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ALAS, NO "TASTING AIDS" YET

by Julie Comber

If your favourite food has lost its appeal, it may not be the cook's fault. It may be your tastebuds. Everyone realises that hearing and sight tend to deteriorate with age, but what about our other senses? When food isn't perceived to be as tasty and flavourful anymore, one's appetite tends to be reduced. This can contribute to the "anorexia of aging" and thus to potentially dangerous weight loss and nutritional deficiency in seniors. While a gradual loss of taste sensitivity is normal, the use of multiple medications by seniors appears to accentuate this loss. Seniors taking an average of three medications require two to 15 times as much of an odour or taste in order to experience it as vividly as younger people do.²

Though there is research being conducted on enhancing the flavour of foods, taste appears to be an untreated sensory loss. We have glasses and hearing aids, but no taste and smell enhancing gadgets. Therefore, the food itself must be made more palatable for older people. For example, there are both artificial and natural flavour enhancers that can make beef "beefier" and chicken "chickenier". However, since simply marinating meat in these enhancers does not penetrate the food

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AN INTEGRATIVE APPROACH TO THE STUDY OF HUMAN AGING AND THE BRAIN AT MCGILL UNIVERSITY

An interview with Dr. Jens Pruessner, Assistant Professor in the departments of Psychiatry and Neurology and Neurosurgery of McGill University

by Tania Elaine Schramek

Do the shape and size of the brain change with age? Is the aging brain more vulnerable to the effects of stress? How does stress impact memory function? Rather fitting questions for a researcher for whom part of his training took place in the setting of the original laboratory of Dr. Alois Alzheimer. In fact, more than one pioneer in research has shaped Dr. Pruessner's career.

After having completed his undergraduate training in Psychology at the University of Trier in Germany and Washington State University in the USA, Dr. Pruessner pursued his graduate studies in Psychoneuroendocrinology under the guidance of two very influential figures in the field of human stress research, notably, Dr. Dirk Hellhammer and Dr. Clemens Kirshbaum. His time spent at the Centre for Psychobiological and Psychosomatic Research of the University of Trier was followed by postdoctoral research fellowships at the Montreal Neurological Institute with Drs. Alan Evans and Alain Dagher and the Douglas Hospital Research



Centre with Drs. Michael Meaney and Sonia Lupien. In July 2000, Dr. Pruessner received a faculty appointment in the Department of Psychiatry of McGill University that was followed by an appointment to the Department of Neurology and Neurosurgery.

Now an assistant professor based at the Douglas Hospital Research Centre, Dr. Pruessner, studies "the endocrinology of stress with a strong link to the theme of stress and aging". More specifically, he examines the long-term consequences of stress on the brain using a variety of tools, which include magnetic resonance imaging (MRI) and positron emission tomography

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EDUCATION

EDUCATION FOR LONG-TERM CARE PROVIDERS: SESSIONS FOR THE FUTURE

by Daniel Auld

Sensational incidents of elder abuse in Montreal area long-term care facilities have recently received widespread media coverage. Although extreme and not the norm, these incidents have exposed a clear need for staff education and sensitivity training. Fortunately for both long-term care

residents/clients and for staff at these institutions, there are dedicated and dynamic individuals within the system who believe that improvements can be made and that education can be a vehicle for betterment.

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ALAS, NO “TASTING AIDS” YET

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deeply enough, one upscale chain of retirement residences has developed a proprietary technique that uses high pressure to make the flavour enhancers permeate the meat.²

The food industry has been reluctant to develop and market flavour enhanced foods for seniors. But in the next 20 years, 25% of North Americans, and 1 billion people worldwide, will be over 60 years old. At some point, the market will have to respond to their demand for more flavourful food.

In the meantime, there are many strategies for tastier eating. To try to intensify flavour, seniors can use more salt (unless they have high blood pressure) and pepper. Chutneys and jams add bursts of naturally intense and concentrated flavour. Roasting rather than boiling vegetable and meat retains more taste. Adding crunchy foods like croutons and crisp vegetables adds interesting texture. It is also best to use the freshest herbs and spices possible, because they lose flavour over time. Hot food gives off more aroma, which helps. Some retirement residences, for example, have moved their bread-making closer to their dining rooms because the odour of baking bread stimulates appetites. Another idea is to alternate between the different foods on one's plate, rather than eating one type and then moving on to the next.² And it can't hurt to experiment with exotic, spicy or pungent spices. Bon Appétit!

