

## Meditation and TTAP Method® with Residents Diagnosed with Early Stage Alzheimer's Disease

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### Abstract

This paper describes a pilot study conducted at a senior living center. A seven week quasi- experimental, pre- post design was utilized. For a seven week period, students from St. Thomas Aquinas College were paired with residents diagnosed with early onset Alzheimer's disease. The pre post questions were designed to measure mood, memory, psychosocial, and relaxation. The results of this study showed a significant correlation to participation in TTAP Method® programming which utilizes meditation prior to each activity to enhance self-reported feelings of increased memory abilities, significant mood enhancement, and overall feelings of relaxation.

**Keywords:** Alzheimer's disease, TTAP Method®, Cognition, Mood, Memory, Relaxation, Socialization, Mild Alzheimer's disease, Self-expressive art therapies, Therapeutic Recreation, Art therapy

### Introduction

This qualitative and quantitative study collected data on verbal self-expressive questions in responses to the use of Therapeutic Thematic Arts Programming (TTAP Method®) [1,2] which provides enhanced social stimulation and increased cognitive abilities through meditation and theme conversation. In previous studies, results showed significant positive changes in the resident's social, cognitive, mood and memory [1-3]. The TTAP approach stimulates three distinct brain systems, thus encourages brain wellness and neural regeneration, a viable means for enhancing cognitive functioning in older adults. The TTAP Method® ultimately provides and promotes early intervention that is necessary to help adults in retraining cognitive as well as psychosocial abilities [4-6]. This study's findings continues to support clinical research since 2007 which identifies the use of the TTAP® approach to enhance interaction with participants through stimulating all aspects of brain functioning while addressing social and emotional needs [1].

### Overview

As of 2016, Alzheimer's disease is the 5<sup>th</sup> leading cause of death in the United States. By 2020 it is predicted that there could be over 10 million people affected with the disease (Alzheimer's Foundation of America, 2016). Prevention and promoting of cognitive impairments has taken center stage in current research in social sciences. Among older adults living in residential facilities, cognitive functioning is essential for overall wellbeing. Enhanced cognition, emotions, mood and mental stimulation are factors that can positively affect cognition among the elderly [7-10].

Cognitive impairment is a frequent problem for elderly clients across the United States [11]. It is currently suggested that twenty percent of those living in assisted residential facilities are afflicted with cognitive impairment [12].

This study was conducted within Promenade Senior Living, at Blue Hill located in Pearl River, New York for a seven week period. The TTAP Method® was implemented on highly functioning geriatric residents diagnosed with early stages of Alzheimer's disease. Three students from St. Thomas Aquinas College were each randomly assigned a resident. The residents chosen were recommended to the study through the senior living staff because these residents showed symptoms of withdrawal and a

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Step	Process	Stimulation	Brain Region
1	Individual thought to group ideas	Linguistic	Broca's Region
2	Group ideas to music / guided imagery	Musical/ Visual	Visual / auditory cortex
3	Music / Guided Imagery to 2D image	Visual	Temporal
4	Image into 3D image/ sculpture	Spatial	Parietal / Occipital Lobe
5	Sculpture into movement	Kinesthetic	Motor cortex
6	Movement into words/ poetry/ stories	Linguistic	Frontal Lobe
7	Words into food for thought	Spatial	Sensory cortex
8	Food for thought into photography	Intrapersonal	Reticular formation
9	Photography to themed event	Interpersonal	Broca/ Wernicke's area

Note: Multiple regions of the brain are stimulated at any given time throughout multimodal intervention. However, the brain region listed is the focus of corresponding steps (Levine Madori, 2007, 2012)

Table 1: TTAP Method® Nine Steps outlined

lack of participation in normal daily activities of the residences. Of the three residents that were chosen for this study, two were Caucasian males and one was a Caucasian female, the mean age was 90. Group format structured the nine different steps of the TTAP Method® into the seven sessions. The seven sessions correlated with the nine steps of the TTAP Method®: mediation and drawing, meditation and sculpture, meditation and movement, meditation and poetry, meditation and theme event, meditation and phototherapy, meditation and sensory stimulation, and drama therapy [1]. These nine steps specifically correlate to the various reigns within the brain. Therefore, the nine steps of the TTAP Method® directs therapeutic interventions through stimulating various regions of the brain, thus strengthens cognition while reforming remaining strengths. The main goals of the research was to increase the residence time in therapeutic recreation programming from the normal 30 minute sessions to well over an hour. It has been documented that continuous activity stimulation can enhance memory, and improve overall quality of life [13,14].

