

Supporting Group Analysis in Psychotherapy

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Abstract

Psychological therapy for pathologies such as depression, anxiety, among others, often leads patients to group therapy sessions, where patients and therapists interact and share their experiences. Besides including the challenges that are present in any kind of meeting settings, psychotherapy, for its critical health scenario, presents difficulties that have not yet been approached by currently used groupware. This paper introduces a system, which uses mobile devices and a large public screen, to support group therapy sessions. It encompasses a variety of functionalities that provide both therapists and patients with necessary means to enhance and fulfil their particular tasks during and between sessions.

Keywords

CSCW, Psychotherapy, Mobile Devices, Groupware, Smart Boards.

1. INTRODUCTION

Psychotherapy, on its various forms and orientations, requires interaction between patient and therapist. Both actors engage on sequential meetings where information is exchanged orally, through conversations, and through paper artifacts. These artifacts are completed by both, cooperatively, or by the patient, during the meetings, at home as homework or during the daily life, registering important events that matter to him [5].

Group therapy assumes all the above mentioned activities and introduces new ones. Here, global procedures are maintained, but the number of participants, information and used artifacts is larger, increasing the challenges for both therapists and patients. Furthermore, group therapy sessions are many times guided by two therapists, introducing a new communication channel. However, conversations and information exchange between therapists are usually reduced to pre or post-meeting sessions and interaction during session is avoided. Cooperation is limited and generally one therapist assumes a passive role, observing the meeting and taking notes. The management of patients' information is difficult and at times obstructs therapists from accessing necessary data during sessions. For patients, the completion of tasks, using the usual paper forms and questionnaires is demanding and time consuming. Furthermore, patients are only able to share their experiences orally, and homework and completed artifacts are rarely (re)viewed by everyone.

Nowadays, these challenges are yet to be addressed by specific groupware and cooperative work systems, which are suited to these critical scenarios. Overall, it is paramount to provide therapists with: (1) a way to access necessary information without interrupting the sessions; (2) support the information flow between therapists

without annoying patients; (3) provide means to interact with all patients equally, sharing information between all. On the other hand, for patients the main problems to be solved are the access to the used artifacts, their completion and filling-in and a way to easily share their work with their colleagues.

This paper presents the JoinTS (Joint psychological Therapy Support) system, comprised by mobile devices and a public display (e.g. smart board), which addresses the aforementioned problems and aims to enhance the group therapy process. The paper starts with an overview of the project's main goals, followed by the description of the envisioned solution's architecture. Afterwards, the features that tackle each of the procedures and respective problems that pertain to the group sessions are described. Finally some related work is presented, conclusions are discussed and future work is drawn.

2. JOINTS

JoinTS is a project that aims to provide adequate computational support to group therapy, in several scenarios, with different hardware and software configurations and covering a multitude of psychotherapy activities. The JoinTS's system covers from classical group therapy scenarios, in one room with the presence of all participants, to completely distributed scenarios (e.g. "holiday" groups), through spontaneous gatherings (e.g. "coffee-table" scenarios), combinations of the above, etc. Some of these are "tentative" situations that emerge from the introduction of the technology, but need clinical validation.

Hardware configurations also vary. A single display groupware setting (large public display - LPD) seems adequate, for instance, to the classical scenario, either

providing direct interaction with an interactive LPD or indirect through the therapist device. Multiple participant interaction with the LPD is also envisaged, although most of the times, the therapist control seems clinically preferable. Participants and patients in particular may use PDAs, small emerging tablets, smart-phones or simply mobile phones. The main therapist most adequate devices should be TabletPCs, but PDAs and even phones are admissible particularly in conjunction with an interactive LPD. Auxiliary therapists' may recur to PCs. In other scenarios, the LPD may not be possible or multiple LPDs might be needed (e.g. two room sessions).

This paper addresses the LPD setting. Most notably, it focuses the analysis activities where the tasks performed by patients, either at home or during the session, are presented and discussed.

2.1 Therapy Analysis LPD Architecture

Figure 1 depicts the LPD architecture. The scenario encompasses a public screen (the LPD) and corresponding application, a session server, a session facilitation tool, patient applications and, eventually, an auxiliary analysis tool.