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1. See Murphy, C., Schubert, C.R., Cruickshanks, K.J., et al. *Prevalence of Olfactory Impairment in Older Adults*. *JAMA*, 288(18): 2307-2312 (2002), described in the May-June issue of *Geronto-McGill*, for information on the prevalence and potential consequences that a loss of smell sensitivity could have on seniors.

2. Stauss, S. *When Tastebuds Turn Grey*. *Globe and Mail*, (27 Sept 2003).

An interview with Dr. Jens Pruessner, Assistant Professor in the departments of Psychiatry and Neurology and Neurosurgery of McGill University

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(PET). His choice of such tools stems from “a long-standing fascination with the anatomy of the human brain” and also relates to the possibility these neuroimaging techniques provide of examining the structural and functional integrity of brain areas that are particularly vulnerable to the effects of stress, such as the hippocampus and prefrontal cortex.

Dr. Pruessner explains that these brain areas are more susceptible to the effects of stress because they contain a large number of stress hormone receptors. In fact, the hippocampus is an exceptionally important structure, owing to its regulatory role in the stress response system. Specifically, in the face of a threat or a psychological stressor, a hierarchical system within our brain known as the hypothalamic-pituitary-adrenal (HPA) axis, responds with the release of a cascade of hormones, the end result of which is a stress hormone called cortisol. Cells within the hippocampus regulate the stress response system by telling the HPA axis to shut down the production and release of cortisol.

There is considerable evidence to suggest that long-term exposure to elevated levels of cortisol and possibly aging can lead to a loss of the cells in the hippocampus that mediate the release of cortisol. Thus, with fewer cells telling the HPA axis to shut down, more stress hormones are released which can ultimately harm structures containing cortisol receptors. This damage Dr. Pruessner explains, can be structural and/or functional. In the case of the former, the size of the hippocampus or prefrontal cortex may change, e.g. become smaller. Given that both brain areas are essential in memory processing, functionally, damage caused by elevated stress hormone levels can translate into memory impairments. Thus, in using sophisticated neuroimaging techniques such as MRI and PET, Dr. Pruessner is able to visualize both normal age-related changes in brain structure and function and/or those that might occur as a result of chronic exposure to elevated stress hormone levels.

“In order to establish the size and shape of a brain structure in a specific person however, a series of complex processing steps must be undertaken before the final images are examined”. One important difficulty in this field of research is that distinct processing methods are used in

different research laboratories. Consequently, significant discrepancies are observed across studies. Dr. Pruessner contributed greatly to the field of structural brain imaging by developing a methodology by which the aforementioned processing steps can be generally applied in different laboratories thus rendering findings more comparable across studies and ultimately more precise.

This is but one of the noteworthy contributions Dr. Pruessner has made so very early on in his career. His broad interest in the long-term consequences of stress in the aging brain led him to question what other factors might influence brain integrity. Remaining true to his Psychology background, Dr. Pruessner began to examine certain personality characteristics and their relation to changes in brain size. Interestingly, he observed that elderly individuals with higher self-esteem had a larger hippocampus than did those with lower self-esteem. These findings proved particularly fascinating in the light of the “known relationship between greater functioning in old age and higher self-esteem”. Moreover, in another study, Dr. Pruessner demonstrated that higher self-esteem was linked to lower reactivity to stress. Dr. Pruessner's findings could therefore have important implications for the everyday lives of older individuals such that efforts aimed at “changing aspects of a person's environment that could help modify their self-perception may have beneficial effects”. In fact, older individuals who feel they have greater control over their environment, a good self-concept, and healthy coping abilities are among those researchers studying aging define as *successful agers*. Thus, Dr. Pruessner has demonstrated an important link between personality and physiology further highlighting the importance of systems working in concert (i.e. body and mind) to promote health across the lifespan.

