress: 1. Demonstration that the use of a user-centered design process for migrating the collocated game to a web-based tool is effective. By incorporating stakeholder feedback in staged, fast design, prototype, evaluate cycles, we are creating an effective online therapy game that preserves the therapeutic value while not expending excess resources in developing infrastructure. 2. We are well along the way to creating a new web-based therapist tool, ***FamilySense***, that can be used in practice for families that may not be able to attend a therapy session together. The overwhelming emotional response from the family in our last stage emphasizes that already our web-based game has the necessary elements to promote emotional closeness that can be integrated by a professional therapist in a course of treatment. Our next steps are to establish the therapist interface by prototyping a web interface for allowing them to create the Q/A for the game (Figure 6) and running the game during the therapy session as well as how to manage the distance for celebrating and potentially strong emotional reactions during the game without having the family in the same room. We have enlisted another therapist for this already. We intend to use a cultural knowledge base [1] to support the therapist generating culturally sensitive or even personalized Q/A for the family.

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