## Collection

Prior to sessions, residents and family members completed consent forms to participate. Participants had the option of attendance each week and the freedom of nonattendance or withdrawal at any time.

The study collected both subjective and verbal responses to seven sessions. Data was documented through the use of pre-session and post-session questions answered by each resident on a numeric Likert Scale, five being the highest and one being the lowest. The students adapted their questions from DAPS (Connelly). The pre-session questions consisted of one social question: 1) How would you rate your interaction today? One psychosocial question: Did you do anything that made you feel proud? One question on memory: Have you thought of the past today? One question on mood: How is your mood at this point? One question on relaxation: How relaxed are you today? The post- sessions questions were also formulated on the same concepts after each session. 1) How much has this session increased your interaction? 2) How would you rate your self-esteem and feelings of pride after this session? 3) Did this session help your memory and reminiscing? 4) How would you rate your mood after this session? This study was qualitative without use of a controlled group. The format used for data collection allowed continuation of research which supports previous findings within this field of Art and Therapeutic Recreation as well as the objectives of the TTAP Method® [1,2,13].

## Objectives of the TTAP Method®

The TTAP Method® is a program that encompasses five main objectives. First, the program is created to embrace the concept of *use it or lose it* by stimulating all areas of brain functioning to enhance cognitive, emotional, physical, and social capacity [4]. Secondly, to provide opportunities for individuals to integrate life experiences into group experiences through object relations in the creative arts process. Third, to provide a system in which the individual can reintegrate into a supportive social group to foster feelings of safety and support and thereby increase social participation. Fourth, to engage the participant in a multitude of creative arts experiences: music, drawing, sculpture, movement, poetry, and special theme events. Lastly, to provide programming that enables the flow to flourish [1] (Table 1).

## Stimulate Optimal Brain Function

Research on brain plasticity, neural regeneration, and the phenomena of cognitive reserve validates that positive changes in neural activity can be activated by visual, auditory, and sensory stimulation [4,5,6,13]. Through TTAP Method® programming, participants are provided with visual, auditory, and sensory stimulation through creative arts as well as stimulation to three distinct brain systems: the affective system, the strategic system, and the recognition system. A study conducted at Nanyang Technological University in Singapore supported the importance of brain stimulation by activities utilizing a controlled group and a stimulation group. Through brain stimulation, it was found that new neurons began to form in the brain. The results of this experiment means that new brain cells can be created when an individual is involved in stimulating activities and the longer period of time the better [14,15]. Brain research now indicates that the brain can change in mass and density through increased stimulation in these three areas [16,17]. Diversified forms of interaction is essential in the TTAP Method®, residents experience meditation in conjunction with self expressive art activities. Blooms' Taxonomy of Learning (1956) is incorporated into the TTAP Method® approach, and each of the nine steps is designed and structured so as to stimulate the visual learner, musical learner, linguistic learner, interpersonal learner, intrapersonal learner, kinesthetic learner, and spatial learner. Reinforcing social interaction by stimulating all types of learners increases the likelihood of full participation from each participant within the group experience and has a protective effect on the hippocampus [18,19]. Therefore, decreasing the likelihood that individuals with Alzheimer's disease will show signs of further decline in language abilities and short term memory [4,8,14,20].

The combination of numerous artistic activities elicits an integration of higher cortical thinking (e.g. planning, attentiveness, problem solving, and emotional investment in both the topic of discussion and in goal accomplishment) thereby increasing the speed of cognitive and emotional processing, facilitating learning and memory [13,14]. Guided imagery, in corroborated with music, is one of the most unique and significant steps in the methodology in that it allows the individual to access positive long term memory [1,2]. Guided imagery has also been shown to significantly decrease cortisol levels, thereby enhancing mood and subsequent cognitive performance [21].

