Building Continents of Knowledge in Oceans of Data: The Future of Co-Created eHealth
A. Ugon et al. (Eds.)

doi:10.3233/978-1-61499-852-5-695

Evaluation of the Technology Acceptance of a Collaborative Documentation System for Addiction Therapists and Clients

Anja PERLICH[a,1], Christoph MEINEL[a] and Daniel ZEIS[b]
[a]*Hasso Plattner Institute, University of Potsdam, Germany*
[b]*Ambulante Beratungs- und Behandlungsstelle (AWO), Potsdam, Germany*

Abstract. Addiction treatment outcomes are strongly determined by relational factors. We present the interactive documentation system Tele-Board MED (TBM) developed as an adjunct to therapy sessions aimed at enhancing the therapeutic alliance and patient empowerment. The objective of this work is to find factors that predict the acceptance of TBM in face-to-face addiction treatment sessions. We combined the methodologies of survey and focus group and based the data collection and analysis on the Unified Theory of Acceptance and Use of Technology. The studies, which involved therapists (n=13) and clients (n=33), were conducted in an addiction counselling center in Germany. Therapists see a flexible, context-dependent usage as a basic condition for TBM acceptance and its greatest benefit in providing a discussion framework and quick access to worksheets—in both individual and group sessions. Clients are inclined to use the system with the expectation of improved communication and better recall of the discussed topics based on a personal copy of the session notes.

Keywords. Addiction care, computer-mediated therapy, therapeutic alliance, UTAUT, doctor-patient relationship, evaluation

1. Introduction

In 2012 in Germany approximately 3.4 million people suffered from alcohol use disorders, i.e. alcohol dependency and / or abuse [1]. Common drug abuse treatment approaches are cognitive behavior approaches, including functional analysis of drug use and social skills training [2]. Besides treatment techniques, also known as specific factors, there are relational factors, which are considered significant determinants of addiction treatment outcome. Such factors, including therapist empathy, client self-efficacy and therapeutic alliance, are appropriate subjects to further investigation [3]. The potential for using information technologies (IT) in addiction counselling is actively explored, but seems to be limited to computerized treatment (i.e. stand-alone technology that provides client support independently of a therapist, such as web-based applications or mobile apps) [4]. Various theories are used in health care to predict IT acceptance [5].

We have developed the interactive, whiteboard-inspired documentation system Tele-Board MED (TBM) as an adjunct to therapy sessions, aimed at enhancing the relational factors of therapeutic alliance and patient empowerment. TBM allows for

[1] Corresponding Author. Email: {firstname.lastname}@hpi.de

visual and collaborative note taking during treatment sessions and the creation of templates for common therapy contents (cf. fig. 1). It supports the subsequent use of notes (i.e. clients can get print-outs to take home and therapists can receive case reports created semi-automatically). As a web-based system TBM can be used with multiple hardware setups, such as a digital whiteboard or a laptop with a beamer.

In earlier studies [6] we investigated computer-mediated therapy in the domain of mental health care, a field that shares similarities with addiction counselling especially in the usage of cognitive behavioral treatment approaches. While we learned that TBM successfully addresses patient needs, therapists' barriers to adoption of the system have remained high. This is the case despite an easier adherence to the legal requirements of providing patients access to their records and the efficient use of digital notes [6]. Thus, we seek to find out what determines the willingness of addiction therapists and clients to use a collaborative documentation system such as TBM in treatment sessions.

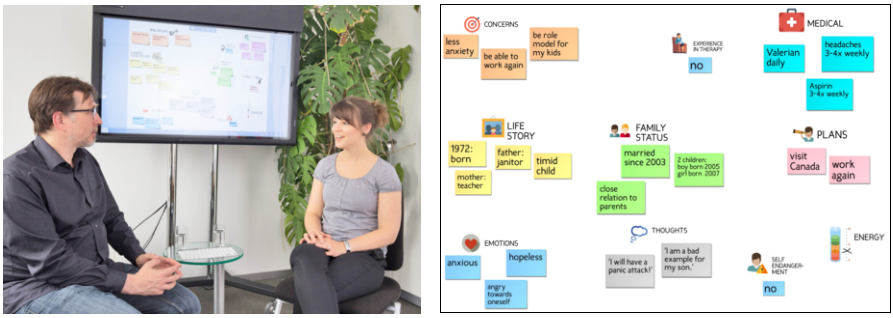

Figure 1. Tele-Board MED user scenario and anamnesis panel with patient data on digital sticky notes.

2. Methods

We used a mixed-method approach and combined surveys and a focus group as quantitative and qualitative approaches to data collection and analysis [7]. The studies were guided by the Unified Theory of Acceptance and Use of Technology [8] (fig. 2) and conducted in group rooms of an addiction counselling center in Germany.