In fact, links such as these are central to the integrative approach adopted by Dr. Pruessner in his research as evidenced by the nature of the on-going projects in his laboratory. These include, investigating interactions between personality traits and the effects of acute stress on brain activity and the release of the neurotransmitter

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An interview with Dr. Jens Pruessner, Assistant Professor in the departments of Psychiatry and Neurology and Neurosurgery of McGill University

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dopamine, studying the effects of hormone replacement therapy on brain volume and memory in aging, examining the effects of age-related changes in hormonal regulation and the occurrence of depressive symptomatology and brain integrity in aging, and finally, the development of protocols that would allow the brain to be examined under conditions of acute stress with functional MRI. These are however, but a few of the questions Dr. Pruessner addresses in his laboratory. Ultimately, he would like to “fully explain what happens in the brain under acute stress on a systems level in combination with endocrinological tools and psychological assessments”. Through this multidisciplinary approach and efforts with students on two continents, we have surely only begun to hear about this promising young professor.

IS THE KEY TO LONGEVITY IN THE BLOOD?

by Daniel Auld

How is it that some individuals are blessed with amazing longevity, remaining relatively healthy even into their tenth decade? Although this question is fascinating for most of us, the mechanisms underlying such longevity are particularly intriguing for aging researchers. Indeed, if contributing factors can be identified, then they could direct lifestyle changes or drug design that could help us all age well. Considering that cardiovascular disease is a major age-related illness, Dr. Nir Barzilai and colleagues wished to determine if there were specific cardiovascular markers associated with remarkable longevity. Accordingly, they examined a group of individuals with exceptional longevity (average age 98) and found that they had larger blood lipid particles (i.e. somewhat like droplets of fat traveling in the bloodstream). Since exceptional longevity is hereditary, the researchers next wondered whether larger lipid particles would also be observed in their children (average age > 68). Indeed, their children had large lipid particles as well, supporting the hereditary hypothesis and reinforcing the potential importance of lipid particles in contributing to longevity. Relative to others of similar age and socioeconomic status, the exceptional agers and their children also had differences in a cholesterol associated protein, termed CETP, which could influence lipid particle size. Moreover, increased lipid particle size was associated with reduced cardiovascular disease, metabolic disease and hypertension, with these perhaps being denominators of enhanced longevity. Although more research is needed before this information might be used to promote longevity in the general population, is there a message for the rest of us who may not have been endowed with such innately healthy biochemistry? Considering that large lipid particle size was associated with reduced cardiovascular disease, presumably contributing to exceptional

longevity, there are two simple ways that we all can encourage a healthy cardiovascular system, namely physical activity and healthy eating.

Barzilai N, Atzmon G, Schechter C, Schaefer EJ, Cupples AL, Lipton R, Cheng S, Shuldiner AR. Unique lipoprotein phenotype and genotype associated with exceptional longevity. JAMA. 2003 Oct 15;290(15):2030-40

POLICY AND POLITICS

EQUAL OPPORTUNITY KILLER, UNEQUAL SYMPTOMS AND CONSEQUENCES

by Julie Comber

Everyone knows what a heart attack (acute myocardial infarction) is like. The middle-aged male victim suddenly experiences crushing chest pain. He clutches at his chest, looks both pained and startled, and collapses. But this scenario is more Hollywood than reality. Heart attacks kill more women than men each year,¹ and many women do not experience the “classic” symptom of chest pain.²

Heart disease in women compared with men

Cardiovascular disease is the number one killer of both men and women. Almost 1 in 2 women will eventually die of heart disease or stroke.¹ However, women in Canada, the USA and the UK are more afraid of breast cancer than of heart disease – even though women are far more likely to die of cardiovascular disease than cancer.^{1,3,4} In the USA, for example, women are 14 times more likely to die of cardiovascular disease than of breast cancer.¹ Many people think heart disease is a male problem, and the British Heart Foundation claims the media are partly to blame because television shows, newspapers, and magazines reinforce this false idea by always portraying the victims of heart attacks as men and by devoting more column inches to breast cancer than to heart disease in women.⁴

Men do tend to get heart attacks earlier than women. However, after the age of 50, women begin to develop and die of heart disease at the same rate.¹ But equal risk does not translate to equal outcome. In the USA, women who have suffered their first recognized heart attack are twice as likely as men to die within one year, to have another heart attack within six years, or to be disabled with heart failure within six years.¹ American women are also almost twice as likely as men to die after bypass surgery, and American women are less likely than men to receive β -blockers, ACE inhibitors or even aspirin after a heart attack. Similarly, in patients with no identifiable contraindication to β -blocker therapy, women were significantly less likely than men to receive this life-saving agent in Ontario. Older and frailer patients were also less likely to receive β -blocker therapy.⁵ More women than men die of heart disease each year, yet women receive only a third of the angioplasties, stents, bypass surgeries, implantable defibrillators and open-heart

surgeries. Furthermore, women comprise only 25% of the subjects in all heart-related research.¹