## Social Emotional Needs

Current Research in the social sciences suggests that when social and emotional needs are addressed, feelings of self-worth, self-esteem, mood, and overall quality of life are enhanced [7,10]. The TTAP Method®, in its thematic orientation, structures programming to meet the specific needs of persons with Alzheimer's disease that include the exploration of feelings of hope, love, grief, life review, sorrow as well as fortitude [1,20]. The TTAP Method® was created and designed to address a range of emotional and social needs by increasing opportunities to engage participants in positive individualized and person centered social involvements [1,22].

One of the central problems that has become a key feature of Alzheimer's disease is cognitive difficulties, specifically short term memory loss (Alzheimer's Association, 2015). The individual diagnosed with early stage Alzheimer's disease finds that the initial memory losses can impact their daily routines as well as quality of life due to the decline in self-confidence and can lead to anxiety, depression, and withdrawal from activities and other social involvements [18,23]. Social withdrawal can result in a general increase in symptoms including enhanced memory loss. These increased in symptoms beyond those attributable to the disease process is an example of what has been termed "excess disability" [14,23]. Individuals that participate in structured activities are less likely to exhibit some of the alarming symptoms of Alzheimer's disease which include aggression, anger, depression, frustration, and wandering away. Having a routine within programming is extremely important due to the cognitive benefits [24]. The TTAP Method®, through its person-centered

approach, naturally enhances feelings of self-worth, which has a direct correlation to motivation levels directed towards creating enhanced social support systems, thus decreasing the likelihood of withdrawal among participants [1,22].

When depression is combined with the ongoing feeling of hopelessness, an individual can have a negative impact on cognitive functioning. Emotions directly affect cognition and, therefore, subsequent motor coordination, memory, self-esteem, and the perception of one's own health [7,10,23]. Cognitive evaluation tests show that cognitive performance is significantly impaired during depressive states and 15 to 30 percent of individuals with Alzheimer's disease have clinically significant levels of depression symptoms [23]. Successful depression treatment, through the use of multi-modal interventions such as the TTAP Method®, has been correlated to significant alleviation of cognitive impairments and therefore an overall improvement in independent functioning [19,21].

## Results

Responses over the seven weeks were correlated to the five psychological domains of social, psychosocial, memory, mood, relaxation and interaction. The students gathered the data and created a mean rating for each of the seven sessions. The graphs documented below indicate calculated mean rating for each session comparing the group's levels before programming and after programming occurred. The findings were based off of change within these domains. Throughout the seven week process, the social data collected (how would you rate your interactions after this session) questions ranged from an average low of 2.75 pre-session to and a high of 4.75 post session. The Psychosocial average low was 0.75 pre session and exceeded to 4.75 post TTAP session. The mean for memory consisted of a low of 1.75 pre-session and a high of 4.75 post session. The increase in memory is significant as the residents were able to assess that the sessions helped strengthen one of their biggest weakness. Mood ranged from a low of 1.75 pre session and extents to a high of 4.75 post session. Lastly, the relaxation levels ranged from a low of 1.75 before each session and reached a high of 4.75 after each session. Again, mood and relaxation are tremendous improvements for these individuals. Their quality of life has been enhanced through structured programming (Figures 1-3).

