

BRIDGING ART THERAPY AND NEUROSCIENCE: FACILITATION OF ART
EXPRESSION OF AN INDIVIDUAL WITH LATE STAGE ALZHEIMER'S DISEASE

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ABSTRACT

BRIDGING ART THERAPY AND NEUROSCIENCE: FACILITATION OF ART EXPRESSION OF AN INDIVIDUAL WITH LATE STAGE ALZHEIMER'S DISEASE

Elena Guseva

This research paper aims to examine whether art therapy interventions can encourage communication and self-expression of an individual with late stage Alzheimer's disease (AD) if they are adapted to the disease related visual deficits and directed on utilizing remaining visual capabilities of this individual. A crucial component of caring for individuals with late stage AD is maintaining their dignity and individuality. Art therapists advocate that art making can be beneficial to individuals affected by AD as it facilitates their self-expression through sensory stimulation, creativity, and social interaction (Stewart, 2004; Ehresman, 2014). Unfortunately, research that validates interventions directed toward maximizing the remaining capacities of individuals with late stage AD and promotion of the adaptation to their disease-related deficits remains scarce.

This research based enquiry presents a unique multidisciplinary approach to creating art therapy interventions that may be beneficial and therapeutic to clients with late stage AD. The enquiry resulted in a case study that adopted a qualitative research methodology. It demonstrated that art therapy interventions that address disease-related visuospatial deficits of an individual with late stage AD can produce a positive change in their ability for self-expression and promote communication with the outside world. Although the study has significant limitations, it can be viewed as a pilot study and further research is necessary to empirically demonstrate the effectiveness of such interventions.

Keywords: Alzheimer's disease, art therapy, self-expression, visuospatial deficits

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Introduction

The following paper presents a case study that examines whether art therapy interventions that address disease-related visuospatial deficits of an individual with late stage AD can facilitate and encourage self-expression and communication with others. In older people, AD is the most common form of dementia characterized by gradual loss of short-term memory and cognitive decline. The disease progresses at different speeds for every individual; however, for most, communicating with others eventually becomes difficult, requiring more and more assistance with daily living activities (Stewart, 2004).

Our sense organs are an extension of our brain. Hence, AD affects not only the cognitive facilities but sensory functions as well. Sensory deficits considerably impact the daily lives of individuals with AD, increasing their social isolation. As dementia destroys the brain, persons are stripped of their personhood and at risk of “losing the self” (Smebye & Kirkevold, 2013, p. 2). In order to understand the experience of living with this debilitating disease, professional fields have begun to pay attention to neurobiological research that can provide insights on the disease related sensory deficits. A number of studies have looked to create interventions based on sensory functions in order to reduce or delay cognitive decline and promote a sense of well-being, and an improved quality of life (Dunne et al., 2004; Laudate et al., 2012).

According to Edwards (2004), art therapy is a form of psychotherapy that uses the process of art creation and reflection on the experience of the process, as well as the final product, in order to evoke emotional expression and foster therapeutic growth and healing through nonverbal means. Art therapy uses sensory stimulation to enhance cognitive processes, improve communication, and arouse memories (Ehresman, 2014). Unfortunately, art therapy research that validates interventions that promotes adaptation to sensory deficits and the maximization of remaining capabilities in individuals affected by AD in order to facilitate their self-expression and communication has been limited.

This case study presents a new multidisciplinary approach that bridges the fields of art therapy and neuroscience in order to examine if art therapy can be effective for an individual with late stage of AD when interventions address disease related sensory deficits. This research hopes to demonstrate that collaboration between these professional fields has the potential to produce a therapeutic tool that may positively affect the communication strategies used with this population, and assist in reduction of the social isolation often associated with this disease.

Literature review

According to the World Health Organization (WHO) and Alzheimer's Disease International (ADI) (2012), dementia “poses one of the greatest societal challenges for the 21st century that must be addressed internationally, nationally, and locally, as well as at family and personal levels” (p. 90). As the world's population ages, the number of people affected by dementia is growing exponentially with an estimated 46.8 million cases worldwide in 2015 (Alzheimer's Disease International, 2015). The 2015 global societal economic cost of dementia is an estimated 818 billion US dollars, with huge quality of life impacts both for individuals living with dementia and for their families (Alzheimer's Disease International, 2015).

Dementia is an umbrella term that encompasses many different diseases. AD, the most common form, accounts for 50% of all type of dementias (Stewart, 2004) and initially presents as deterioration of short-term memory capacities (Cernin, Keller & Stoner, 2003). In more advanced stages of the disease, decreased cognition inhibits information storage and retrieval and increases disorientation and confusion, leading to dependency on others for daily activities and an increase in supervision (Cernin et al., 2003, p. 255). The main characteristics of AD manifest in difficulties in communication and the ability to perform daily living skills (Stewart, 2004). An individual in the advanced stage of AD often becomes angry and confused, sometimes even aggressive toward caregivers because of the loss of dignity and independence (Stewart, 2004). A major manifestation of dementia in advanced stages is passivity, identified as a decrease in gross motor movement accompanied by apathy and lack of interaction with the environment (Stewart, 2004).

The theme of the diminishing self in late stages of AD is a common one in popular and health care literature on the disease (Tappen, Williams, Fishman, & Touhy, 1999). Diana Friel McGowin (1994) described her experience of Alzheimer's as having “less and less of me every day” (p. 33). Spouses complain that their husbands or wives are just a shell of what they once were (Jenkins & Price, 1996). Nursing home staff frequently avoid all but task-oriented communication with people in the latest stages of the disease (Ekman, Norberg, Viitanen, & Winblad, 1991) on the assumption that the severely demented experience life as meaningless (Norberg & Asplund, 1990). Similar assumptions are found in healthcare literature (Downs, 1997). A person's attempts at speech in the later stages have been described as nonsensical and

devoid of meaning or insight, contributing to the impression of a diminishing self (Bohling, 1991).

With a presumed loss of ability to respond affectively, caregivers often see the person as unable to interact, communicate, or possess feelings (Tappen et al., 1999). Jenkins and Price (1996) refer to this as a “tendency to envisage the person in terms of cognitive functions” (p. 87). Communication strategies focus primarily on ways to prevent behavioural disturbances or to accomplish the basic activities of daily living, with little to no attention paid to the expression of feelings (Tappen et al., 1999). This lack of awareness or appreciation of personhood in late stages the disease leads to task-oriented care and low expectations for therapeutic or remedial work (Tappen et al., 1999).

Lyman (1989) made the argument that people in the advanced stage of dementia are treated as if they are already dead leading to a "social death" before physical death. According to Kitwood and Bredin (1992), this occurs because providers withdraw from these individuals, not the other way round, thus objectifying people with advanced AD and banishing them from society. Bell and McGregor (1995) found that every person with AD under their care has proven to be unique, showing that while personality changes, core characteristics remain. Although the difficulties of working with this population are undeniable due to a “lack of insight into their physical and psychological condition”, individuals suffering from this debilitating disease are “still able to respond visually and affectively” (Ehresman, 2014, p. 48).

Maintaining comfort and dignity is a crucial component of caring for individuals who live with dementia and AD. Even at the latest stages of the disease, persons have the right to live and to function at their fullest capacity; however, research that validates interventions that encourage adapting to the deficit of dementia by boosting remaining capabilities is limited (Rosswurm, 1991). According to nursing literature, the activities prescribed to individuals with AD should be “therapeutic, enhance quality of life, arrest mental decline, and generate and maintain self-esteem” (Marshall & Hutchinson, 2001, p. 489). Such activities may be more important for the psychological state of well-being of individuals with AD rather than their general physical and social state (Marshall & Hutchinson, 2001). The literature suggests that failure to provide opportunities for such activities is “tantamount to abuse” (Marshall & Hutchinson, 2001, p.489).

According to Brod et al. (1999), there are two domains that remain important to individuals with dementia and AD even in the advanced stages: Aesthetics and Interaction Capacity. Aesthetics is understood as the experience of appreciation and pleasure obtained from sensory awareness on a verbal or nonverbal level such “as viewing or creating art, the sight and sounds of nature, or listening to music” (Brod et al., 1999, p.29). Brod et al. (1999) emphasized that the domain of Aesthetics is of particular importance to individuals with dementia and AD as “it offers the promise of interventions and appears to be the one domain that can remain pleasurable in the more advanced stages of the disease” (p.31). They agreed with Russel (1996), who "challenges us to go beyond the narrow idea of dementia as a contraction of life to a new and more complex vision of a unique and creative world . . . in which people with dementia may actually have a more personal, unique and individual experience because of their dementia" (p. 1401).