2.1. Survey and Focus Group with Therapists

The study with addiction therapists lasted 70 minutes and involved all of the center's therapeutic staff (n=13). The system was introduced by a 7 minute video showing the TBM system used in a roleplay of a behavior psychotherapy treatment session. A therapist speaks to a patient with an anxiety disorder. Furthermore, the film summarizes earlier findings on data security measures and its influence on the patient-therapist relationship. Following a joint viewing, the therapists were asked to fill out an anonymous questionnaire. The survey items represented the five UTAUT variables: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), and intention to use (IU) or acceptance. They were rated on a five-point Likert-type scale ({-2} disagree, {-1} rather disagree, {0} uncertain, {1} rather agree, {2} agree). PE is representated by seven items that constitute the goals of TBM, namely supporting faster high-quality documentation, doctor-patient communication, and patient

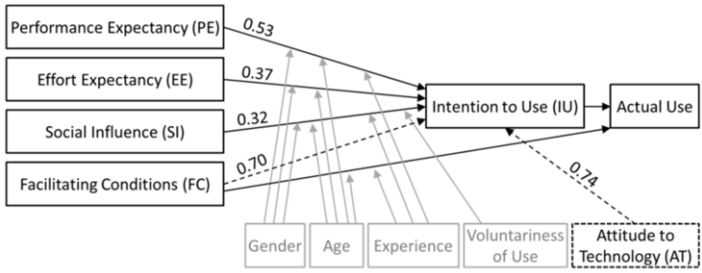

Figure 2. UTAUT model with the main constructs in black, moderators in grey (adapted from [8]). We added the dotted parts and numbers representing Pearson correlation coefficients.

empowerment. For the EE variable, seven items were included, which represent the TBM software and hardware features, as well as the system as a whole. SI is represented by two items relating to people, who influence the therapists' professional work and other people who are important to them. FC was covered by four items that represented the fit of TBM to the therapists' personal attitude on client counselling and to the addiction center's mission statement as well as TBM's integrability in existing work routines and documentation practices. Finally, IU was assessed with two items. The data analysis included descriptive and inferential statistics with SPSS 25.

Directly after the film and survey we took 45 minutes for a focus group that involved 11 of the 13 therapists and the administrative head (n=12). The discussion was moderated by two members of the research group. The facilitator guided the discussion with open questions inspired by the UTAUT core constructs and the rapporteur handled audio recording once we obtained written consent from all participants. After the recording was transcribed verbatim with a slight smoothing, the written text was analyzed with MaxQDA 12. We took a deductive approach to qualitative content analysis and used the five UTAUT variables as a predefined coding scheme. However, PE was split up into perceived usefulness and perceived disadvantage, and both were further segmented into context-dependent subclasses. The coding was double-checked by a second researcher. The responses cited here were correspondingly translated from German into English.

2.2. Survey with Clients

The inclusion criterion for clients (n=33) was their presence in group sessions at certain times. The clients were introduced to TBM in groups by a shortened version of the mentioned film of the roleplay. Afterwards they were asked to complete an anonymous questionnaire including items on the perceived effects of TBM (scale as above -2 to 2).

3. Results

The quantitative analysis of the therapist survey data focused on finding interrelationships between the UTAUT variables. In the qualitative content analysis of the focus group data, we looked for meaning related to the UTAUT variables (cf. fig. 2). The analysis of the client survey data assesses TBM's perceived usefulness. The therapists' perspective is covered in greater depth, since they are decisive in the implementation of systems such as TBM.

3.1. Clients' Acceptance of Tele-Board MED

The clients (n=33, 26 m, 7 f; addiction: 24 alcohol, 5 gambling, 3 illegal drugs, 1 medicines; age: 27–69, avg. 48) perceive TBM as beneficial in the areas we assessed (fig. 3). The acceptance in both individual and group sessions is positive and fairly balanced. One client stands out, rating all but two items as very negative. He states that he cannot imagine using TBM, yet gives no reason for his assessment.

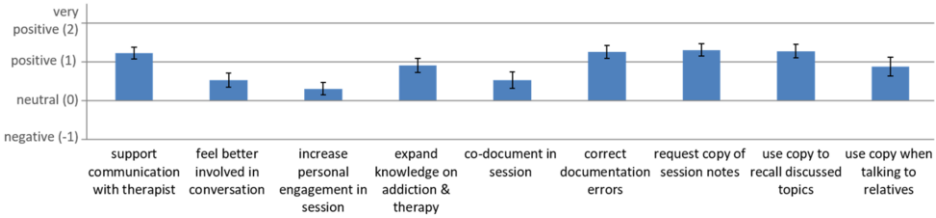

Figure 3. All average client ratings fall within the positive realm (std. deviation ± std. error of the means).