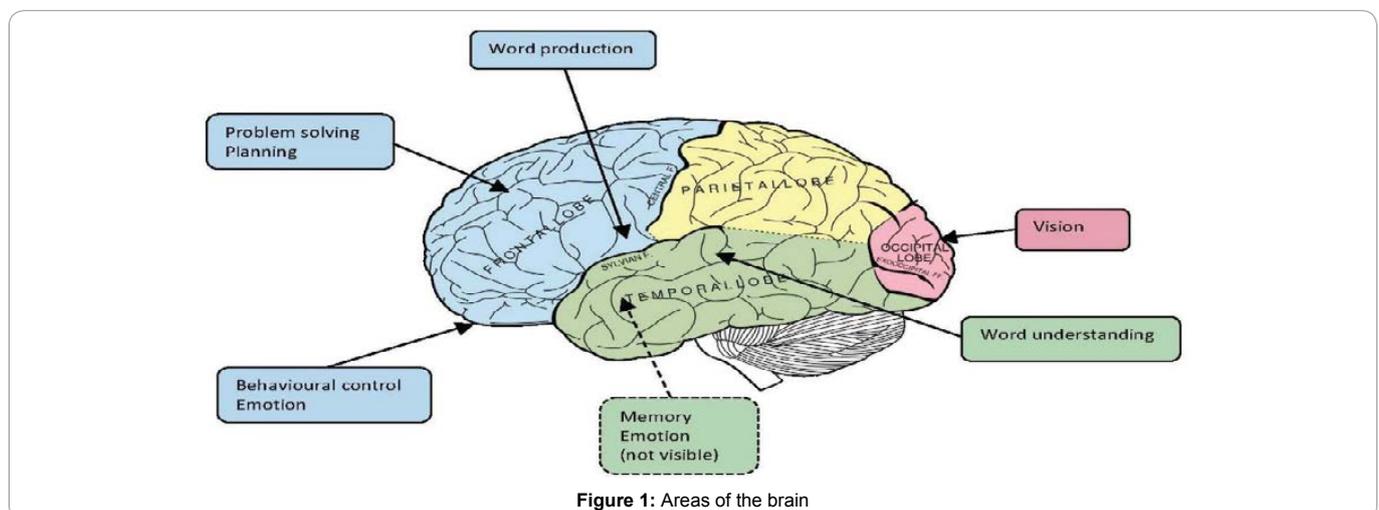


Figure 1: Areas of the brain

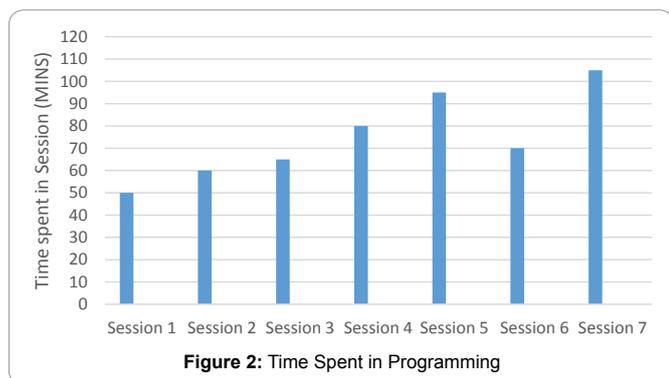


Figure 2: Time Spent in Programming

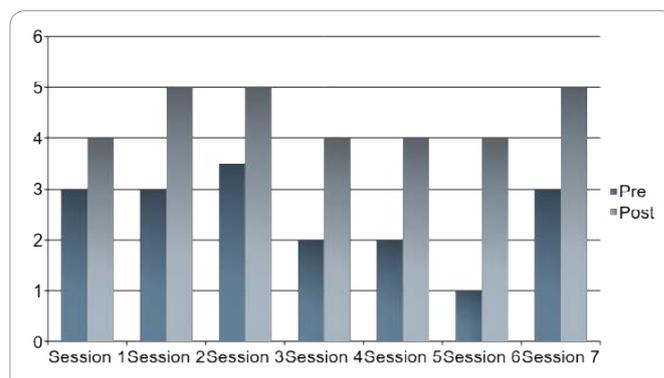


Figure 4: Psychosocial

Pre: How would you rate your interaction today? Did you do anything that made you feel proud?  
 Post: How much has this session increased your interaction? How would you rate your self-esteem and feelings of pride after this session?