The other domain – Interaction Capacity – includes communication and social interaction (Brod et al., 1999). This domain is disease-specific and “specifically taps into areas of difficulty that individuals with dementia and AD have when interacting with the environment” such as “difficulties in carrying on a conversation and expressing oneself” (Brod et al., 1999, p. 32). Brod et al. (1999) state that, “problems with comprehending written material leave a person at a great disadvantage in interacting with the world, a world which relies on the written word to communicate” (p. 32).

Creative arts therapy (CAT) is widely used for people affected by dementia and AD (Cheston, 1998; Hannemann, 2006), and includes different approaches such as reminiscence (Moos & Bjorn, 2006; Woods, Spector, Jones, Orrell, & Davies, 2009), therapeutic activities (Marshall & Hutchingson, 2001), visual arts (Killick & Allan, 1999), and music therapies (Koger, Chapin, & Brotons, 1999; Sherratt, Thornton & Hatton, 2004; Sung & Chang, 2005). Some researchers suggest that it can provide great benefits even in “the more regressed stages” of the disease (Cowl & Gaugler, 2014, p. 284); CAT offers a wide range of interventions that can be aesthetically pleasing and can lead to increased socialisation when done within group settings. According to Cowl and Gaugler (2014), potential benefits of artistic, mentally stimulating interventions may include “the building of a larger cognitive reserve, one of the factors implicated in the prevention of Alzheimer's disease and dementia” (p. 283). CAT also has the potential to provide both a personal sense of control and social support, cited as important health

outcome predictors in the elderly (Cohen, 2009; Cowl & Gaugler, 2014). Through manipulation of art materials and control of their own art work production, a sense of mastery and restored self-efficacy can be achieved (Basting, 2006; Cowl & Gaugler, 2014; Harlan, 1993). As demonstrated in research conducted by Basting (2006) and Hannenmann (2006), interventions in which “participants can create their own artwork or music allow spontaneity, originality, and expression of personal thoughts and feelings that, in turn, lead to improved emotional health” (as cited in Cowl & Gaugler, 2014, p. 283).

Another important factor contributing to a better prognosis for individuals with AD and dementia are social support and meaningful relationships (Cowl & Gaugler, 2014; Doric-Henry, 1997; McFadden & Basting, 2010). When conducted in group settings, creative arts interventions can lead to increased socialisation during and after therapy sessions (Cowl & Gaugler, 2014). CAT can be beneficial even for individuals with late stages of AD and dementia. It has been suggested that less involved forms of creative arts therapy like listening to music “can effectively reduce undesirable behavioural symptoms for people in the more regressed stages of the disease that no longer have the motor skills or attention span necessary for participation in more refined art activities” (Cowl & Gaugler, 2014, p. 284).

Over the last decade, including art therapy as part of the treatment plan for individuals with dementia and AD has been given increased attention (Ehresman, 2014; Stewart, 2004; McFadden & Basting, 2010). While current pharmacological treatments for dementia and AD demonstrate mild effectiveness, the demand for treating the growing number of people affected by the disease has led to consideration of non-pharmacological means of improving behaviour, cognition, and quality of life (Ehresman, 2014). Although art therapists advocate that the process of art creation will benefit people with dementia and AD through the opportunity for sensory stimulation, social interaction, and creativity (Ehresman, 2014; Stewart, 2004), there is limited existing research on the effects of art therapy for people with dementia (Ehresman, 2014).

Originally, art therapy as a practice relied on art concepts as its theoretical basis and goals; today, it is slowly embracing scientific thinking and the objective tools of scientific investigation (Konopka, 2014). By understanding the parts of the brain affected by dementia, art therapists are able to provide much better assistance to individuals affected by dementia “in their struggle for self-expression, dignity, and, in some cases, resolution of lifelong issues” (Stewart, 2004, p. 148). Degenerative neurological disorders like dementia and AD “fundamentally affect

an individual's functioning, including the capacity to make art” (Safar & Press, 2011, p. 102). An applied understanding of the neural mechanisms can inform the nature of a specific deficit in art production and allow for its targeting in a more effective therapeutic way (Safar & Press, 2011).

AD is a degenerative neurological disorder with considerable changes in the visual system (Mendez, Tomsak, & Remler, 1990) and increasingly being understood and defined as a "visuocognitive illness" (Cronin-Golomb, 2004; Jones & van der Eerden, 2008). It is characterized by significant abnormalities not only in cognition but in visual perception as well. Neurobiological research reveals a complex of visuospatial difficulties that may contribute greatly to disabilities caused by the disease as well as possibly magnify the effects of other cognitive deficits (Mendez et al., 1990). AD is reported to impair such visual sensory functions like contrast sensitivity, colour recognition, stereopsis, temporal resolution, and motion (Rizzo, Anderson, Dawson & Nawrot, 2000) and knowledge of these deficiencies can be crucial in understanding how and what patients see in order to create more effective and meaningful interventions. It could provide “tools for understanding 'mistakes in perception' due to visual pathology” (Jones & van der Eerdenn, 2008, p. 18) and help to clarify the role that these deficits play in daily life activities of people with dementia and AD. Colors, forms, and textures can play an important role as visual and tactile stimulus to the patients whose cognitive system becomes less flexible due to the disease and incapable of compensating for the impairments in processing (Stewart, 2004).

AD has been associated with various deficits in basic visual functions (Cronin-Golomb, Sugiura, Corkin, & Growdon, 1993). Multiple studies reported that patients with AD experience a deficit in colour discrimination specific to blue, green, and violet hues (Cronin-Golomb et al., 1993; Wijk, Berg, Sivik, & Steen, 1999). The studies recommended caution in the use of any cognitive tests that require discrimination of stimuli of different colours (Cronin-Golomb et al., 1993) because patients may appear to be more disabled than they actually are, particularly in situations when they are exposed to exceedingly complex environments with a variety of stimuli (Wijk & Sivik, 1995). In their study on colour discrimination among patients with AD, Wijk et al. (1999) also found that the degree of dementia severity significantly affected the ability to name mixed colours. A deeper knowledge of visual and colour discrimination deficits in AD could potentially help diagnosis, interpretation of cognitive performance, and help guide interventions in patients with the disease (Salamone et al., 2009).

The source of most visual impairments found in AD patients can be attributed to impaired contrast sensitivity (Mendez et al., 1990). Gilmore, Cronin-Golomb, Nearing, and Morrison (2005) determined that enhanced contrast normalizes visual processing in patients with AD. Gilmore et al. (2005) suggest that interventions for this population should target to increase contrast of reading materials and other aspects of the immediate visual world through interventions such as enhancing lighting, reduced glare, and use of high-quality print.

A number of studies have looked at how to improve contrast sensitivity in order to normalize visual processing in the visually disabled population more generally. Strauss and Werner (1942), for example, studied the gait of children with brain lesions and found that a perceptually impaired child who walked badly in daylight could take almost normal steps if they looked at white shoes when walking in a darkened room. According to Strauss and Werner (1942), the child could perceive the motion of a white or “negative” figure by its character as a “hole” in a dark or “positive” background (as cited in Uhlin & De Chiara, 1984, p. 88). Later, Uhlin and De Chiara (1984) examined the positive effects of figure-ground reversal on drawings of neurologically handicapped children and found that children were able to produce the forms of the House-Tree-Person figure significantly better by using white crayon on black paper, rather than the usual black crayon on white paper (as cited in Uhlin & De Chiara, 1984, p. 89).

Even more generally, positive black-on-white polarity has been shown to facilitate performance in segments of the population not visually disabled (Buchner & Baumgartner, 2007) due to higher overall display luminance (Buchner, Mayr, & Brandt, 2009). This is due to the greater constriction of the pupil needed to perceive a black-on-white polarity, leading to “an increase in the depth of field and also the depth of focus” (Taptagaporn & Saito, 1993, p. 14). However, according to some studies, this advantage of positive polar display does not generalize to readers with visual impairment (Legge et al., 1985; Rubin & Legge, 1989). People with low vision due to ocular clouding (glaucoma) perform better with negative polar display (Legge et al., 1985; Sandberg & Gaudio, 2006). It has been argued that this is due to the scattering of light, which leads to a resulting veiling luminance and reduction in text-to-background contrast (Rubin & Legge, 1989, p. 82). Rubin and Legge (1989) argue that it has long been known in clinical practice that some low-vision observers read up to 50% better with "reverse contrast" text (p. 81). According to Pelletier et al. (2014), the prevalence of glaucoma is increased in individuals with dementia of Alzheimer's type (DAT). But, it needs to be emphasized, that the eye of an

individual with DAT may be more susceptible to glaucoma, while an individual with glaucoma may not be more at risk for DAT (Pelletier et al., 2014).