Women who have suffered a heart attack may also be less likely to be admitted to the intensive care unit (ICU) than men in the same condition.⁶ A UK study found that for patients who had suffered a heart attack, gender appeared to be a more important determinant of ICU admission than medical need. The authors suggest that physicians are using more stringent ICU admission standards for female patients. In other words, women had to be sicker and have more risk factors to receive care on par with their male counterparts. Women were also more likely to die from their heart attack than men, which implies that this sex-based inequity may leave women without the aggressive care they need.⁶

Women may not exhibit the “classic” heart attack symptoms

Chest pain, long considered the classic heart attack symptom, was experienced by only 43% of women in a recent paper in *Circulation* by McSweeney et al.², and was usually described as aching, tightness or pressure rather than as pain. McSweeney et al. speculate that the lack of significant chest pain in many women may be the major reason why women have more unrecognized heart attacks than men, and why they are more likely to be misdiagnosed and mistakenly discharged from emergency departments because clinicians continue to evaluate chest pain as the primary symptom of heart attack. In one study, 85% of nurses and 66% of physicians stated that they assessed patients with suspected heart attack primarily for chest pain. Only 35% reported assessing “atypical” heart attack symptoms, even though 92-100% of the clinicians surveyed had previous experience with an atypical presentation of heart attack.⁷ Failure to recognize prodromal symptoms, both by women who experience them and by their physicians, might also explain why women experience a greater proportion of sudden cardiac deaths than men do.

What to look for

According to McSweeney and colleagues, the women's major symptoms up to one month prior to their heart attack included unusual fatigue (70%), sleep disturbance (48%), shortness of breath (42%),

indigestion (39%), and anxiety (35%). During a heart attack, the most common symptoms included shortness of breath (58%), weakness (55%), unusual fatigue (43%), cold sweat (39%) and dizziness (39%). Less than 43% of women experienced any kind of chest pain: 20% of women experienced generalized chest pain, and 30% experienced pain centered high in the chest.²

The authors caution that their study did not adequately represent non-Caucasian women. Therefore, more work needs to be done to understand the clinical significance of the above symptoms, and to develop a normative description of women's heart attack symptoms to help the public and clinicians detect their heart attacks earlier.

What to do?

These limitations aside, McSweeney and colleagues still strongly recommend that clinicians carefully investigate unexplained, severe fatigue, especially in women with risk factors for cardiovascular disease. They also stress that clinicians should recognize that when chest discomfort is present in a person having a heart attack, women are far more likely to describe the feeling as aching, tightness or pressure, rather than as pain.² McSweeney also recommends that women who experience new or unusual symptoms that get worse, especially those with known risk factors for heart disease, should see a doctor.⁸

Of course, an ounce of prevention is worth a pound of cure, so everyone should try to reduce their risk of heart disease so they will be less likely to suffer from a heart attack in the first place. The Heart and Stroke Foundation of Canada maintains that investing in even small lifestyle changes can reap big health rewards. It recommends that everyone should become more physically active (at least 30 minutes of brisk walking each day, with a doctor's approval), quit smoking and avoid second-hand smoke, maintain a healthy weight, and learn to manage stress. A balanced diet is important, and should include five to ten servings of fruit and vegetables daily, a variety of whole-grain products, and limit salt, alcohol and caffeine intake.³ Heart disease is an equal opportunity killer. Heart disease prevention can be an equal opportunity lifesaver.

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EDUCATION FOR LONG-TERM CARE PROVIDERS: SESSIONS FOR THE FUTURE

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One such individual is Mona Beck, member of the McGill Centre for Studies in Aging Educational Task Force and Chair of the Sessions for Paid Care Providers subcommittee. With the help of the Gustav-Levinschi Foundation, the Task Force is implementing educational sessions for paid staff, projected to begin this spring. These sessions will focus on a variety of topical issues, which include, but are not limited to, elder abuse. Although Mona Beck would insist that the educational sessions are not designed to change the long-term care system at large, at the very least, it is certain that they will be making changes for the better within the system. As she puts it, a major goal is to “enhance the quality of care that clientele receive by educating care providers and to enrich care providers’ work life and experience.”