3.2. Therapists' Acceptance of Tele-Board MED

The therapists (n=13, 3 m, 10 f; age: 33–56, avg. 46) follow behavioral approaches that they have used in their working experience of 2 up to more than 10 years. 8 specialize in alcohol addiction, 2 focus on illegal drugs, and another 2 are concerned with substance-free addictions (gambling, media). The Pearson coeffient *r* was used to measure pairwise correlation among the predictor variables (PE, EE, SI, FC) and the intention to use (IU). The values show moderate ($.3<r<.5$) to high ($r>.5$) correlation (fig. 2). In addition to the UTAUT variables, our survey also contained an item representing the attitude to technology (AT), which appears to be the strongest predictor of IU (.74). A regression analysis shows that the 4 UTAUT predictor variables account for up to 50% of the variance in IU (adjusted $R^2=.16$). However, a regression with AT as additional variable explains 92% of the variance (adj. $R^2=.85$). Remarkably, a regression with AT as a single item allows for a better prediction of IU ($R^2=.55$, adj. $R^2=.51$) than the 4 UTAUT factors together, which integrate 20 items in total. A principal component analysis yields two components in the respondents, who agree to system usage. Group 1 sees TBM's greatest potential in supporting the client encounter itself in respect to communication, counselling process and client engagement. Group 2 expects support in documentation by allowing reports to be created faster and errors reduced. The discussion revealed additional factors of perceived usefulness that were not represented in the survey, e.g. TBM's potential for facilitating a session: *"I think technology could add structure and maybe there's a way to avoid the constant search for worksheets, instead to just give a keyword, like 'relapse model', and the sheet appears immediately."*(F6). There is a broad consensus that the system should flexibly go into action whenever it seems useful for the client and the session content: *"Our work lives from relationship building. Therefore, what matters most is to utilize technology in order to connect with the client and create a win-win situation."*(F1). Therapists are concerned with the effects on their clients: *"For me getting a client's feedback is critical, to hear the client's opinion about whether something is disruptive or helpful. This assessment will strongly influence my final judgement."*(M1). Unexpectedly, we observed that some therapists did not see the core benefit in supporting case-specific documentation: "*We try to put as few private details as possible in therapeutic reports because any insurance employee might read it, and*

such sensitive data is none of their business."(F4). The suggestion to use TBM in group sessions came up increasingly: *"While the issue of trust also plays an important role in the group, not everything is officially put on paper and printed."*(F3).

4. Discussion

This study aims at finding factors that predict the acceptance of TBM in face-to-face addiction treatment sessions. The moderate to high, but not significant, correlations between the four UTAUT predictor variables and the intention to use, as well as the limited amount of explained variance, suggest that other factors strongly influence the therapists' acceptance. One of these factors is their attitude toward technology which surprisingly is explicitly excluded from UTAUT [8]. However, adding variables to IT acceptance models is common in research [5]. The therapist focus group clearly showed that acceptance is strongly dependent on specific treatment situations. The findings show shortcomings of the UTAUT model when a secondary user, and thereby a more dynamic user scenario, is involved. We found inclincation in clients to use the system with the expectation of improved communication and better recall of discussed topics. Therapists see great benefits in capturing non-personal, auxiliary information for supporting session facilitation and structuring since TBM could provide a discussion framework and quick access to worksheets. Interest in efficiently creating case-related documents with TBM seems less paramount than for psychotherapists [6]. The acceptance of a technology like TBM can hardly be assessed in a general manner because the process of care influenced by computer-mediated therapy is intrinsicially very context-dependent. Nevertheless, therapists expect TBM to meet the requirement of flexible, situation-specific use. Future research will investigate other implications of TBM in practice and their effect on clients.

Acknowledgments

We would like to express our appreciation of the HPDTRP for funding this project. We thank the therapists, clients, Julia von Thienen and Matthias Wenzel for their support.

References

[1] A. Pabst, L. Kraus, E. G. de Matos, D. Piontek, Substanzkonsum und substanzbezogene Störungen in Deutschland im Jahr 2012, *SUCHT* **59** (2014), 321–331.
[2] K. M. Carroll, L. S. Onken, Behavioral therapies for drug abuse, *Am. J. Psychiatry* **162** (2005), 1452–60.
[3] W. R. Miller, T. B. Moyers, The forest and the trees: relational and specific factors in addiction treatment, *Addiction* **110** (2015), 401–413.
[4] K. Johnson, A. Isham, D. V Shah, D. H. Gustafson, Potential roles for new communication technologies in treatment of addiction, *Curr. Psychiatry Rep.* **13** (2011), 390–7.
[5] R. J. Holden J., B.-T. Karsh, The technology acceptance model: its past and its future in health care. *Journal of Biomedical Informatics* **43** (2010) 159–72.
[6] A. Perlich, C. Meinel, Juggling Doctor and Patient Needs in Mental Health Record Design, *Informatics Empowers Healthcare Transformation, Proceedings of ICIMTH* (2017), 189–192.
[7] B. Wolff, J. Knodel, W. Sittitrai, *Successful Focus Groups: Advancing the State of the Art* SAGE Publications, Teller Road, Thousand Oaks California 91320 United States, 1993.
[8] V. Venkatesh, M. G. Morris, G. B. Davis, F. D. Davis, User Acceptance of Information Technology: Toward a Unified View, *MIS Q.* **27** (2003), 425–478.