“Consistent with the clinical heterogeneity of this disorder, individuals with AD vary in the extent on their visual system pathology and in their visual problems” (Mendez et al., 1990, p. 62). All visual functions are not uniformly affected in AD and examination of the visual system in patients with AD reveals a broad range of disturbances. Visual symptoms are often prominent, although do not arise in all cases, reflecting the heterogeneous nature of AD particularly at the early stages (Kurylo, Corkin, Dolan, Rizzo, Parker, & Growdon, 1994). While visual abnormalities may be present, they are not an obligatory correlate of mild to moderate AD (Kurylo et al., 1994). Although during the course of their disease individuals with AD present different clinical pictures at different times making their profiling difficult at best (Marshall & Hutchinson, 2001), it is important to note that in the advanced stage—as damage spreads to more areas of the brain—the symptoms become more uniformed.

It has been already demonstrated that visual interventions can assist individuals living with dementia and AD. Dunne et al.’s (2004) study of AD patients in long-term care demonstrated an increase in the ingestion of food and liquid in long-term care through the use of enhanced contrast of dining tableware. The patients' visual attention was directed to the task of eating through the strengthening of the visual contrast between a nutritional object and its background. The study showed that simple environmental manipulations could have a great effect on severely affected AD patients and recommend that clinicians and caregivers consider implementing such interventions (Dunne et al., 2004). An earlier study conducted by Koss and Gilmore (1998) also found that modifications of the visual contrast environment improved nutritional intake in AD patients and reduced agitated night-time behaviour.

Meanwhile, Laudate et al. (2012) investigated whether performance of a complex, familiar visual search task—like the game of bingo—could be enhanced through manipulation of task stimuli. They varied stimulus contrast, size, and visual complexity during game play and found that increasing the visual contrast of game cards improved the performance of AD participants; difficulty in perceiving the stimuli would likely decrease both the desirability and probability of participating (Laudate et al., 2012).

A variety of therapeutic fields began to pay close attention to the elements of AD visual pathology research that has the potential to provide useful information. Letts et al. (2011), for

example, argue that occupational practitioners need to address perceptual impairments through perception and sensory stimulation and that it can potentially offer a way to activate sensory and perceptual systems in a way that engages people with AD and dementia in meaningful activities. The authors point out that not all aspects of such interventions may be within the scope of occupational therapy (Letts et al., 2011), suggesting that other professionals working with this population need to become involved.

The field of geriatrics has also initiated discussions about the impact of sensory deficits on the life and well-being of individuals with AD and the role different professionals may play in providing a supportive and accommodating environment. Kenigsberg et al. (2015) write that the capacity to integrate the world encountered through sensory experience in a comprehensive context is seriously affected when cognitive function deteriorates because of dementia or AD (p. 250). Professionals involved with neurodegenerative diseases remain poorly aware of sensory deficits, and in general, give it little importance (Kenigsberg et al., 2015, p. 250). Kenigsberg et al. (2015) state that as soon as sensory deficits are acknowledged, individualized interventions can be developed to reduce the psycho-behavioural disturbances of dementia and can help prevent the risks associated with sensory deficits in the activities of daily living (Kenigsberg, 2015, p. 254). Kenigsberg et al. (2015) conclude that the effectiveness of sense-based psychosocial interventions for people with cognitive disorders deserves to be supported further.

Careful examination of AD visual pathology can have important implications for the field of art therapy. Although creating an artwork with creative medias is a multisensory experience, it can be considered a predominantly visual process (Miller & Hou, 2004). Riley (2004) writes that, “we art therapists might assume that we and our clients are seeing the same art therapy images and have mutually shared visual perceptions” (p. 185). She adds, however, that “we must not make assumptions. Every image has unique meaning to the art maker, and now we are forced to accept that his or her vision is also unique” (Riley, 2004, p. 185). In the case of art therapy, this is more challenging but also more stimulating because “therapists must now explore how clients “see” the world before we can begin to hear their narratives” (Riley, 2004, p. 185).

In recent decades, researchers have begun to focus on understanding the experience of living with dementia—the nature of emotional needs, changing awareness, and progressive difficulties (Jones & van der Eerden, 2008, p. 16). They found out that there are two distinct ways to think about the behaviour of persons with dementia: as either “abnormal in a normal

world” or as “relatively normal in an abnormally perceived world” (Jones & van der Eerden, 2008, p. 19). If a “visual misperception” is thought to be a hallucination, “the resultant communication strategy might be to tell the person that what they are seeing is not real” and bring more confusion and frustration in their life (Jones & van der Eerden, 2008, p.19). If a “visual event or mistake” is an illusion or misidentification, “the resultant communication and care strategy might be listening more carefully” to try to understand what is being perceived and felt “to reduce isolation, anxiety, and fear” that associated with the disease (Jones & van der Eerden, 2008, p. 19).

Methodology

Research Design

This single-case study is designed to assess if art therapy interventions addressing AD related visual deficits could assist in self-expression and communication of an individual with late stage of the disease. I was motivated to use empirical enquiry as the comprehensive research strategy because it allows for the investigation of “a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident” (Yin, 2003, p. 13).

The rationale for using the single-case design is that it corresponds to the research criteria for its use outlined by Yin (2003). First, this case study represents the critical case in testing a theory's propositions and may refocus future investigation in the field of art therapy for individuals with late stage AD. Second, it is a representative case as every individual affected by AD eventually reaches an advanced stage of the disease characterized by a progressive decline that limits the possibility of communication with the outside world.

In order to examine the phenomenon more thoroughly, the case study method was deliberately chosen so that a number of contextual conditions such as location, surroundings, and participant/researchers interaction would be included as qualitative data. In addition, the case study method also “copes with a technically distinctive situation in which there are many more variables of interest than data points. It relies on multiple sources of evidence, with data needing to converge in triangulation fashion. And, it benefits from the prior development of theoretical positions to guide data collection and analysis” (Yin, 1994, p. 13).

The findings chapter of this study addresses the contextual variables that might potentially affect study results. These variables may include participant’s mood and level of

fatigue, time of the day when sessions were conducted, level of noise in the room, environmental distractions. Although this research strategy represents the best framework for examining these variables, these variables can also operate to undermine the internal validity of the study. To improve the internal validity of the study, the data was collected from two different investigators – the researcher and the inter-rater.

This case study is a pilot project and designed to test a theoretical proposition that cannot be generalized to a wider population yet. This theoretical proposition guided the data collection as a means of contributing to the further knowledge development of sensory-based art therapy interventions that can possibly assist in self-expression and communication of an individual with late stage AD; a replication study with a larger sample needs to follow.

Research Method.

Considering that this case study is a pilot project that had many contextual or extraneous variables beyond my control, such as level of noise in the room, intrusions from other patients and staff members, time of the day when sessions were conducted, I decided to utilize a qualitative approach that would help me to examine these variables and analyze their possible effect on the participant. One of the strongest advantages of the qualitative research approach is that it allows for the examination of phenomena in detail and depth. It is my strong belief that qualitative data based on human experience in its entirety can often be more powerful and more compelling than quantitative data.

Qualitative data requires researchers to become close with the research participants in order to get to know them, feel close to them, and to improve empathy for them (Palys, 1997). Emphasis on personal encounter through experience with persons represents the primary strength of qualitative research as well as its fundamental claim to being a valid process (Reason & Rowan, 1981). The quality of such research often depends on a researcher's individual skills and consequently can be influenced by the researcher's personal biases. This is one of the reasons why qualitative data is more intricate and difficult to validate.

Another important issue in qualitative case study is reliability. According to Yin (1994), the general way of approaching the reliability problem is to conduct research as if someone were always looking over your shoulder. Given the difficulties of "blinding" the researcher in this particular project, inter-rater reliability assessments were needed. Third party raters are needed to avoid potential biases that can be introduced when researchers believe in the efficacy of their

own interventions. In order to improve this project's reliability, the role of the third party rater was fulfilled by an undergraduate Concordia student from the Department of Fine Arts.

The inter-rater in this study and I took great caution in corroborating our observations and personal analysis of the sessions; particularly, since checking with the study's participant was impossible due to her cognitive decline. I hoped to increase the levels of convergent and contextual validity which enhances the overall validity of any particular piece of data through constant inter-rater - researcher checking and the embracement of multiple researcher viewpoints, perspectives, and perceptions (Reason & Rowan, 1981).

