SOCIABLE - NEXT GENERATION COGNITIVE TRAINING USING MULTI-TOUCH SURFACE COMPUTERS

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Alzheimer’s disease treatments

- There is currently no cure for Alzheimer’s disease
- Medicines in use only mitigate the symptoms
- It is increasingly recognized that nonpharmacological treatments for dementia should, in best practice, be pursued early in conjunction with antidementia drugs
- Prevention strategies for Alzheimer’s disease include mental stimulation activities
SOCIABLE programme

- SOCIABLE is an ICT based programme aiming at:
  - Training and improving the cognitive functions of healthy elderly, elderly with MCI and patients with mild AD, using:
    - A set of ICT supported Cognitive Training Sessions that are performed in a care center with the support of a medical expert or a specialised care center employee
    - Individual Cognitive Training Activities that are performed at the homes of the elderly with (or without) the support of a formal (or informal) carer
  - Improving quality of life of both the elderly and their families through:
    - A set of ICT supported activities in order to enhance mood and social activation of the elderly
SOCIABLE Equipment (surfaces)

- Microsoft Surface Table (used in care centers)
- Tablet PC or ALL-IN-ONE PC (used in care centers and homes)
**SOCIABLE partners**

- SingularLogic S.A - Greece
- CEDAF - Italy
- University of Valencia - Spain
- AIJU - Spain

- Trodheim Kommune - Norway
- Hygeia S.A. - Greece
- Municipality of Forlì, Welfare Policies Service - Italy
- Forlì’s Local Sanitary Organization (Geriatric department) - Italy
- KEKOIPO – Municipality o Kifissia - Greece
- Fondazione Santa Lucia - Italy
- PREVI S.L - Spain

- European project funded by the EC- 2009/2012
- Programme: ICT-PSP - Objective: 1.4: ICT for ageing well with cognitive problems, combining assistive and independent living technologies
SOCIABLE components

- Specially developed software corresponding to cognitive training activities based on multi touch tables or tablet PC’s
- Back-office application facilitating Medical Experts in monitoring users’ cognitive performance and in evaluating collected data
- Medical Specialists (e.g., neurologists, psychiatrists, geriatricians, neuropsychologists, nurses, social workers) who deal with elderly users
- Elderly users
The SOCIABLE pilot study was a multi-national, multicenter, randomized, placebo-controlled efficacy study. Its objective is to evaluate the impact of SOCIABLE programme on the cognition, the affection and the functional abilities of cognitively intact elderly, patients with MCI and patients with mild AD.
SOCIABLE Study Population

350 elderly 65+

**Group A:** cognitively healthy elderly

**Group B:** MCI patients
\[(MMSE 25-30)\]

**Group C:** Mild AD patients
\[(MMSE 20-24)\]
SOCIABLE Study Population

Inclusion criteria

- Aged 65 years +
- Fluent in native language
- A minimum of 6-year formal education
- Absence of sensory deficits
- Willing to commit
- Presence of a formal caregiver (for groups B & C)
- Stable medication (for group C)

Exclusion criteria

- Major neurological (e.g. stroke, transient ischemic attack) or psychiatric illness (e.g. depression not controlled by medication)
- Traumatic brain injury.
- Current substance abuse
- Significant communicative / motor/ sensorial impairments
SOCIABLE Cognitive training programme

- Cognitive domains trained:
  - Memory
  - Executive function
  - Constructional Praxis
  - Attention
  - Logical reasoning
  - Language
  - Orientation

- Computer mediated reminiscence therapy
  - Book of life: used to create an individual memory space composed by several audiovisual stimuli related to users’ own life in order to share it with other users and create a collective memory space
SOCIABLE Sessions

Sessions include:

- 24, hourly, computerised cognitive training, twice weekly for three months

- 50% individual sessions- 50% group sessions

- Small number of home users (using a tablet PC)
SOCIABLE Study Design

- Diagnosis
- Informed consent
- Cognitive, affective, and functional assessment
- Subjective self-report

Weeks:
- T0: Week 0 "Warm-up"
- T1: Week 1-12
- T2: Week 24 "Follow-up"

2 sessions/week = 24 sessions
SOCIABLE Study Design

Subjects were randomized to start the SOCIABLE programme promptly or with a 3-month delay. The latter group served as “control” for the former group of immediate initiation.
SOCIABLE Pilot Study Results

Preliminary results from 185 users (102 healthy, 57 MCI and 55 mild AD)
Pilot study results

* $p < .05$; ** $p < .01$; *** $p < .001$
## Pilot study results

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<th>ABILITIES</th>
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<th>TEST</th>
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<th>MCI (B)</th>
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Treatment effects-verbal memory (RAVLTLT-immediate)

All subjects

Estimated Marginal Means of MEASURE_1

Healthy elderly

AD patients
Treatment effects-verbal memory (RAVLT- delayed recall)

All subjects

Estimated Marginal Means of MEASURE_1

Healthy elderly

AD patients
Treatment effects – Praxis (Rey’s figure -copy)

All subjects

Healthy elderly

AD patients
Treatment effects – Visuospatial memory (Rey’s figure -delayed)

All subjects

\[ F(1, 230) = 2.942, \ p = .055 \]
Treatment effects - Language (Object Naming)

All subjects

Estimated Marginal Means of MEASURE_1

F(1,230)=6.375, p<.01
Treatment effects - Mood (Geriatric Depression Scale)

All subjects

Estimated Marginal Means of MEASURE_1

Healthy elderly

AD patients
SOCIABLE users satisfaction
Discussion

- Participants’ *statistically significant* improvement was observed in the score of most neuropsychological tests.
- Especially improvement was observed in the group of healthy elderly → the role of the cognitive training programme in prevention.
- The improvement was maintained three months after the end of the intervention for the healthy elderly.
Finally...

- These preliminary results are encouraging.
- The analysis of the results from the total number of users has started and it seems that final figures will be even better.
- SOCIABLE consortium intends to conduct new studies focusing on the involvement of additional elderly populations in SOCIABLE sessions.
- Finally, we intend to enrich the programme with new games training an even wider range of cognitive domains.
- More info at:
  - www.sociable-project.eu
  - degen.brain@hygeia.gr