

CORRESPONDENCE

Applying GentleCare to older adults with dementia (Reply)

In the previous issue, Mauro Colombo¹ extended the concepts of Luria and Fozard² to the daily practice of older adults with dementia in the GentleCare concept of Moyra Jones³. Colombo mentioned the three basic elements that make up a pleasant environment: (i) the individual with whom the person with dementia interacts, (ii) the physical space in which the person lives, and (iii) the activities in which the person engages. We also work with these basic three elements, and call it the Brain-Environment-Methodology (BEM, in Dutch: BOM). BEM is based on neuroscientific results stating that in the damaged brain, programming of behaviour is determined by the environment. By knowing how the damaged brain is processing incentives, we can understand what kind of environment we have to design. As to the three environmental aspects mentioned above, we start with items (i) and (ii) when organizing the environment for persons with dementia. The physical environment is prioritized. If wrong incentives are present in its design, gentle interaction by carers has no lasting effect. The physical environment encompasses chairs, kitchens, colours, tablecloths, apparatus, technology, programs on flat screen, etc.

Hierarchical brain organisation

Our brain can be thought of as having four functioning levels with a hierarchy of increasing complexity. At increased levels, there is also an increased competence in understanding complex situations (input) and in reacting with adjusted or sophisticated behaviour (output). The two lower levels of brain functionality are completed at the age of 3. Here the incoming incentives are sorted out and ordered, an image of the situation emerges and the lower part of the limbic system screens the image for (i) nice/nasty, (ii) pleasant/unpleasant, and (iii) safe/hostile. Initial uncontrolled emotions start here.

The two higher levels (3 and 4) are ready at around our 25th year of life. They contain the higher brain functions like self-knowledge, control of emotional impulses, forming an overview of the situation, abstract thinking, recognising cues, imagining virtual plans, and choose one of them to execute⁴. Levels 3 and 4 are vulnerable since they use an intensive network of connections with all corners of the brain involved. Many brain diseases have their focal point at the higher levels. An anatomically small injury can cause an enormous dysfunction in thinking and behaving. Dementia



shows from the beginning serious mental handicaps arising from damage to levels 3 and 4, especially when there is a perception of threats that causes fear and stress⁵. The preparation and processing of behaviour is based on the perception capacity of the brain. Level 3 and 4 are absolutely needed to maintain an appropriate perception of situations.

In dementia, level 1 and 2 create the perception of environment and self. The dementing brain is responsible for a lot of misunderstanding and related misbehaviour. In order to facilitate 'normal' behaviour, the incoming incentives have to be simplified. The environment has to become understandable for the levels 1 and 2 of brain functioning. Powers⁶ called this: the control of perception. In our opinion all longterm care-giving is in the end a matter of manipulation of perception.

Behaviour and the damaged brain

There are two different types of behaviour. One is processed by all four brain layers and is thought out. The other, steered by the lower two layers, is merely impulsive, intuitive, emotional and spontaneous. The latter is common in Alzheimer disease. The environment steers behaviour, not free reasoning, since the capacity of the lower brain (levels 1 and 2) is limited. The personal touches vanish and behaviour becomes based upon a number of neurological principles which are valid for nearly every brain-damaged patient. This means that over-all measures can be taken to create a favourable surrounding for the demented persons. The main principles are: (i) Images in memory diminish and eventually relate only to younger years up to the age of 30⁷;

(ii) Since the lower brain cannot focus, only one source of stimuli at a time is useful⁸;
(iii) Static information (that is without sound or movement) cannot be processed; A demented person may 'repair' this by walking (wandering) or other obsessive behaviour like tapping, screaming, etc⁹.