This qualitative single-case study due to a small sample size and lack of control group, holds very little empirical validity. However, it can be viewed as a plausible pilot study for future examination that can raise the internal validity through integration of both quantitative and qualitative data (Brannen, 1992). Quantitative data might include possible test scores of psychological well-being before and after interventions, measures of time periods when participants interacted with art materials, number of colors used in different interventions, etc.

Research Procedure

Participant. The participant in this case study is Ms. K., a white female in her late 80s with probable Alzheimer's diagnosis. The name of the client, place of residence, and other identifying features have been changed or omitted for confidentiality reasons. Due to Ms. K.'s cognitive impairment, the study and a proxy consent form was approved by Concordia University Human Research Ethics Committee and signed by a member of her immediate family. A verbal consent to participate in this study was also obtained from Ms. K.

Ms. K. presents the symptoms of advanced stage AD. Clear and precise diagnosis of Alzheimer's disease could add scientific rigor to this study but unfortunately definitive diagnosis of AD still relies on pathological evaluation at autopsy by investigating the accumulation of tau tangles in brain structures (Farzan, Mashohor, Ramli, & Mahmud, 2015). Ms. K. experiences difficulties with her memory and ability to communicate verbally. She demonstrates confusion or unawareness of her environment and surroundings and needs assistance with her activities of daily living. Ms. K. exhibits a lot of anxiety in unfamiliar settings and can become verbally aggressive if agitated or confused.

According to a member of her immediate family, Ms. K. was diagnosed with AD five years prior to the study. Ms. K. was very active throughout her lifespan keeping up with her

work, family and social life. She doesn't have any previous art making experience but, according to her family, has a deep sense appreciation for the arts.

Setting. This study was done in an activity center that is a part of a not-for-profit organization that provides a comprehensive range of services to those directly and indirectly affected by AD and increases awareness and understanding of the disease. This center operates five days a week and provides stimulation and socialization for people with cognitive impairments. The programs offered focus on five areas: Cognitive, Physical, Sensory, Creative, and Social. The activity center includes recreational therapists, art therapists, music specialists, social workers, students, and volunteers.

In order to keep the participant more comfortable and minimize the possibility of her feeling stress, anxiety, or discomfort from moving to an unfamiliar environment, the study was conducted in the same room that Ms. K. attends for the purpose of participating in art therapy sessions. In addition, research sessions were carried out during a time period when the rest of her group was having art therapy as well in order to preserve her regular schedule at the Centre. In addition, according to Ehresman (2014), "watching others make art can ameliorate the hesitation" and make the process contagious (p.47). Although Ms. K. was moved to a separate table in order to direct her attention to the research activities, she remained with her group and could observe and interact with them at any time.

Informed Consent. A potential participant guardian, functioning in the capacity of Power of Attorneys (POA), was approached by a program coordinator at the center with an offer to participate in the study. After getting verbal authorization from the guardian by the program coordinator, I was able to contact the guardian in order to move the research forward. A written informed consent form was given to the guardian during our meeting. Before signing the form, the guardian was informed of: 1) the purpose of this study; 2) the risks of the study; and 3) a right to withdraw at any time during the study without any consequences detrimental to the participant. In addition, the guardian will have access to the full research paper once it is completed and uploaded to Spectrum. The guardian will be notified by e-mail once this occurs.

Data Collection Method. In this study, my intention is to evaluate if art therapy interventions based on AD-related changes in vision can assist in self-expression and communication with the outside world of an individual with late stage of the disease. It is my

hope to produce scientifically based therapeutic tool for the professionals who work with this population.

The qualitative data was collected through careful summarizing of in-depth notes and discussions between me and the inter-rater following every session. These were based on our detailed observations of each session. In order to generate a richness of qualitative data, I used the *Thick Descriptions* method. Geertz (1973) and Denzin (1978) define the technique of *Thick Description* as a process of developing thorough and comprehensive descriptions of the phenomenon under study. If a “thin” description merely states facts, a “thick” description includes information about the context of an act, the intentions and meanings that organize action, and its subsequent evolution (Denzin, 1978, pp. 57-58).

The notes were done partially during the sessions and completed immediately after. Weekly reports were produced by me and the inter-rater. The data was collected, coded, and analyzed with the help of the Psychological Well-Being Instrument used in Renz’s (2002) pilot project – *Memories in the Making* –, an outcomes-based evaluation of an art program for individuals in the early and middle stages of a dementing illness. This pilot project was sponsored by the Greater Cincinnati Chapter of the Alzheimer’s Association and implemented at different sites where AD patients in the weekly art program used paint to create images on paper or fabric (Renz, 2002). The project used Lawton’s (1991) conceptualization of psychological well-being as a framework to demonstrate how engagement in the art program *Memories in the Making* improves psychological state of the participants.

The Instrument used in *Memories in the Making* defines the participant’s psychological state in 12 declarative statements of objective and subjective indicators of engagement, expression of pleasure, enhanced self-esteem, and expression of emotions and feelings (Renz, 2002). In the present study, due to the participant’s advanced stage of AD identified by severe cognitive decline and difficulties in verbal expression, psychological state definitions were modified and included 15 declarative statements of objective and subjective indicators of engagement, expression of pleasure, enhanced self-esteem, and expression of emotions and feelings (Table 1). Modifications included a decrease in time of sustained attention during an activity and emphasis on non-verbal communication.

Art therapy materials and interventions. The study consisted of eight 30 to 45-minute long individual art therapy sessions occurring on a weekly outpatient basis at the same location

where the participant receives her regular group art therapy sessions. The study included the following activities: mandala colouring (sessions 1 and 2), collage making (session 3 and 4), painting of a wooden box (session 5 and 6), and bracelet making (sessions 7 and 8). Sessions 1, 3, 5, and 7 were used as a baseline in this study. Sessions 2, 4, 6, and 8 were specifically adjusted to improve the participant's visual perception and contrast sensitivity. During these sessions, a table was covered with a red tablecloth that provided improved visual contrast for the art materials. To use as a background for the participant's artworks, white was replaced by black paper. Neurobiological research suggests that individuals affected by AD experience deficit in discriminatory ability in the blue and green area (Wijk, Berg, Sivik, & Steen, 1999). Hence, art materials selected for sessions 2, 4, 6, and 8 were mostly in the yellow, orange, red and pink hue range.

As stated earlier, activities included mandala colouring, collage with self-adhesive stickers, painting a wooden box, and making a bracelet. Due to the participant's probable advanced stage of AD, I intended to ease Ms. K's cognitive and emotional load through the use of the art materials that would allow engagement and interaction without prior experience. Jensen (1997) states that individuals with AD can often experience "frustration and anger but unfortunately may lack capacity to properly express these emotions, which can enhance agitation" (as cited in Ehresman, 2014, p. 46). According to Grasel et al. (2003), "one aim of conducting art therapy is to alleviate or diminish those challenging symptoms" (as cited in Ehresman, 2014, p. 46). Hence, the emphasis was on the process of art making, and the participant's experiences and behavioural changes while interacting with different art media.

When choosing art materials that the participant could use in this study, a few considerations were taken into account. According to Ehresman (2014), "the materials incorporated in an art therapy session for people with AD become an important aspect because of the client's probable cognitive deficits" (p. 46). Therefore, the art materials were chosen with intent to avoid potentially risky or embarrassing situations for the participant. Also, Jensen (1997) suggests that "a person with AD is operating without control on a daily basis and thus the art therapy experience should have boundaries and be completed with easily controllable materials" (p. 46). For example, mandala colouring was done with oil pastels that helped to "maintain control and safety" and were "preferable choice to crayons and markers, which may appear juvenile" (Ehresman, 2014, p. 46). Jensen (1997) also points out that "the client's mental

and physical abilities need to be considered on an individual level when making decisions regarding materials...they need to suit client's needs while preserving dignity and independence" (as cited in Ehresman, 2014, p. 46).

My choice of art therapy interventions for this study was motivated by the various healing qualities of different art media and the emotional expressions they can invoke. For example, drawing mandalas or colouring pre-drawn pictures are techniques documented as potentially reducing anxiety (van der Venet & Serice, 2012). According to Hinz (2009), the "pleasing arrangement of external stimuli such as mandala can impose limits, boundaries, or structure on a turmoil of confusing thoughts and emotions and can be translated into a satisfying internal state" (p. 82). In addition, some of the art therapy interventions have already been used with AD and dementia populations, demonstrating positive effects.

