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In this edition:

This newletter is intended for people who participated in the Research Centre on Aging's projects

It is also distributed to anyone who wants to receive it. Please contact us for more information (see page 4).

Virtual Reality to the Rescue of Your Failing Memory

By Stéphane Protat

Can virtual reality technology pave the way for a new psychotherapeutic approach to stimulate the memory of persons suffering from Alzheimer's disease and thus improve their well-being?

Stéphane Protat is a doctoral student at the Research Centre on Aging and a recipient of a training award from the Quebec Network for Research on Aging (QNRA). His work is supervised by Ms. Dominique Lorrain, professor at the department of psychology of the Université de Sherbrooke, and Mr. Denis Bélisle, professor at the department of literature and communications of the Université de Sherbrooke. Both are researchers at the Research Centre on Aging.

Do you remember your first family vacation or your first romantic dinner? A photo album or a familiar odour captured at a street corner can help us reminisce about our past and long-forgotten emotions.

The memory which is thus solicited is referred to as the autobiographical memory. It contains our memories about our personal history and expresses itself naturally throughout our lifespan. Among Alzheimer's patients, the autobiographical memory is impaired, especially the most recent memories. The quality of the earliest memories is also affected, but they are often easier to retrieve.

Caregivers noticed this capacity long ago. They are seeking to exploit this aspect of the illness to improve the retrieval of memories and the quality of life of Alzheimer's patients. Life review therapy is the branch of psychological therapy which applies this clinical method.

During these sessions, a therapist shows the patient a series of old photographs (personal or non-personal), old objects, plays music, and so on. The objective is to bring *lost* memories to the surface. The resurfacing of these memories becomes the object of discussions and helps the individual to reassert his history and to establish a life review .

Investigators of life review therapy have noted that life review can have positive effects on the recovery of ancient memories, mood disorders, behavioural disorders, and depression.

WERE YOU AWARE THAT... ?

An individual's emotional state, level of alertness and body position can influence memory retrieval. For example, memories of vacations spent lying on a beach can resurface while lying on a bed.

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Treatment in Palliative Care: Decision-Making Process

By Julie Lamontagne

Ms. Julie Lamontagne graduated in psychology and earned a master's degree in gerontology while working at the Research Centre on Aging. She is presently conducting her doctoral research under the supervision of Ms. Marie Beaulieu, Ms. Chantal Caron and Dr. Marcel Arcand, who are all researchers at the Research Centre on Aging.

How do an elderly patient in palliative care, his family caregiver, and the attending physician reach a common agreement on whether to pursue or interrupt certain forms of treatment?

Many elderly persons receive palliative care at the end of their lives. It aims to provide maximum comfort, not a cure to their ills. In this difficult context, it is useful to understand how certain decisions about whether to pursue or interrupt the administration of medicine to alleviate pain or to prevent certain diseases (but which no longer have any medical significance) are reached. Many individuals are involved in the decision-making process: the elderly patient, the family caregiver, and the attending physician.

In order to gain a better understanding of this process, we began conducting research this fall on the subject of maintaining or interrupting the administration of medicine. We will be meeting elderly persons in palliative care centres, their family caregivers, and their attending physicians. We will use feedback from their experiences and their reflections to uncover the elements which trigger their decisions.

In practice, understanding this process will allow healthcare professionals to recognize the elements which guide them in the decision-making process in palliative care. The results of this study will also help individuals reach more enlightened decisions while taking into consideration the elderly patient's comfort level in order to maximize his quality of life in palliative care.

WERE YOU AWARE THAT...?

Only 5 to 10% of individuals suffering from cancer receive palliative or end-of-life care. Such care can answer not only responds to their physical needs, but also to their psychological, social, or spiritual needs.

Each case is unique and many decisions need to be reached. In order to keep our research focused, we have decided to maintain or cease administering medicine in two common situations: 1. osteoporosis treatment and the prevention of fractures; 2. reducing morbidity from cardiovascular or cerebrovascular accidents.

Our choice is not random. We consulted physicians in palliative care who informed us of the problems they encountered in raising the controversial issue of ceasing to administer medicine to some of their patients. In many cases, elderly persons who reach the end-of-life stage continue to receive medicine initially intended for preventative purposes, even if such treatment has been rendered useless by circumstance. Such medication occasionally adds to the patient's discomfort.

Sources of our reflection

This fall's investigative work follows up on a previous study in which we studied family caregivers accompanying their elderly spouses in home palliative care. We recognized that many decisions need to be reached. We explored the decision of providing home palliative care rather than hospitalizing or resorting to palliative care centres for end-of-life patients.

The decision we are exploring is often difficult, and is reached at the end of an arduous thought process in which are interwoven the patient's expectations, the motivations of the family caregiver attending to his or her spouse, as well as the problems he or she encounters in such a situation.

This study also allowed us to realize that in most cases, many individuals revolve around the family caregiver. The patient in the end-of-life stage, his relatives, and healthcare professionals participate in the family caregiver's decisions. It is precisely with the intention of gaining a better understanding of those relations that we have decided to undertake the current study.

Finally, family caregivers recounted in our initial research that one of their most trying experiences is to witness the physical suffering of the sick, elderly patient. The caregivers mentioned that improper pain management might encourage them to send the elderly patient to palliative care or to hospital centres. The patient's comfort is an essential aspect of palliative or end-of-life care. Could the side-effects of preventative medication rendered useless influence the family caregiver's decision? That is but one of the questions which we will attempt to answer in our ongoing investigation.