One special target group that the Task Force believes could benefit from specialized training sessions are paid care providers who are neither professionals nor para-professionals. These individuals make key contributions to the long-term care system, but typically have limited educational opportunities. By offering continuing education, the Task Force hopes to reinforce pre-existing knowledge and to offer opportunities for knowledge expansion to meet an ever-evolving work environment. As Mona Beck says, “We believe that individuals who feel that they are growing and contributing will have a higher level of work satisfaction than those who do not get the learning opportunities and training.”

To ascertain the degree of need within the system, the Task Force compiled a needs assessment in 2001-2002 based on five long-term care facilities. Five major axes were identified as being areas that would benefit significantly from continued training. These include helping care providers (1) understand and better approach memory loss associated with Alzheimer’s Disease and other dementias, (2) offer a person-centered approach to providing care for people with memory loss, (3) recognize and prevent elder abuse and neglect, (4) better appreciate and understand how to deal with loss, death and dying, as well as grief and bereavement among the residents/clients and families, and (5) appreciate goals for quality of life in a long-term care facility, as well as how to help their clients achieve them. Given the enthusiastic response, as evidenced by a high level of demand for the

educational sessions, it is clear that these are areas of interest and need.

With respect to the increasingly diverse community that long-term care facilities service, one theme that has emerged as important in multiple axes is helping care providers to appreciate cultural differences. An important aspect of this is to help care providers to be aware that quality of life definitions can be different for different individuals, and that this can be heavily influenced by culture. Helping staff to recognize these differences and to implement a course of action to achieve appropriate and culturally sensitive outcomes is a major focus of the educational sessions. Indeed, it is hoped that a greater appreciation of the needs and desires of residents/clients and their families will lead to better care.

Also, the educational sessions are designed to endow the care provider with confidence based on new knowledge. This is expected to lead to enhanced capabilities and increased self-worth. As Mona Beck puts it, “We are hoping to enrich paid care providers’ work lives and help them get greater satisfaction as they see what they are doing makes the resident’s and family’s quality of life better.” More satisfied, confident and innovative care providers are expected to engender greater satisfaction among clients/residents and their families.

Hopefully for all involved, the educational sessions will prove to be as successful as anticipated. In a long-term care environment that is constantly evolving through social, technological and budget changes, the only way to ensure a high quality-of-care is to ensure that the staff are not complacent. Indeed, the attitude that learning never stops, which is embodied by the Task Force and the educational sessions, will likely prove to be a key element for maintaining a healthy long-term care system.

For more information regarding the educational sessions, please contact Ms. Andrea Lozoff at the McGill Centre for Studies in Aging at (514) 766-1009.

EQUAL OPPORTUNITY KILLER, UNEQUAL SYMPTOMS AND CONSEQUENCES

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DID YOU KNOW...?

FARMED SALMON ARE MORE CONTAMINATED THAN WILD-CAUGHT

According to a new study, farmed salmon have higher levels of polychlorinated biphenyls (PCBs) and other toxins than wild-caught salmon. The source of the contamination is the feed given to the farmed salmon. These results have created controversy and consternation, since salmon is high in heart-healthy omega-3 fatty acids, yet the level of contamination may increase the risk of cancer. Until the debate is resolved, concerned consumers can try to select the cleanest fish possible; informed decision-making about food choices is always wise.

Source:

Ronald A. Hites, Jeffery A. Foran, David O. Carpenter, M. Coreen Hamilton, Barbara A. Knuth, and Steven J. Schwager. *Global Assessment of Organic Contaminants in Farmed Salmon*. *Science* 303: 226-229(2004).

SEXUAL HEALING?

The release of the hormone prolactin in mice after mating and during pregnancy triggers stem cells in the brain to produce new neurons in the smell centre of the brain. Humans also have a surge of prolactin after orgasm. Researchers hope further research will provide clues for how to trick other parts of the human brain to repair themselves after injuries caused by strokes and head traumas, or to mitigate the damage done by neurodegenerative diseases such as Alzheimers.

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"Sex makes your brain grow", at <http://www.globeandmail.com/servlet/ArticleNews/front/RTGAM/20030102/wsexx12a>

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