A well-known technique in art making, and sometimes used in psychosocial interventions for patients with Alzheimer's disease (AD) as part of creative and recreational activities, is collage (Beck, 1998). It has been found that although dementia sufferers have some difficulties in making a collage, it is easier than drawing, concluding that the collage method could contribute to "a new perspective of dementia by exploring messages from the inner world of dementia patients" (Meguro et al., 2009, p. 301). Similarly, mandala drawings "seem to provide a stimulus for art making that dementia patients are able to tolerate, no matter the degree of brain dysfunction" and that "dementia patients often choose to work with the mandala when a choice of options is given in an art therapy session" (Couch, 1997, p. 192).

My interest in evoking emotional expression in the participant motivated me to include the use of acrylic paints in the line of interventions. According to Expressive Therapies Continuum (ETC) – a foundational theory in the field of art therapy – fluid media and bright or intense colours evoke affect (Hintz, 2015; Ichiki & Hinz, 2015; Lusebrink, 1990). They can increase clients' ability to identify and discriminate among emotions and can aid clients in appropriately expressing and soothing emotions through art making and other creative endeavours (Hinz, 2015, p. 45). Magai et al. (1996) state that there is a substantial range of emotional expressions in late-stage AD and these expressions are evident in even the most deteriorated patients. They concluded that "linguistically impaired dementia patients may suffer the same fate as prelinguistic infants who, when neglected or exposed to nonresponsive caregivers, show a rapid decline in their expressive behaviors" (Magai et al., 1996, p. 393).

Although art making considered to be a predominantly visual process (Miller & Hou, 2004), vast variety of art media can provide a multisensory experience. The use of beads in the last two sessions was prompted by the research on an increase in the importance of the tactile sense in people affected by AD (Stewart, 2004). There is a possibility that such increase is due to loss in vision. Growing evidence from neurological studies shows that the human brain has shared mechanisms for touch and vision and that touch can activate visual cortical areas (Blake, Sobel, & James, 2004; Merabet et al., 2004). The brain draws on somatosensory information to resolve visual conflict (Blake, Sobel, & James, 2004), helping to “see” better.

Case study

Session #1

Materials: white tablecloth, black on white mandala printout (size 11” x 17”), soft pastels

Ms. K is a well-dressed and well-groomed woman in her late 80s. She is tall and neat, her silver hair nicely frames her delicate face. Beautiful small hands are graced with long pink nails. She pleasantly smiled when I offered her to follow me to a table and didn't exhibit any visible signs of anxiety or fear. The day was very sunny and the room was brightly lit with sunrays shining through large windows. The atmosphere in the room was comfortable and quiet.

On the day of Ms. K's first individual art therapy session, she seemed to be in a good mood and was very cooperative. She showed an interest in a collection of printed mandalas but couldn't understand what she was supposed to do with them. Ms. K seemed hesitant and confused when I offered that she chooses a print but with a little bit of encouragement was able to manage. On my suggestion that she choose a colour crayon, Ms. K picked up the blue one closest to her but maintained a confused look. On my invitation to use multiple crayons to colour the mandala, she put down the blue crayon and switched it for a pink one.

Ms. K began colouring a part of the mandala that was closest to her showing difficulty in staying within the lines. Nevertheless, she seemed very pleased with her work and often repeated “great” and “very nice.” Ms. K took many pauses to look at the mandala, occasionally raising it up as if to see it better. At some point in the session, she changed her colouring strategy and began drawing lines instead of filling up the shapes. After a pause, Ms. K said, “it looks much nicer now.” Towards the end of the session, she changed her strategy again and began to draw a lot of choppy lines. She was talking to herself, “you have to go like this. Look at that, so nice.”

At the end, a bit concerned with the white parts of the mandala, she started colouring again, a little more vigorously, putting a lot of effort to complete the mandala's shapes.

Her level of concentration and cooperation seemed to be good. I attempted to switch her attention to other crayons in hopes to see if another color might attract her attention. Ms. K politely declined all my attempts and kept the pink one. Towards the end of the session, Ms. K began to exhibit signs of fatigue by deeply exhaling as if she was exhausted and saying, "hand is hurting me." She raised the mandala print she was working on and looked at it for a long time. She seemed worried about the blank parts; she pointed at them, said, "here and here, I have to do that" and drew a little bit more. When I asked her if she would like to stop, she asked politely, "you don't mind?" and we agreed to finish the session.

Session #2

Materials: red tablecloth, white on black mandala printout (size 11" x 17"), soft pastels.

Ms. K. recognized me but couldn't recall what we did the last time. This was our second session and, similar to our previous session, the room was brightly lit with sunshine. Ms. K looked at the mandalas and said that they looked very nice. This time she chose a print to work with much quicker than the last time but once again remained hesitant when approaching colouring. Initially, she had picked up a yellow crayon but changed her mind and chose the pink one once again. I asked her if she likes the colour green and she answered "no" because it's not as "nice as the others." After a little pause, she went back to the yellow crayon to use as the second colour. Ms. K said that these colours looked "big" and spread her arms as if trying to show how big they were. It appeared as if she was trying to say that these colours stood out a lot. I wanted to remind Ms. K how to draw and placed the crayon directly in her hand but she wasn't really interested. She put it back on the table and continued comparing printouts of the mandalas. She seemed intrigued by their designs and even looked at the back of the paper. After careful examination, she concluded that they looked the same.

The images on the mandalas that resembled flowers evoked in Ms. K recollection of an earlier life when she still lived at her home and had a lot of plants. She expressed sadness that she doesn't have them anymore because she is unable to care for them. Once or twice, I tried to place the pink crayon back in her hand and she would continue working on her mandala by herself for a few seconds. Occasionally, she would stop and ask me, unsurely, "what do you

think?" I felt as if she wanted more interaction with me, possibly to talk and express her emotions, get reassurance or validation of her feelings and I stopped interrupting her.

Towards the end of the session, Ms. K did a little bit of colouring again while discussing with me what she was doing – “we need to go this way,” or asking my opinion – “what do you think?” She didn’t respect the lines inside the mandala but was doing much better around its edges. Ms. K had been colouring for about 4 minutes before she showed some signs of fatigue; her speech became more confused and she made a few deep exhales. The group art therapy session was almost over and it was getting increasingly louder in the room. Ms. K seemed to lose her concentration as she watched her peers get ready to go home. She mumbled, “crazy here, don’t know where to go,” and we agreed to finish our session.

Session #3

Materials: white tablecloth, white paper (11” x 17”), self-adhesive stickers in the shape of butterflies, dragonflies, flowers in a variety of colours, coloured feathers, cotton balls, and foam letters

When I arrived at the center for our third session with Ms. K, I was notified by staff that she was experiencing difficulty participating in the activities due to high levels of anxiety and agitation. As soon as staff members of the centre began leading other participants to the part of the room where they usually have art therapy sessions, I approached Ms. K and offered her follow me to the table. Ms. K didn’t recognize me and refused to get up from her chair. She didn't have her usual friendly smile and looked as if something was bothering her. To my question of whether she was upset, she answered "no" but continued to mutter “so much talk... That place... I don’t know... I don’t want to go.” At one point, she became visibly agitated and said loudly, “I don’t give a shit.”

When I was finally able to convince Ms. K to move to the table, she followed me but continued with angry outbursts. She looked confused, anxious, upset, did not recognize me, and seemed to not know who she was. Indeed, as we walked to the table, she kept repeating, “I don’t know who I am! I don’t know where I am!” I didn’t feel that it would be appropriate to ask her to participate in the session but felt an urge to help her calm down. I noticed that Ms. K's nametag was upside down and offered to turn it right side up for her. As I was holding the nametag in my hand, Ms. K read and spelled her name. It seemed that this simple gesture calmed her a little bit and she smiled. It is also possible that the act of repeating her own name brought back a memory

of who she is and why she was at the centre. I decided to use this opportunity to switch her attention from the small letters on her nametag to the large foam letters on the table in front of her that I had prepared for collage making. She remained uninterested and kept staring at the nametag.

My attempts to get Ms. K involved with the art materials were unsuccessful but her mood seemed to improve a little bit. She remained abrupt with me but not aggressive. Ms. K's hands were folded on her chest and she moved away from the table, her posture clearly communicating that she was not interested in whatever was going on at the table. To my question if she was tired, she answered – "I'm tired and I want to go home" – and we decided to finish our third session.