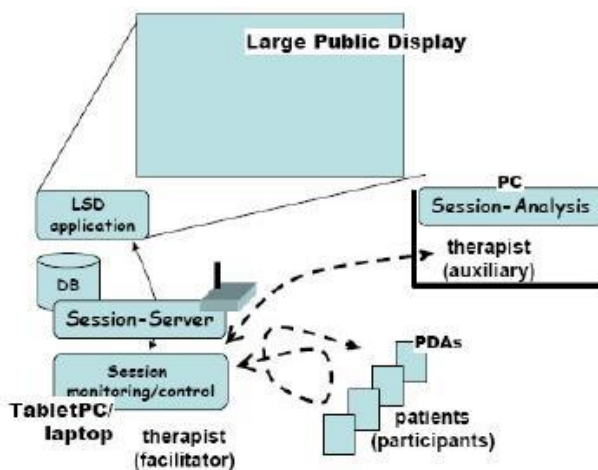


Figure 1. Architecture for the Large Public Display Setting

The session-server is the central component of the architecture. It provides access to a storage space (DB in the figure), that keeps records about patients, their work and historical progress during therapy and info about groups and sessions. Above all, the session-server is responsible to ensure the flow of communication during sessions, including the information that is displayed in the LPD. The session-server usually runs on a dedicated PC in the session room.

The LPD application shows the information in the LPD. For interactive LPDs it is also responsible to forward modifications to the server. It is up to the server to maintain the coherence between the information shown in the LPD and other local representations of that display (e.g. session facilitation). The LPD application usually runs on

the server PC, although remote settings are also envisaged (e.g. a two-room setting).

The patient tools are form-filling tools (e.g. questionnaires answering, activity and thoughts registration), running on a PDA/phone based platform. Patients transfer entered data to the server as needed (at the beginning or during the session) and it is up to the server to notify the other tools (e.g. session facilitation). Patients also receive forms from the server. Patient tools of this scenario are the same used on individual therapy (see [2] for details).

The session facilitation tool enables therapists to analyse and monitor patients' data, communicate with the auxiliary therapists and patients, manage what information will be shown in the LPD and in general control all the information exchanged in sessions. It usually runs on a TabletPC held by the main therapist. Situations may arise where the TabletPC is also the server PC, running the LPD application on a second monitor output.

The session analysis tool is a subset of the monitoring/control, disabling the management of the LPD space and the communication with the patients. A wireless, access-point based, network ensures the connection between tools. Other configurations are possible but more adequate for alternative scenarios. XML is used in all exchanged messages. The server receives messages from the clients, checks the destination, saves them in the DB as needed and forwards to the correct user or users.

3. THE SESSION FACILITATION/ANALYSIS TOOL

Figure 2 shows the facilitation tool. Three workspaces are identified, corresponding to the three available "tabs". The first one ("my space") corresponds to the therapist private space. The second one ("shared space") corresponds to the workspace shared with other therapist. The third one ("display space"), only available for the facilitator, corresponds to the public display space.

The private space, selected in the figure, is used to prepare and analyse information. The visible information reveals pain therapy questionnaires from three different patients. The shown objects are exact replicas of the corresponding patient-PDA artefacts, and may correspond to a home work or to an ongoing patient task. In both cases, the buttons on the top of each artefact enable the therapist to browse each patient's data independently. The ones next to the tabs permit to advance all forms simultaneously. In the case of an ongoing patient task, the artefacts are (optionally) updated as patients interact with their own PDA. This allows the therapist to monitor the patients' activities, including their difficulty to interact with the PDA application.

Once the therapist is satisfied, it may send the information to the other therapist or publish it on the LPD just by dragging all or a subset of the patients' artefacts to the corresponding tab selector. In both cases, the information is duplicated in the corresponding tabs of the local tool, and sent, through the server, to the remote application (the other therapist tool or the LPD application).



Figure 2. Workspace Management

On the right side of figure 2 two vertical bars are visible that provide access to a set of auxiliary components. When opened they offer the elements visible in figure 3. The "Listing tool" (on the left) is used for the selection of data, usually published to the private space. It permits several working modes. For example: (1) select data for one specific form, from all selected patients; (2) select data of several forms for one patient (view patient evolution); (3) select ongoing patient task. Specific patients can also be selected and the destiny workspace chosen.