An example

A concrete example from the Netherlands on how to use the environment when the upper brain is damaged, concerns some nursing homes organized in small communities of 6-10 persons. Each person has a personal bedroom around a shared living room and kitchen. In the communal space we have created an active part –table and right chairs–, and a passive area –with easy chairs and a big flat-screen television. Some activities take place in the active and some in the passive area. Then it is possible for the damaged brain to distinguish between the different activities. To define the two spaces clearly, the walls of the dining area and living room have bright and distinct colours, as have the heavy curtains. This is done to accommodate any poor vision of persons with dementia. All furniture has a colour different from wall and floor; they are recognisable and look familiar. We use PVC flooring with an oak-wood motive.

As part of the entrance procedure of a candidate-member of the community, a workshop with family members is organised. Here information is supplied about the working brain and also a number of questions are asked on current habits and environment of their beloved relative with dementia. In addition family members are requested to take photographs of the home environment and send them to the nursing home. From these photographs two pieces of furniture or furnishings are selected: the most frequently used easy chair, and a favoured piece. These two pieces become part of the communal home of people with dementia. Other personal items are placed in the private bedroom.



The result for the living room is that Mr. A is sitting in his own easy-chair, and against the opposite wall he sees his own dresser. Mrs. B, also in her own chair, has a view on her own floor-lamp. Mrs. C. perceives opposite of her chair her own old painting that she got from her parents.

Activities guided by technology

Continuous incentives are essential otherwise the demented persons start obsessive behaviour. For example: there are birds in a bird cage in the room, a caregiver telling a story, or cooking together in an old fashioned looking kitchen with old fashioned recipes, etc. The most important source of incentives is the big flat screen where we use 'extended television'¹⁰. The programme may start any moment of day or evening. Meaningful supporting stimuli are options, like sun-rising scenes in the morning, eating persons before starting a meal, walking children to stimulate walking, and sun-downing and stories before bed-time.

To prevent obsessive wandering, the corridor has so-called 'beautiful-experience corners' for example a nursery coloured pink and with baby noises, a fancy corner with fascinating moving coloured lights, an old fashioned chapel with a religious statue and dedicated music, or a royal corner with pictures, lights and colours of the Royal House of Orange. The wanderers stop walking and sit down. The passive persons with dementia are taken by their family for a walk. This walking prevents them from falling and from becoming dependent on a wheel-chair with a lower quality of life.

Persons involved

By BEM the whole environment is methodologically analysed and advice is given to make the environment favourable for demented persons. Not only the family members but also the managers, medical and paramedical staff, professional caregivers and volunteers, are educated to become involved in creating

a favourable environment for the demented inhabitants. Their behaviour, caring and interacting is of utmost importance. In these aspects, the GentleCare concept³ is much in correspondence with BEM.

Results

We applied the BEM concept in ten nursing homes. Organization and quality of care improved. It is pleasantly quiet in the communal living room; inhabitants find their own chair easily, no discussions of who belongs where; wandering is no burden anymore; few inhabitants use a wheelchair; most inhabitants have become independent in (finger food) eating. The caring processes are executed accompanied by using the right incentives and they take less time now. So the 'spare time' of the professionals can be used by spending more time with the demented people. This implies playing games (we make our own games), singing songs, helping in the household or telling stories of the past.

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ISG BUSINESS

ISG*ISARC2012 news

The next World Conference combining gerontechnology with automation and robotics in construction, ISG*ISARC2012¹, has already published on its website² abstracts of most of its keynotes and symposia. They are freely available to all readers of the conference. In addition, an Android app has been prepared to read the information on your smart phone.

Among the organizers, Thomas Bock (Germany) is the new track-director and associate editor for the field of Realities or Application Systems.

Call for papers is open for leading-edge technologies, oral communications, and presentations of the GeronTechnoPlatform.

In the meantime, we also prepared the master-class for PhD students in gerontechnology (Director: professor dr Helianthe S.M. Kort)³, and an IAARC Academy for professionals in automation and robotics in construction (Director: professor Dr. Thomas Bock)².