Session #4

Materials: red tablecloth, black paper (11" x 17"), self-adhesive stickers in the shape of butterflies, dragonflies, flowers in a variety of colours, coloured feathers, cotton balls, and foam letters of different colours

On the day of our fourth session, Ms. K seemed to be in a better mood and met me with a smile. She was not very talkative but answered a few of my questions. Ms. K told me that she was feeling okay and that she was busy today. When I suggested that we relax, Ms. K seemed to be relieved, smiled, and replied, "yes... okay."

It's important to indicate that there were a lot of distractions in the room that day. The music was very loud; there was a lot of movement and noise coming from the other participants and the staff members. I wanted to establish some kind of continuity with our previous sessions and directed Ms. K's attention to her nametag. I offered to spell her name on a black piece of paper with the large foam letters placed in front of her. Slowly, she found the first letter of her name in a pale green color foam; however, she was not able to say which letter followed. She looked to the nametag for reference but this didn't help. When I named the second letter of her name, and asked that she find it within the foam letters, she answered, "I don't see it." When I asked if she saw the third letter of her name (which was a pale yellow foam piece), she said, "yeah." I continued to encourage her to find the rest of the letters but it seemed to be too confusing for her and she replied, "I can't do it."

Ms. K's attention began to wander; sometimes it looked as if she couldn't hear me well. At that point, she didn't seem interested in doing anything else. On my offer to end our sessions,

Ms. K didn't respond but as soon as I proceeded to put the art materials away, she protested by waiving her hand. Ms. K began to play with the letters in front of her; she took the letter P (pale green) probably assuming that it was an L that was the next letter in her name. She then played with the A (red), followed by the U (yellow), breaking it in half to make it into the letter L. She repeated the letters P-L-L very loudly, turning her head, and aiming at the rest of the group. She became very playful and it looked as though she was having fun.

After a while, Ms. K switched her attention to a shiny, sparkling yellow dragonfly, taking it in her hand. Ms. K then picked up a green letter that was also the first letter in her name and placed it at the bottom of the paper making a small pile out of foam letters that she previously chose. She began to tell a story about her daughter while playing with the yellow dragonfly she was still holding in her hand. Her story was difficult to follow because it was deconstructed and I could understand only some parts of it. When she finished her story, and while still playing with the dragonfly, she announced, "nothing else, that's it." I asked if she wanted to do something else and she replied, "so far, no."

After a small pause, Ms. K returned to the art materials: she moved the green letter P and the red letter R on the black piece of paper while the yellow dragonfly remained in her other hand, and said: "I don't know what it will be... wait and we'll see." As she said that, she looked sad and lost in her thoughts. Suddenly, Ms. K began picking up all sorts of art materials that were in front of her such as self-adhesive stickers and colored cotton balls. She seemed to enjoy different textures; her fingers kept stroking course surface of the stickers and squishing colored cotton balls. Finally, she piled them up with the foam letters and declared, "*c'est beau/bon*" (it's beautiful/good). The pile looked very colourful on black paper and I also reacted, "it's very beautiful." Ms. K. looked at me and laughing, said, "is that right?"

As she picked up the various items for her collage, Ms. K dropped the red cotton ball she had picked up earlier, and expressed her sense of relief with a loud "phew" when I returned it to her. At that moment, Ms. K turned her head towards me and carefully looked at me; her eye contact was very strong. She took the pompom from my hand and placed it over the green dragonfly pressing really hard as if making sure that it wouldn't fall again.

Towards the end of the session, she demonstrated signs of fatigue. She made a lot of "ouuff" sounds, and "oh boys." She seemed to be relaxed, while after a busy day she is often tired, confused, and anxious. Before leaving the room, Ms. K came up to me. I thought that she

wanted to tell me something and turned my head to hear her better but instead, she laughed and kissed me on both cheeks.

Session #5

Materials: white tablecloth, a wooden box (size 6" x 3" x 4"), water-based acrylic paints (red, green, blue, yellow), a painting brush

On the day of our fifth session, Ms. K appeared to be anxious. She didn't display her usual friendliness; her speech was incoherent and it was difficult to understand the source of her anxiety. When I presented a wooden box to Ms. K, she mistook it for a gift and said, "thank you very much." It captured her attention for a few seconds but as soon as I began talking about painting it with different colours, Ms. K lost interest. Her response was "it doesn't matter" and "whatever."

Ms. K didn't appear to be in a good mood. She seemed to be absorbed in her thoughts and continued to talk to herself, "now I have to wait and see what will happen with me." My attempts at establishing communication with her or getting her involved with the art materials were ineffective and we decided to end the session.

Session #6

Materials: a red tablecloth, black paper (size 11" x 17"), a wooden box (size 6" x 3" x 4"), water based acrylic paints (red, orange, green, blue, yellow), painting brushes with coloured handles

On the day of the sixth session, Ms. K. seemed to be in a good mood; she was interested in everything that was going on in front of her on the table. I showed her a big red brush and she exclaimed, "oh boy!" Ms. K took it from me and tried to put it in her mouth. I explained to her that it was a brush for painting and that it doesn't go in the mouth; she laughed and put it back on the table.

I picked up a smaller green brush, dipped it in yellow paint, and carefully placed it in her hand. When I placed the box directly under her brush, Ms. K started to paint it independently and without my assistance. Ms. K made a few small strokes; she looked very concentrated. To my question, "how does it feel to paint?" she replied, "it feels good!" After one minute of painting, she put the brush back on the table. I encouraged Ms. K to continue painting. She seemed unsure, then took the brush back and painted for a few more minutes.

Next, I gave Ms. K another brush covered with red paint and showed her another side of the box that she could paint. Ms. K painted the box slowly and with a lot of encouragement on my part. The painting lasted almost a minute and when she was done, she sighed. I asked Ms. K if she was tired and she said, “yes, a little bit.” However, when I presented her with a yellow brush covered in bright green paint, it produced the biggest positive reaction. Ms. K loved the colour and kept repeating “very nice” while applying it by herself on a side of the box.

The process of painting the box didn't take a lot of time and while we were still in session I decided to offer Ms. K that she choose her favourite art materials and place them in the box. Ms. K picked up a yellow dragonfly sticker; she touched it with both hands as if she was enjoying the texture. She squished it and rubbed it for a few seconds without speaking, looking absorbed by what she was experiencing. I offered to Ms. K that she put it in the box but she didn't show any enthusiasm about my idea and just shrugged her shoulders. When I picked up a large red flower sticker and placed it on top of the box, she smiled and said, “it's cute.” This was at the end of the day for the centre as everybody was getting ready to go home. Before leaving the room, Ms. K silently picked up the box and examined it from every side. When I told her that she could take it home, Mrs. K looked at me and smiled.

Session #7

Materials: white tablecloth, small wooden beads of different colours (size $\frac{3}{4}$ ”), elastic ribbon

Our seventh session was done at Ms. K's residence because there was no available transportation to the center. When I found her in the TV room, Ms. K didn't recognize me but expressed willingness to participate in art therapy. The room was large but not well lit. There were a few other residents present but not too many. The TV was on but the volume was very low. I brought a large box of colourful wooden beads and planned to use them for bracelet making. Ms. K's arms were crossed and she was looking down at the table as if she was very tired. When I spread the beads on the table, however, they seemed to catch her attention. Ms. K exclaimed, “oh my, look at that” and on my offer to help separate them by colour, she answered “yeah, sure.” Suddenly, her attention switched to the string on the table in front of her. After a few attempts, Ms. K was able to pick it up, fold and play with it, trying to make a knot. After a while, she delicately put it back on the table as if she had had enough.

I attempted to switch her attention back to the beads, but communication was very difficult. Ms. K began mixing the words making me repeat things multiple times. At one point, I

took a few beads in my hand and asked her to choose one. She grabbed my finger instead of a bead and started to pull at it really hard which made me wonder if she saw clearly what was in front of her. She began to look tired and I decided it was best to terminate the session.

Session #8

Materials: red tablecloth, black paper, small wooden beads of different colours (size $\frac{3}{4}$ "), elastic ribbon

Our last session with Ms. K was once again at her place of residence due to unavailability of transportation. Ms. K greeted us with a smile but seemed a little anxious. The sitting room was very spacious but dark and a lot of noise was coming from the nearest hallway. The session was conducted in the TV room again where a number of other residents were present as well as some nursing staff.

