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## The efficacy of BAPNE Method in dementia treatment: a research proposal in Friuli Venezia Giulia, Italy

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### Abstract

In treatment of dementia, further to the use of medicine, methodological approaches have shown positive results as to the improvement of the people's condition, by employing cognitive, relational, behavioral stimulation techniques, or intervention on the surroundings. The aim of this research file is to verify the efficacy of BAPNE method as a cognitive and relational stimulation tool, on elderly patients diagnosed with Alzheimer's disease or with other kind of mild to moderate dementia. Scientific research has already given evidence of positive results of the BAPNE method on people with mild impairment, in particular concerning the executive functions. In this experiment, a sample group of 40 elderly patients will undergo a cycle of 12 sessions; the estimation of the quantitative results will be determined by comparing the data of the experimental sample group (40 elderly patients), with those of the control group (20 elderly patients). The cognitive functions and the executive functions will be measured. Questionnaires and interviews will be used for the qualitative aspects. A decrease in the general cognitive deterioration, and an improvement in the attention capacity, in memory, and in executive functions, is expected after the treatment. Furthermore, a positive effect is foreseeable on the quality of caregivers, giving them the possibility to relate in a new way.

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## 1. Introduction

The elderly population with cognitive impairment related to vascular dementia or Alzheimer's disease, is growing exponentially. The WHO has published a provisional data of the diffusiveness of dementia: in 2050 it will reach 114 million cases; about half of these will be affected by Alzheimer's disease. It will be necessary to keep costs as low as possible, as the economic resources will have to be divided among a greater number of paupers.

The increase of life expectancy is an achievement; however, it also has to necessarily bring with it an improvement of the quality of life itself.

Statistics show that the region of Friuli Venezia Giulia is one of the areas where the incidence is among the highest in Europe, because it goes hand in hand with the percentage of elderly people living there. It is necessary, in addition to pharmacological research (Schiavo, 2014), to find effective methodologies for the treatment of dementia. The behavioral and cognitive supporting techniques used so far are good, as well as the environmental interventions on structures and furnishings, and their efficacy has already been proven by various researchers (Aguirre, Woods, Spector & Orrel, 2012; Aguirre, Hoare, Spector & Orrell, 2013; Boccardi, 2007; Craighero, 2010; Damasio, 1994; Guerrini, Giorgi Troletti, 2008; Mapelli, Di Rosa, Nocita & Sava, 2013; Moro, Condoleo, Valbusa, Broggio, Moretto & Gambina, 2014; Orsi, D'Anastasio, Ciarrocchi, 2012; Perri, Carlesimo & Caltagirone, 2001; Pieramico, Esposito, Cesinaro, Frazzini & Sensi, 2014; Spector, Orrell & Woods, 2010; Woods, Aguirre, Spector & Orrell, 2012).

This research proposal aims to verify the efficacy of the BAPNE method in treatment of dementia (Romero, 2014), at a degree where impairment in people's abilities has reached a level in which independent living is no longer possible, and dependence on other people is already a matter of fact.

The theoretical bases of the method, founded on Biomechanics, Anatomy, Psychology, Neuroscience and Ethnomusicology (Justel & Diaz, 2012; Romero, 2011a; Romero, 2011b; Romero, 2011c; Romero, 2008; Romero 2013, Umiltà, 2011), justify the attempt for an experimentation, being aware not to lose sight of the person's unity, its story, its culture, its emotions, its capabilities, its identity, including its disabilities (Romero & Romero, 2013; Swaab, 2010).

Multiple intelligences as they have been discussed by Howard Gardner (1985) are present in every person, at any age, in any condition, in any culture, even though the disease has changed their characteristics (Romero, 2008; Romero & Martinez, 2011). Dementia in elderly people gradually change their brain, which gradually loses cognitive, praxis and mnemonic skills (Romero et al., 2014) and functions, sometimes getting to changes in their personality. During the degenerative process, the neurological system continually seeks for new balance, in order to maintain its functionality as long as possible. For this reason, it is necessary to stimulate it, to take advantage of this plasticity and to recover those functions that the disease inexorably affects (Doidge, 2007).

The disease, as well as the evolution of the third and fourth age, enforce the researcher to a greater attention and to a continuous verification of the identified activities, so that they can be useful in achieving the objectives of cognitive stimulation, while respecting people's individualities, but also their clinical features.