Figure 3. Session definition & auxiliary channels

On the right of figure 3 two other components are available. At the top, a chat tool enables an instant messaging service between therapists, usually from the auxiliary to the facilitator. In conjunction with the therapists' "shared space", provide an important, non-disturbing, means of communication between therapists, not possible without in paper based-sessions. At the bottom an annotation tool is available.

4. RELATED WORK

In order to fully understand a collaborative system, it is necessary to study two basic aspects of its workflow: how users perform their individual work and how they relate it in a collaborative way [7].

Group therapy scenarios often rely heavily on communication in order to achieve the purposes of the system. Pinelle [3] points a few key factors for the construction of a successful collaborative system: support of explicit communication - both spoken and written as the first type is the most commonly used in real collaborative environments and the latter is crucial for questionnaire filling during therapy sessions. Another important aspect in groupware is related to shared-workspace usage. By providing a space where each intervenient is able to see what another is doing, it is possible to reduce communication traffic in the system. Although this may be seen as a major advantage in a system, it also has major drawbacks: it is necessary to manage and protect each user's work in the shared-workspace to avoid conflicts and collisions during work session. The final issue presented is related to artifact sharing in collaborative environments. Traditionally, one would have to physically deliver an artifact to another in order to share it. In groupware applications it is possible to perform this action in an asynchronous way, through wireless communication.

The Pebbles project [6] was an academic research whose main goal was to connect several hand held devices to a PC. The portable devices would interact with the main computer in several applications, which allowed them to control the keyboard individually. The system also allowed an individual to see what his colleagues were doing by displaying overall information on a whiteboard. Still, the management of different groups with specific needs is scarcely manageable. Furthermore, the specificity of the group therapy scenario requires details such as the easiness of use and the specificity of the used artifacts, particularly for the patients' client applications, to be of utmost importance.

Another interesting system is Teampace [4], jointly developed by Boeing and IBM. The project's goal was to support cooperative teamwork in a spatially distributed environment. The main focus was to support task scheduling in the system, managing workflow and sharing work artefacts across a significant time period. The system also allowed for synchronous meetings in which all intervenients would review each other's work and schedule new tasks. However, the online monitoring of several working spaces is not included in the system, whereas for psychotherapy, it is essential for therapists to have the possibility to be aware of every patient's action.

Overall, despite their technological potentialities and wide roll of features, current collaborative systems and the several modules that support it, can not be directly used on the group therapy setting. Besides the critical scenario and the particular settings in which these take place, the needs of both therapists and patients need to be taken into consideration and must be included in a single

system. Furthermore, the system must also support the management of information that might be generated by several working teams and patient groups. Another important aspect is the continuous nature of the therapy process, where the pre and post meeting work, either isolated or done in cooperation, is essential to the success of each meeting. Accordingly these tools, that support off-session work, must comply with the needs and features that are incorporated into the overall architecture.

5. CONCLUSIONS AND FUTURE WORK

Current group psychotherapy procedures and used materials introduce challenges to the therapy and collaborative process that result in demanding and time consuming activities for all the actors, at times, even preventing the achievement of better results. Most importantly, these challenges can not be solved by generic groupware tools or by existing psychotherapy software.

This paper presented JoinTS, a project which addresses this problems and aims to support group therapy sessions, integrating individual therapy solutions [1], enhancing the work flow and communication during sessions, but extending its scope through various settings. The adopted solutions take advantage of the emerging mobile technologies, which provide the mobility and necessary characteristics to be used on several scenarios, without disrupting and enhancing the currently used processes. A large shared display is also included to facilitate the dissemination of information between users and to support the management of each session as well as the analysis and visualization of multiple data from the various members of the group.

Current and future work includes new visualization patterns and templates, particularly adequate to share results, patients' evolutionary paths and statistics with therapy groups. On this facet, the monitoring functionality is being extended in order to allow a deferred visualization of the patients' behaviour. Besides supporting the revision

of group sessions, it also supports the deferred analysis of the patient's behaviour while working away from the therapist.

6. ACKNOWLEDGEMENTS

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