When I placed the beads on the table in front of Ms. K, she looked at them, but didn't seem as interested as in the previous session. I explained what we would be doing in the session, but Ms. K said, "I don't know, do it yourself." She was not as receptive as the previous session and I had to reassure her that I would be with her during the process; she then replied, "okay, you can start."

The white string on the black paper caught her attention again, similarly to the previous session, but this time she was able to pick it up with no difficulties. I placed a few beads closer to Ms. K and asked her to pick out the first bead for our bracelet but it looked as if she was getting more anxious and concerned. The level of noise was high and more people were coming to the TV room. The session wasn't moving along and I decided to change directions. I asked Ms. K to help me place the beads back in the box and she complied. I saw that she was able to pick up the beads much better during this session as compared to the previous one, and this activity seemed to entertain her. She was working very hard and was very efficient; she hadn't displayed such good dexterity in any of our previous sessions. When all the beads were in the box, Ms. K put her hand inside the box and began to play with the beads letting them flow through her fingers. She said, "you have a lot of them."

At the end of the session, I asked Ms. K if she was feeling better. She answered, "I think so" and began to talk about her boyfriend and the troubles they were experiencing in the residence. Her concern about their relationship seemed sincere and very touching. While Ms. K was speaking, her small hands moved around the surface of the black paper, almost caressing it.

As I was leaving the TV room, I turned around and saw her still looking at me. I waved her my final goodbye and she waved me back.

Data Analysis

In order to determine whether art therapy interventions that were adjusted to the AD-related visual deficits facilitated the participant's self-expression and communication compare to the interventions that were not adjusted, the collected data was coded and categorized into four domains: engagement, expression of pleasure, enhanced self-esteem, and expression of emotions and feelings (see Table 2). Each objective and subjective indicators of the four domains were numerically rated on 4-point Likert scale: 4=Always; 3= Some of the time; 2= Rarely; 1= Never. Data seems to indicate that facilitation of self-expression and communication manifested itself through an improvement in all four domains of well-being.

In the domain of engagement – an indicator of well-being – acquired data demonstrates that the participant of the study was able to sustain attention for 10 minutes “some of the time” during three out of four sessions with adjustment (WA) compared to one session with no adjustment (NA). The participant was socializing during all four sessions WA: two sessions “always” and two sessions “sometimes”, as compared to two sessions with NA, respectively. In three out of four sessions with NA, the participant “always” required prompting as compared to two sessions WA.

For the expression of the pleasure domain, also an indicator of well-being, the participant displayed relaxed body language during art making “always” in all four sessions WA, as compared to one session with NA. Verbalization of pleasure during the sessions WA was observed in all four sessions: in two sessions “sometimes”, and in two sessions “rarely”. In sessions with NA, verbalization of pleasure occurred only in two sessions, respectively. It was also observed that the participant was never agitated or tense during all four sessions WA. In addition, confusion during art making was experienced by the participant during two sessions with NA “always”, and during three sessions WA only “sometimes”.

Indicators of enhanced self-esteem through verbally expressed satisfaction was observed in all four sessions WA: three sessions “sometimes” and one session “rarely”. In sessions with NA, it occurred once “sometimes”, once “rarely”, and twice “never”. The participant non-verbally expressed her pride in the art work in all four sessions WA: once “sometimes” and three

times “rarely”, as compared to only two sessions respectively with NA. Only during one session WA did the participant demonstrate her work to others.

All four indicators of expression of emotions and feelings domain were consistent in demonstrating positive improvements in the participant’s behavior. The participant “sometimes” brought up past life experiences in three out of four sessions WA. She responded to art making with verbal reminiscence, displayed non-verbal behaviours indicating comfort in the activity, and communicated non-verbally with the researcher “sometimes” in three out of four sessions WA. In sessions with NA, the participant “never” brought up past life experiences or responded to art making with verbal reminiscence. Only in two sessions out of four with NA did the participant “sometimes” displayed non-verbal behaviours indicating comfort in the activity or communicated non-verbally with the researcher.

Discussion

While participating in this study, Ms. K exhibited a variety of symptoms associated with advanced stage AD such as, anxiety, verbal aggression, severe impairment in memory, the inability to process information and orient herself to time and place. Her capacity for comprehensible speech was severely affected, although words or phrases were occasionally uttered. Although Ms. K has no history of practicing art making during her lifespan and, according to her family member, has never expressed a desire to engage in the process, she appeared to be more inclined to participate in the art therapy sessions adapted to the AD-related visual deficits, as compared to the NA sessions. It did appear that the colour contrast between the red tablecloth, black background paper, and art materials created a visual display that attracted and focused her attention on the activity. That combination facilitated her engagement and promoted further interactions. This confirms Dunne et al. (2004) and Koss and Gilmore’s (1998) earlier findings that simple environmental manipulations to improve visual contrast could have a great effect on severely affected AD patients.

The most positive results of the art therapy interventions adapted to AD-related visual deficits were the increase in emotional expression by the participant of the study and improvements in her ability to communicate with the researcher through verbal and non-verbal means. Such sessions evoked a lot of reminiscence; in those sessions, Ms. K spoke about her life, past and present. She expressed her sadness about the losses she suffered because of the disease like the inability to care for her favourite plants, concerns about her relationship with her

daughter and her boyfriend at the residence, and stress associated with daily living. It would seem that the art materials and the process of interacting with them may have acted as a missing link between Ms. K's internal emotional world and the external world; this link seemed to have help elicit her feeling and emotions and encouraged their expression. The most powerful example of this was observed during our collage session when Ms. K exhibited particular affection for a large yellow butterfly. As Ms. K held and caressed the butterfly and talked about her daughter, I could feel her love.

Verbal communication with Ms. K during the sessions adapted to AD-related visual deficits seemed to be much easier perhaps because of her engagement with the art materials and art making process. I witnessed an increase in the instances of spontaneous verbalization and even the use of French words. Ms. K seemed to be more relaxed, involved, and even playful. She even demonstrated an ability for creativity by adjusting the interventions to what was aesthetically pleasing or stimulating to her, such as during the making of the collage or while playing with the wooden beads. Particularly moving were the moments Ms. K would acknowledge me, which manifested themselves as intense eye contact, touch of hand, or a kiss after a session.

Not all interventions that were adapted to AD-related visual deficits evoked similar reactions. I can hypothesize that this was partially due to Ms. K's personal preference or level of enjoyment that each intervention provided and the demands it placed on her cognitive processes. For example, during the mandala colouring, Ms. K's interactions with the art materials in both sessions was not significantly different quantitatively; the quality of these interactions, however, was different. During the first session, which wasn't adapted for contrast and object identification facilitation, Ms. K's behaviour seemed to be mostly task-oriented; it looked as if she wanted to please me by doing it right. Here, Ms. K's visual difficulties were more prominent: she often lifted the paper up to eye level so as to look closer at the mandala and touched parts of the mandala trying to pick these parts up as if they were three-dimensional. In the second session, Ms. K devoted more time to looking at the designs, enjoying their beauty, comparing them to each other, which elicited a lot of verbalization. In addition, she chose two coloured crayons and expressed verbally and gesturally that they looked "big" to her. Previously exhibited visual difficulties that Ms. K experienced such as lifting the paper closer to her eyes and touching the paper with her fingers were not observed in the second session.

During the first collage making session, the art materials didn't invoke any interest in Ms. K. My attempts and those of other staff members' to engage her in the art making process also provoked a lot of agitation and even hostility. Collage making during the session adapted to AD-related visual deficits demonstrated a significant improvement in Ms. K's ability to interact with art materials and was expressed by an increased level of creativity. During this session, she seemed to easily overcome her initial disinterest and remained engaged throughout the whole session. Ms. K's creativity manifested itself in the breaking up of the foam letters in order to make new ones and the creation of colourful and aesthetically pleasing forms using the stickers. It seemed that during this session, Ms. K acted with a lot of autonomy while choosing her art materials. Ms. K was more tactile and seemed more aware of the textures of the different objects. This was the only session where Ms. K presented her work to others and verbally appraised her artwork in French. She didn't exhibit any visible signs of anxiety or distress that I usually observed in her at the end of the day, likely associated with increased levels of noise and movement in the room as a result of everyone getting ready to go home.

In both box-painting sessions, multiple internal and external variables potentially interfered with Ms. K's levels of participation and engagement. Her initial mood states were different as well the levels of noise and circulation in the room. As was previously mentioned, Ms. K is neither a trained artist nor someone who practiced painting or any art making regularly in her life. Painting can potentially be very intimidating for someone who has never done it before, especially if they experience cognitive deficits. Hence, I am not able to definitively conclude that it was the adaptation to the AD-related visual deficits that facilitated Ms. K's involvement in the second session. I did notice, however, that it was much easier to get her to engage with the art materials when contrast was improved. I did observe expressions of joy and satisfaction experienced from the rich textural and visual qualities of the acrylic paint, which she also expressed verbally.