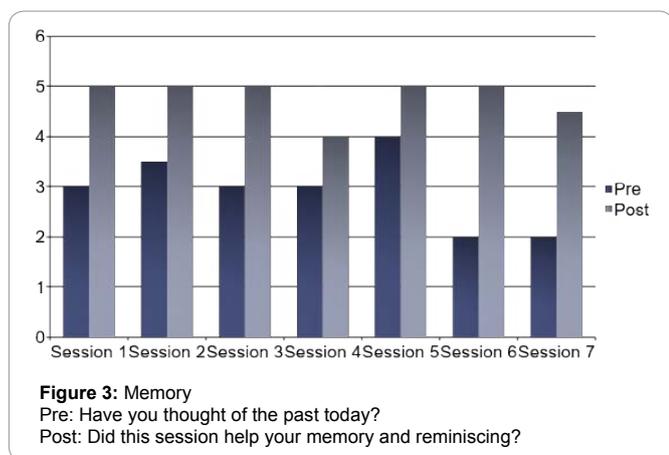


Figure 3: Memory

Pre: Have you thought of the past today?  
 Post: Did this session help your memory and reminiscing?

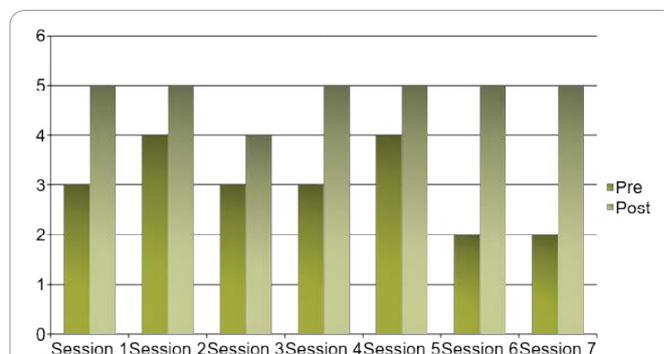


Figure 5: Mood

Pre: How is your mood at this point?  
 Post: How would you rate your mood after this session?

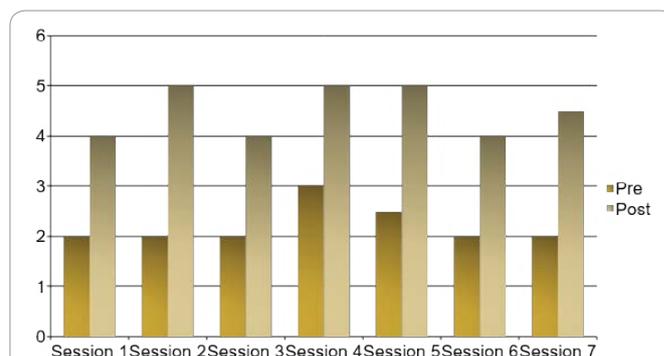


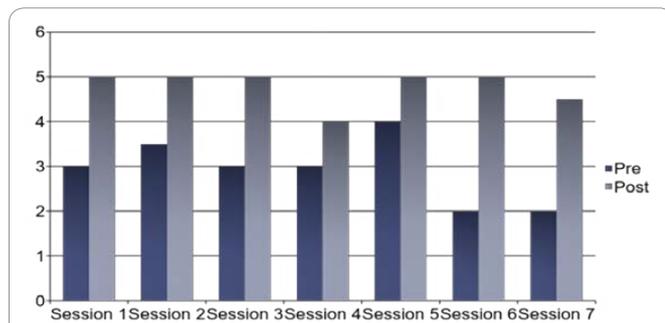
Figure 6: Relaxation

Pre: How relaxed are you today?  
 Post: How relaxed are you feeling now?