Sarcopenia: How Do You Counter the Loss of Muscle Mass When Aging?

By Mélissa Labonté and Isabelle Dionne

Mélissa Labonté is a research dietician at Centre de recherche clinique Etienne-Lebel. After completing her background training in dietetics, she pursued a master's degree in kinanthropology. She now works as a research professional.

Isabelle Dionne is a researcher and assistant scientific affairs director at the Research Centre on Aging. She holds a doctorate in exercise biology-physiology and works as an associate professor at the department of kinanthropology of the faculty of physical education and sports of the Université de Sherbrooke.

S*arcopenia* is a relatively unknown word. However, the phenomenon which this term describes is increasingly becoming a subject of research. Sarcopenia refers to the loss of muscle mass associated with aging combined with an increase in body fat mass. This combination can have serious consequences on the health and well-being of the elderly.

A drop in muscle mass and an increase in body fat mass are unavoidable aging mechanisms. They can even be observed among people who do not lose weight and it appears that these tendencies increase towards 65 to 70 years of age.

Scientists have developed a new term to describe the phenomenon. *Sarcopenia* is derived from the Greek *sarx* for flesh and *penia* for weakness (poverty of flesh). Researchers are increasingly interested in sarcopenia as this condition significantly increases age-related problems such as a reduction in muscle strength in the legs or a loss of physical capacity. Sarcopenia might explain the increase in the number of falls and fractures among the elderly. It also has consequences in the muscles' ability to use blood glucose (or blood sugar) and it increases the risk of developing type 2 diabetes.

WERE YOU AWARE THAT...?

Sarcopenia affects about 30% of elders aged 65 and older. The older the individual, the more severe is the lost of mscule mass. In addition, men are slightly more affected than women.

Countering the loss of muscle mass

It is important to maintain muscle mass in order to counter the effects of sarcopenia. Muscle toning programs adapted to the needs of the elderly can be beneficial as they help maintain muscle mass and muscle strength. Reinforcing muscles also minimizes the risk of falling and ensures better physical capacity in everyday life while reducing the risk of developing certain diseases such as arthrosis.

Contrary to the general beleif, it is the elderly who have only rarely, occasionally or never performed muscle toning exercises who obtain the greatest benefit. Muscle toning not only reinforces muscles, it also helps individuals sleep and generates a feeling of well-being. Muscle toning also reduces risk factors associated with cardiovascular diseases and helps prevent other diseases such as osteoporosis and diabetes. Muscle toning provides guaranteed benefits to everyone, regardless of age or level of fitness.

In our studies at the Research Centre on Aging, we are attempting to determine whether combining healthy nutrition with an exercise program will even further increase the benefits of these approaches. For example, we have discovered that adding antioxidant vitamins (such as vitamins C and E) significantly increases muscle mass among active elderly persons. The results of our research indicate that the elderly benefit even more from an active lifestyle if their diet is rich in fruits, vegetables and proteins contained in meats and dairy products.

This investigation continues to be carried out in the Laboratory of body composition and metabolism of the Research Centre. The next step will be to determine whether the benefits of the diet and muscle toning exercises effectively translate into a reduction in the risks of developing diabetes and cardiovascular disease, or loss of physical abilities.

...VIRTUAL REALITY (continuation of page 1)

However, life review therapy has its own set of limits among Alzheimer's patients. Some of them cannot express themselves verbally; others fear no longer being able to remember; and others have difficulty associating the pictures or objects used to stimulate their memory.

Stimulating memories

The purpose of our study is to update life review therapy and to make it more efficient by using virtual reality tools in order to circumvent the problems enumerated. Virtual reality technology allows us to artificially reproduce existing, real-life environments (parks, houses, museums, shops, etc.). Equipped with the right material, individuals can move and interact in real time in artificial worlds using movement detectors, a steering wheel, head mounted displays which project images of a given environment (much like a small television), and so on.

Virtual reality has been used for more than 40 years in various fields, including: aerospace, public works, video games, medical research, and so on. Virtual reality technology has just recently begun to be used in psychology (i.e. to treat phobias, post-traumatic stress, locomotor rehabilitation, etc.).

Interesting results have recently been reported in recent studies about the use of virtual reality in the psychological treatment of patients suffering from Alzheimer's disease. It would appear that information tools can help patients improve their orientation in an apartment as well as certain aspects of their memory.

As regards our research with patients at the early stages of Alzheimer's disease, our focus is on the more psychological and emotional aspects than on existing research.

Just imagine a virtual village with flowers along a paved road, buildings, a park, traffic noise, birds singing, dogs barking, and so on. The interior of every virtual house is like a museum. Each wall is adorned with old photos (Expo 67, various prime ministers, the City of Sherbrooke in the 1940s, etc.). Personal photos are to be added to these collective images (family vacations, weddings, Christenings, etc.). The patient will be undertaking a *virtual tour* of the village and visit every one of its buildings while sitting down comfortably in a chair and wearing the screen glasses.

This study was initiated in the fall of 2007. It will allow us to verify whether stimulating long-term memory through the use of virtual reality can generate positive results on the memory, mood, and self-identity of the patients. In the long run, this study will contribute to the implementation of a new form of psychological therapy for patients suffering from Alzheimer's disease.

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