During the bracelet making sessions, it looked as if both interventions invoked almost the same amount of interest from Ms. K; however, during the session with the improved visual contrast and object recognition, similar to the second session of collage making, she took initiative and altered the process of art making to what was pleasurable and acceptable for her. She played with the beads, feeling their texture, listening to the sounds they made. Perhaps the relaxing and soothing effect of such interaction produced a calming effect. It looked as if it

appealed or stimulated her senses and she began to share her concerns and worries with me. She was also able to express her sadness that the session was over.

Although preliminary, the results of this case study are encouraging in that they seem to confirm other fields' previous findings that simple environmental manipulations such as contrast enhancement can increase levels of participation and engagement of individuals with advanced stage AD. Overall, this case study demonstrates improved emotional expression and communication with the participant during art therapy sessions adapted to possible AD-related deficits. Visual system sensory stimulation that interventions such as these have the potential to provide can enhance communication and emotional expression, capable of alleviating some of the horrendous emotional and physical symptoms individuals with advanced stage AD experience. Although this case study was based on data from one participant, it suggests that art therapists and other professionals working with this population should consider sensory-based interventions for individuals with late stage AD as promising and potentially valuable therapeutic tools.

Neurobiological research provides us with a new look on the subjective experience of people who are often unable to express themselves due to the debilitating nature of AD. They represent an extremely vulnerable population whose well-being in a large part depends on our ability to provide them with understanding and an empathetic environment. However, the diminishing cognitive and communication abilities of individuals affected by AD present professionals with difficulties that make providing interventions for this population a continuing challenge due to the unpredictable nature of the disease. I hope this study demonstrates that AD-related sensory deficits in vision and possibly in other modalities might provide art therapists and other professionals with guidance in their clinical practice on how to improve communication strategies with this population. In addition, I hope that neurobiological research on sensory deficits and their effect of daily living of people affected by AD might become a scientific base that will aid in the creation meaningful and effective interventions.

Limitations and Recommendations for Future Research

This study has many limitations. First, the absence of the participant's definite diagnosis of AD affects the quality of this study. The diagnosis of Alzheimer's was indicated by a member of the participant's family and wasn't supported by any medical documentation. Lack of clarity about the participant's diagnosis and level of cognitive impairment prevents credible

generalization of the results of this study. Although a definite diagnosis of AD is only possible at the time of autopsy, a variety of screening instruments can be used in future research. These may include a combination of clinical history, neurological and psychiatric evaluation, and laboratory test results to get a more precise diagnosis (Marshall & Hutchinson, 2000).

Second, the desired control factor was unattainable because of external conditions such as levels of noise and lighting in the activity room, distractions from other participants and staff, and changes in regular schedule. This research did not attempt to control for the effects of these conditions during the sessions. The sessions were facilitated based on the participant's schedule at the centre and were done at the end of the day when the participant was tired. Future research has should be conducted in a controlled environment where the influence of external conditions can be minimized. Also, the sessions should be conducted earlier in the day so as to avoid agitation and confusion, also known as Sundowning and manifested by the persons with AD and dementia in the late afternoon hours (Cohen-Mansfield, Garfinkel, & Lipson, 2000).

Third, this case study included only one participant and is limited in its application to a broader population of individuals with AD. A replication study with a larger sample should follow in order to produce conclusive results. Participants should be carefully selected in order to obtain a homogeneous sample. Inclusion and exclusion criteria will increase scientific rigor.

Fourth, future research has to contribute to an understanding of the use of art as a therapeutic tool in working with individuals with late-stage AD. Art therapy offers not only a possibility for non-verbal communication that is so crucial when working with people unable to speak but can be empowering because of its focus on self-expression (Odell-Miller, Hughes, & Westacott, 2006; Stephenson, 2006). Perhaps with a deeper understanding of the role that sensory deficits play in the lives of persons with AD, art therapy interventions can be effectively directed at increasing awareness of self and others, assisting in coping with symptoms of AD, as well as stress and traumatic experiences related to the disease. Interventions can possibly enhance cognitive abilities and support the life-affirming pleasures of art making. Many argue that creativity itself can be therapeutic (Beard, 2012; Kinney & Rentz, 2005; Ulman, 1961) but Ulman (1961) states that only effective therapeutic procedures can lead to fundamental change.

This case study is a pilot project and was done in the hopes of encouraging a new multidisciplinary research approach in the field of art therapy. There is the possibility that such an approach can results in developing a therapeutic tool that has the potential to help art

therapists and other professionals who work with people affected by AD in clinical settings and to contribute to the development of educational and therapeutic concepts for future practice. Safar and Press (2011) state that “degenerative neurological disorders fundamentally affect an individual’s functioning, including the capacity to make art” and that knowledge of the deficits is “essential in providing effective treatment” (p. 102). While science works hard on solving the mystery of Alzheimer’s disease, finding the ways to treat and prevent it, effective and meaningful interventions appear to be a major factor in improving well-being of people affected by the disease. Such interventions probably have little effect on neurological course of the disease, but may have a potential to ameliorate its devastating symptoms and bring sense of hope not only to those who was diagnosed with AD but their families as well.

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Appendix

Table 1.

Psychological Well-being Instrument

Indicators	
Engagement	1. The artist participant greets and socializes with the researcher upon entering the art session 2. The artist participant greets and socializes with the researcher during the art session 3. While engaged in the art activity, the artist participant has sustained attention for a period of 5-10 minutes 4. The participant requires prompting or cueing once engaged in the art project
Expression of pleasure	5. The artist participant has relaxed body language, smiles, and laughs during the art project 6. The artist participant verbalizes a sense of pleasure with phrases such as: this feels good, this is relaxing 7. The artist participant is tense or agitated during the art project 8. The artist participant verbally indicates being confused or lost
Self-esteem	9. The artist participant non-verbally expresses pride in participating and completing a project by looking at it, touching, smiling, nodding happily 10. The artist participant verbally expresses satisfaction by stating: "Thank you, I did that, really?" 11. Without prompting, the artist participant demonstrates his/her work to others
Expression of emotions and feelings	12. The artist participant brings up past life experience 13. The artist participant responds to art making with verbal reminiscence 14. While drawing or painting, the artist participant displays non-verbal behaviours indicating comfort or discomfort in participating in activity: (a) tears; (b) distorted facial expression; (c) grimace; (d) smiles 15. The artist participant communicates non-verbally with the researcher (eye contact, touch, posture, smile)

Note. Adapted from Renz, C. A. (2002). Memories in the Making©: Outcome-based evaluation of an art program for individuals with dementing illnesses. *American Journal of Alzheimer's Disease and Other Dementias*, 17(3), 175-181.

Table 2.

Psychological well-being/instrument/results

Rating	4=always		3=sometimes		2=rarely		1=never	
	No adjustment	With adjustment						
Engagement								
1. Socializing upon entering	•	••	•	••			••	
2. Socializing during the session	•	••	•	••			••	
3. Sustaining attention for 10 min.			•	•••	•	•	••	
4. Requiring prompting during session	•••	••	•	••				
Expression of pleasure								
5. Relaxed body language during art making	•	••••	•				••	
6. Participant verbalizes a sense of pleasure			•	••	•	••	••	
7. Participant is tense or agitated during session	••						••	••••
8. Participant lost and/or confused during art making	••		•	•••	•	•		
Self-esteem								
9. Participant non-verbally expresses pride			•	•	•	•••	••	
10. Participant verbally expresses satisfaction			•	•••	•	•	••	
11. Participant demonstrates his/her work to others						•	••••	•••
Expression of emotions and feelings								
12. Participant brings up past life experiences				•••			••••	•
13. Participant responds to art making with verbal reminiscence				•••			••••	•
14. Participant displays non-verbal behaviours indicating comfort in the activity				•••	••	•	••	

15. Non-verbal communication (strong eye contact, touch, smile)				●●●	●●	●	●●	
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Note. ^a ● = one session, ●● = two sessions, ●●● = three sessions, ●●●● = four sessions.

^bAdapted from Renz, C. A. (2002). Memories in the Making©: Outcome-based evaluation of an art program for individuals with dementing illnesses. *American Journal of Alzheimer's Disease and Other Dementias*, 17(3), 175-181.