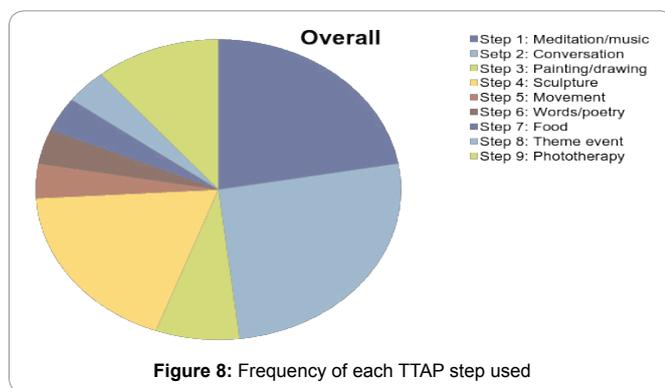
In addition to the positive progress in the data collected, the students recorded the time spent in each session. Session 1 lasted a total of 50 minutes, however progressing from week to week, the final session lasted a total of 105 minutes. The session times varied due to the participant's interaction within the session as well as what each student had chosen what activates the group was doing daily. The collected data supports the findings that the TTAP Method® can naturally increase a residence's time in activity and the ability to strengthen an individual's social, psychosocial, memory, mood and relaxation regardless of their early stage Alzheimer's [1,20]. Students found that additional benefits for the residents consisted of new confidence to accomplish tasks they did not think they were capable of, grew more independent, created relationship between residences as well as students, and reminiscing about old times that brought about happy emotions. The residents were asked to verbally comment on the sessions that they were a part of. When reflecting on one's work a resident stated confidently, "This is very nice!" In another session, a resident explained that she, "Always loved the view up on the mountain" commenting on a rekindled memory. Other comments included "this activity gave my brain exercise", "I haven't thought about that memory in decades", "I really look forward to coming to these groups". The positive feedback and progressive data exemplifies the outcome that Therapeutic Recreation can have on a resident with early onset Alzheimer's disease [10,20] (Figures 4-8). The results of the study achieved a major goal of this research, that individuals that suffer from mild Alzheimer's Disease can have a high quality of life.

## Discussion

In using the TTAP Method®, all forms of communication is a key aspect to social support including self-connectedness and community connection which includes peers, friends, and family [19,25]. Participants regularly discussed how the sessions made them "feel as though they had a new family structure". The TTAP Method® further includes dynamic interaction by incorporating both verbal and non-verbal communication within a group environment [19,25]. Using both types of



**Figure 7: Social**  
Pre: How would you rate your interaction today?  
Post: How much has this session increased your interaction?



**Figure 8: Frequency of each TTAP step used**

communication regulates function within the cerebral cortex which promotes brain wellness and skill retention for older adults [4,5,12]. Although it is recently being tested, there is promising feedback that communication technology such as video and audio analysis techniques and computerized testing may help improve the functional and cognitive assessment of individuals with Alzheimer's Disease [26]. When individuals are invested in the person centered programming they, on average, engage in therapeutic intervention for longer periods of time which activates mental, physical, and social domains. When these domains are stimulated and enhanced, the programming is protecting each individual against cognitive decline and dementia [3,4,6].

Throughout previous studies, it has become known when social and emotional needs are addressed, the feelings of self-worth, mood, and the overall quality of life are strengthened, this phenomenon was supported within the study [1,10,27]. In addition programming can open the feelings of loss, grief, sadness, love, hope, and fortitude to be discussed and shared [14]. The TTAP Method® is specifically created to incorporate a range of social and emotional needs when individuals are participating in individualized and person centered self-expressive programming through creative arts [1,6]. As memory difficulties are a key factor in Alzheimer's disease, there are negative daily struggles that an individual is faced with. The impact of memory loss can become a burden on an individual due to the impact on self-confidence and may lead to anxiety, depression, and lack of interest in activities [23,28]. Likewise, when an individual begins to distance themselves from the activities, it can enhance the memory loss. Due to this chain reaction the TTAP Method® is developed to

enhance feelings of self-worth, which then increases motivation levels creating enhanced social support systems decreasing the likeliness of withdrawal among participant. Positive emotions can directly affect cognition and also will enhanced motor coordination, memory, self-esteem, and the positive perception of one's health. The increase time in programming can be seen as an increase in intrinsic motivation, the residents wanted to be involved, thus their feelings of self-esteem, self-worth and overall increased emotional wellness was experienced [7,10].

Through group sessions, such as group art and recreation therapy sessions, activities can integrate opportunities for life review [9,20]. The process of life review can be incorporated which will allow an individual to reflect on their life, looking at their past, and recall events and unresolved difficulties that they might have experienced. In revisiting memories from the past, reminiscing profound life events can be become useful for depression and intervention within an older adult with dementia [9]. The TTAP Method® incorporates the life review in order to promote memory retention, perceived social values of self, decreased disorientation, reduced fear and anxiety, improved self-esteem, and social Interaction [1,10,29-34].

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