## 2. Objectives

This research proposal aims to identify which are the effects of cognitive and socioemotional stimulation obtained with BAPNE method (Pons Terrés, Romero Naranjo, Romero Naranjo, Crespo Colomino & Liendo Cardenas, 2014), on a population of elderly people with vascular dementia, Alzheimer's disease or senile dementia at a degree of mild to moderate level. The intention is to monitor in particular the effects on attention and on the executive functions (Barrios & Guàrdia, 2001; Dorado, 2012; Ribal, Engeby & Barco, 2004; Tirapu-Ustarroz, Luna-Lario, Iglesias-Fernandez & Hernaez-Goni, 2011), expecting an incidence on the daily action of these elderlies and verifying a real improvement and not just a slowdown in skill loss.

The involvement of caregivers is useful because the shared experience helps dissolving the relationship problems that inevitably occur, providing a space in which the disability of the person with dementia is reconsidered with a view to new possibilities (Pons-Terrés, et al., 2014). For the relatives or the operator who take care of the elderly, it is important to be able to discover still existing strengths on which it is possible to affect in everyday life. The positive and playful atmosphere that is being created, helps to make tensions lighter, improving the quality of relationship. The elderly then has the opportunity to rediscover himself as skilled, as well as those who take care of him, because in this

situation an equal relationship among all participants is re-established. The ever-present physical contact, besides ensuring a sensory stimulation, leads to a corporeality that is not that of nurturing. The non-auto-sufficient elderly body is seen, by those who take care of him, as something to protect, conserve, clean, heal, clothe, support, nurture; in BAPNE activity the body is again the link to a positive relationship with each other, allowing the interpersonal and intrapersonal communication, giving the elderly again the perception of the existence of a self that is not only “self – needy”.

### 3. Methodology

The BAPNE method has its roots in the ethnomusicological and anthropological research. Music and movement have always been an integral part of human development. The psycho-emotional stimulation obtained with body percussion creates a social environment which is enjoyed by the elderly. Melodies and lyrics are selected in order to be familiar or to belong to the tradition of other peoples, with the aim of stimulating curiosity, mnemonic skills, and nonetheless, fun. (Romero-Naranjo et al, 2014)

The work is done in group, formed by the elderlies and people close to them, which can be family members but also caregivers. The group becomes the place where the relationship is to be lived, in which the positive dynamics that are created, enable the achievement of a well-being that continues even after the session. (Pons-Terrés et al, 2014)

The research will have the following organization:

Table 1

Experimental Group	Work Sessions	Proposed Activities
40 persons from 65 years of age, with moderate dementia diagnosis	1 session a week, for 12 consecutive weeks	Activities of BAPNE methodology of socioemotional, cognitive and psychomotor stimulation; they contemplate: <ul style="list-style-type: none"> <li>- Mass-motor activation</li> <li>- Fine-motor activation</li> <li>- Singing</li> <li>- Verbalization</li> <li>- Use of body percussion</li> </ul>

When performing the proposed exercises, the people involved will exercise continuously attention and working memory. In preparing the activities, attention has been given to the stimulation of sustained, divided, alternate and selective attention. Different brain and cerebellar areas will be simultaneously stimulated, in order to have benefits at different levels.

The sample will be divided into 8 subgroups of elderlies; every elderly is expected to have the presence of a caregiver, which can be an operator (support operator, nurse, doctor, physical therapist, educator, social worker, psychologist), a relative of the involved guest, or a volunteer.

Each full experimental subgroup will be composed of 17 people: 8 elderlies, 8 facilitators, one BAPNE researcher. Therefore, to complete the research, 5 experimental subgroups will have to be formed.

The control group will be composed by 20 elderly patients with mild to moderate dementia, and it will follow cognitive stimulation activities of a different kind from that of the BAPNE method, as programmed in the structures that accommodate the experimentation.

Table 2

EXPERIMENTAL GROUP	40 elderly people	40 facilitators	1 BAPNE researcher
5 experimental subgroups	8 elderly people	8 facilitators	1 BAPNE researcher
CONTROL GROUP	20 elderly people		

The research will start with the administration of pre-tests to the elderly taking part to the experimental group; it will end with the administration of post-testes, qualitative questionnaires and with the follow-up three months after the last stimulation session.