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ISG-Sinophone Chapter

2011 is an important year for the Sinophone chapter under construction. In January ISG board member, professor Kou-Ming Wang PhD has been re-elected as the President of the Chinese Society of Gerontechnology and Service Management (CSG)¹. In his 2nd term as the President of CSG, one of Prof. Wang's primary goals is extend the activities of CSG into the Sinophone world and officially establish the ISG Sinophone Chapter.

On April 19, 2011 the '2011 Symposium of Aging and Technology' took place at Yuan Ze

University, and was sponsored by CSG. This biannual symposium is held for the 3rd time. In the morning session of this one-day Symposium, Professor Lewis A. Lipsitz, Professor Vera Novak, and Professor Chung-Kang Peng from Harvard Medical School, and Professor Peter Novak from University of Massachusetts addressed various topics on aging and technology. In the afternoon session, Professor Gong Chen from Peking University, Professor Yeh-Liang Hsu from Yuan Ze University, and General Manager Hung-Jen Yang and Dr. Ming-Shin Hsu from SmartCare Inc. exchanged research results and industrial experience in the field of gerontechnology. More than 200 people attended the symposium, and many local newspapers reported this successful event in promoting gerontechnology in Taiwan.

May 7, 2011 saw the '2011 Master Class and Conference on Gerontechnology and Service Management', also sponsored by CSG. It was held successfully at Nai-Kai University of Technology. This conference is in its 6th year, and is supposed to be the most influential academic conference in the field of gerontechnology and service management in Taiwan. Prof. dr. Annelies van Bronswijk from Technische Universiteit Eindhoven, who is also the editor in chief of this journal, was invited to be the master of 2011. She gave a speech entitled 'Towards a Gerontechnology Community for Housing'. A total of 46 papers in the field of gerontechnology and service management were presented in the parallel sessions.

CSG organized several universities and institutions on Taiwan, and in China and Hong Kong to apply for organizing the 2014 ISG World Congress. As informed by ISG Secretary General Dr. Francesco Franchimon on June 7, 2011, the majority of the ISG Board has voted for the Taiwanese bid. Thereby the bid is officially accepted and the 2014 World Conference on Gerontechnology will be on Taiwan.

Reference

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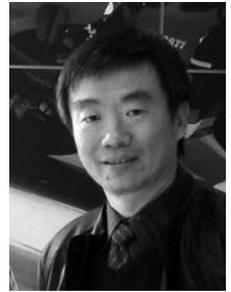
Yeh-Liang Hsu PhD, new associate-editor

Yeh-Liang Hsu is a Professor of Mechanical Engineering Department and Dean of Aca-

demical Affairs, Yuan Ze University, Taiwan. He received his PhD degree from Design Division, Mechanical Engineering Department, Stanford University in 1992. His research interest is engineering design. In January 2003, he started the Gerontechnology Research Center (GRC) in Yuan Ze University, with the mission to 'design technologies and product to provide practical solutions for the various problems in the aging society'. GRC focuses on developing home telehealth systems and service robots, and its research results already lead to a start-up company and several potential commercial products in Taiwan.

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Bo Xie PhD, new associate-editor

Bo Xie PhD is an Assistant Professor in the College of Information Studies at the University of Maryland. She holds degrees in Medicine, Psychology, and Science and Technology Studies (PhD from Rensselaer Polytechnic Institute, 2006). Her research focuses on the intersection of aging, technology, and health.



Her research on e-health literacy, the Electronic Health Information for Lifelong Learners (eHILL) project, has been funded by the National Institutes of Health (NIH) and the Institute of Museum and Library Services (IMLS). This research builds on an understanding of health literacy as an active, lifelong learning process, which is especially important in the context of the rapidly evolving information and communication technologies being increasingly used in health care. Her research on Health Information Wants (HIW) emphasizes individual preferences for information and decision-making autonomy, which is especially important as emerging paradigms in health care increasingly promoting patient participation. As an associate editor of Gerontechnology her main focus will be e-Health literacy.

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