Strategies: Include Cognitive Rehabilitation Training in Daily Life

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Abstract— The aim of rehabilitation is to use regained skills in daily life. However, in existing software-based training, the improvement of the abilities during training is often set as the focus. Therefore, we propose to combine a medically approved software-based training with strategies that can be learned during training and practiced in the patient's daily life. A feasibility study with 4 patients has shown that the system is perceived as meaningful and the patients are interested in its use.

I. INTRODUCTION AND RELATED WORK

Software-based cognitive training is successfully used in the therapy of acquired brain damage. The progress often focuses on the improvement of competences during training. However, the actual goal is to improve and use the skills in daily life [1]. Although some software daily examples are practiced on-screen or in Virtual Reality [2], there is a lack of support in using strategies to solve problems that differ from these examples. This led to the research question 'How to include a system to transfer the software-based rehabilitation training to daily life?' The main contributions of this work are the conceptual and prototypical development of a possible solution and a first feasibility study with patients.

II. CONCEPT AND PROTOTYPE

We used a medically approved therapy software for cognitive training of verbal memory in clinical use (RehaCom) as a basis. The patient read texts, memorized it and answered multiple-choice questions about the text. We have combined this with the strategy 'Visual Imagination' in a click prototype: The patient imagines a picture of the elements in the text or information received (Figure 1). The strategy is explained in three steps: (1) at the beginning of the training the use of the strategy, (2) after half of training an extension of the strategy and (3) at the end how to train or use it in daily life. Between the steps, the strategy was practiced with examples.

III. FEASIBILITY STUDY: METHODS AND RESULTS

We evaluated our prototype in a qualitative feasibility study with 4 patients aged between 17 and 60 years. All had
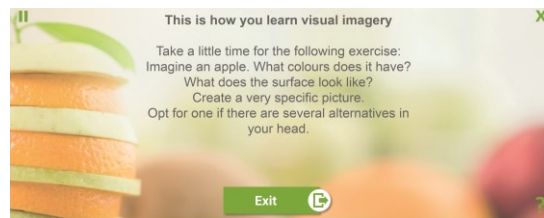
Figure 1: Explanation of how to learn 'Visual Imagination'

acquired brain damage between and are slightly to moderately affected. They were in phase C to D of the German rehabilitation system and had previous experience in the use of cognitive training. First, we collected disease-related and demographic data. Then, patients used the click prototype during a training session. We asked questions about the subjectively felt effect of the training, understanding and use. These were answered using a Likert scale (1 = strongly agree, 5 = strongly disagree) and open questions. It was shown that the patients understood the strategy (m = 1.5), used it in the training situation (m = 1.5) and want to use it in everyday life (m = 2). All participants stated that they liked to learn strategies and to use them as a working tool in their daily life. It was mentioned that the presented strategy does not help in every situation. However, the enjoyment in this way of training was described as higher than in current training. The division into three steps was perceived as meaningful.

IV. DISCUSSION, CONCLUSION AND FUTURE WORK

The participants showed both their abilities to use and their interest in using the strategies in daily life. Not only this but also different strategies are needed for different situations. The system can be used as a basis for integrating different strategies and transfer them to daily life. It also may be transferred to different pieces of training and levels of difficulty. The prototype shows the possibility to transfer the learned strategies into daily life. Currently, we build on these results and integrate a sequence of different strategies, like 'PQRST' or 'Learning through processing depth', into existing training exercises. We evaluate this with patients in a comparative study according to the training success parameters and use in daily life.

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