Table 3

PRE-TEST	<ul style="list-style-type: none"> <li>- Mini Mental State Examination (Folstein, 1975), a quick and sensible tool for the exploration of the cognitive function and of its modification in time, also applicable in serious deterioration forms. It is composed of 11 steps that investigate short-term and medium-term memory, language, time-space orientation, attention, calculation and praxia.</li> <li>- M.O.D.A. (Milan Overall Dementia Assessment) (Brazzelli et al, 1994) is composed of three sections:               <ul style="list-style-type: none"> <li>a) orientations: temporary, spatial, personal and familiar;</li> <li>b) autonomy in everyday life;</li> <li>c) the neuropsychological tests that explore various cognitive domains, that is attention, intelligence, memory, language, spatial cognition and visual perception.</li> </ul> </li> </ul>
POST-TEST	<ul style="list-style-type: none"> <li>- M.M.S.E (Folestein, 1975)</li> <li>- M.O.D.A. (Brazzelli et al, 1994)</li> <li>- Questionnaires valuing the psychosocial aspects: the participants' perceptions on the effects caused by the intervention, reporting their observations concerning the changes in behavior and mood.</li> </ul>
FOLLOW-UP	<ul style="list-style-type: none"> <li>- M.M.S.E (Folestein, 1975)</li> <li>- M.O.D.A. (Brazzelli et al, 1994)</li> </ul>

A group of 20 elderly people with moderate dementia will undergo the same tests, over the same period. The task is to verify the effectiveness of the BAPNE methodology in treatment of dementia by comparing the test results of the control group with the experimental one.

#### 4. Discussion

This research aims to verify the effectiveness of the BAPNE method in the field of cognitive stimulation therapy for elderly patients with dementia. Repeated activation of all the areas of the cerebral cortex and cerebellum, with a continuous change of the task to be performed, stimulates the existing synapses and strengthens them. In the execution of each exercise it is necessary for the elderly to activate motor learning processes. This involves the upgrading of working memory, of short-term memory and thus the activation of the prefrontal cortex and cerebellum. Since verbal and musical language is always present during every activity, the maintenance of speech is favored and remote memory is stimulated. Every person is stimulated to use the sense of sight, hearing and even touch thanks to the contact with one's own body and with that of others, therefore we get the stimulation of the parietal lobe. The hippocampus is continuously stimulated, due to the need to combine all the information arriving from the different activated senses, to the need to orient in space both visually and physically, even if in the exercises movements are reduced, because of the limited mobility of the elderly. Moreover, there is the need to store information in Long Term Memory as well as to recover those of autobiographical memory. Considering that the hippocampus is perhaps the first to be affected in the degenerative process of Alzheimer's, it is useful to strengthen as much as possible a targeted use of this area, to counter the inevitable process of decay. The prefrontal cortex is always active, given the need to coordinate working memory, language, selection of stimuli, to sustain attention and activate language.

As for the mood benefits, there is an expectation to improve the participant's sense of well-being and relationships with caregivers to be more relaxed. The group that is the main working tool, allows the elderly to feel equal with all the participants, with caregivers and with the group leader. Here the difficulties related to the disease are not so emerging, so it is probable that the elderly will feel as competent as younger or healthier people. Thus self-esteem rises and mood improves. The execution of the activities does not expect a correct achievement in performance, so there is no rating level; the dimension of the game with an end in itself outweighs the game seen as seeking victory or with goal achievement. This is the reason why in the experiments carried out so far with BAPNE methodology at

different ages, there have been positive references in connection to the group spirit and to the emotional well-being of the participants.

In the experimental group the expectation is that the scores of the tests remain unchanged or increased, that is that benefits related to cognitive abilities such as attention, concentration, communication and memory, as well as the functional abilities, have significantly better results in the end of the course. Expectation is as well that there is a maintenance of the obtained results in the performances even after a period of three months after the end of the treatment (follow up).

There is also auspice to observe even a positive response in the skills of daily life, as the stimulated executive functions are routinely used in the ordinary life of a person. Consider for example the use of working memory, verbal language, attention and space-time orientation. The comparison with the control group will be decisive in this sense, considering that members of this group as well will follow cognitive stimulation activities that are already in use at the shelter facilities for the elderly. It will be interest for the research team to highlight eventual gaps in comparing the results observed from the experimental group and control group.

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