

CCRN News

Centre for Clinical Research in Neuropsychiatry

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Thomas and Cynthia Shannon Weickert at CCRN



L-R: Professor Assen Jablensky, Professor Luba Kalaydjieva, Professor Cynthia Shannon Weickert and Dr Thomas Weickert at CCRN

From 1– 3 July, CCRN was host to **Professor Cynthia Shannon Weickert** and **Dr Thomas Weickert** from the Prince of Wales Medical Research Institute, Sydney.

Professor Weickert's research is focused on the molecular developmental neurobiology of schizophrenia, and she completed postdoctoral training at the National Institute of Mental Health (NIMH) rising to the level of Unit Chief of MiNDS (Molecules in the Neurobiology and Development of Schizophrenia). Dr Thomas Weickert is a cognitive psychologist whose research is focused on cognitive impairments in schizophrenia. He and Professor Cynthia Shannon Weickert moved to Australia (Prince of Wales Medical Research Institute, Sydney) in 2007, after many years of work at the National Institutes of Health (NIH) in the US.

On 3 July, Dr Thomas Weickert presented a seminar on probabilistic feedback learning as an indicator of basal ganglia dysfunction in schizophrenia, including possible remedial treatment. The ability to 'predict' based on probabilities can be measured using psychological tasks. In Dr Weickert's study, people with schizophrenia showed impaired ability to learn prediction, when compared with unaffected individuals. Interestingly, unaffected siblings of people with schizophrenia performed midway between affected individuals and healthy controls, which may indicate a genetic component.

Professor Cynthia Shannon Weickert then presented a UWA Psychiatry Research seminar on her studies of brain development and its role in schizophrenia. Weickert has developed highly original research which demonstrates that compromised oestrogen receptors in the brain may play a significant role in the development of schizophrenia. A Selective Estrogen Receptor Modulator (SERM) study is being undertaken to see whether these will produce improved cognition and functioning in people with schizophrenia.



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Seminars and Speakers at CCRN, May-July 2009

On Friday 1 May, **Dr David Coall** (Community, Culture and Mental Health Unit, UWA) presented a UWA Psychiatry Research Seminar on *'The role a woman's childhood psychosocial environment plays in her growth, development and reproduction'*.

The relationship between early menarche and higher mortality is widely accepted. But what about other possible variables and confounding factors, which may influence a woman's adult reproductive life and mental health?

Examining a sample of over 500 women, using questionnaires and medical records, Coall has found relationships between childhood stress and age of menarche, first intercourse, and childbirth. When testing other variables, relationships emerged between higher childhood socioeconomic status and delayed reproduction.

There was no association between early menarche and low birth weight, but there was a link between early menarche and proportionate birth weight. This link is affected, however, by lower childhood stress, which can lead to higher birth weight children in women who experienced early menarche.



On Friday 19 June, **Dr Mike Anderson** (Psychology, UWA) gave a CCRN Research Seminar on *'Current conceptions of fluid intelligence and frontal functioning'*.

Charles Spearman's concept of 'g' as 'general intelligence' has been largely reinvented as 'fluid intelligence'. While fluid intelligence studies may offer a new empirical approach to understanding executive functions and their relationship to the physical brain, psychometrical modeling is no substitute for underlying psychological theory. It is tempting to see structural models as bridging the gap between the brain and behaviour, but this is not necessarily a valid approach.

As a concept, 'fluid intelligence' is used to distinguish between moment-to-moment working memory and stored knowledge ('crystallised intelligence'). Research is working towards uncovering relationships between fluid intelligence, executive functioning, the frontal lobes, and now genetics.

Anderson presented the Miyake model, which uses three hypothetical components of fluid intelligence: shifting,

updating and inhibition. Through his studies with over 100 child research participants, Anderson has been able to test the model and examine the concept of the child's brain as 'frontally compromised'. His studies, using a revised model, have found that inhibition and shifting have a heavier loading in children than in adults.

Persons with frontal lobe damage may produce normal IQ test results but show cognitive deficits and poor decision-making. This may indicate that they have impaired fluid intelligence but preserved crystallized intelligence. A further complication is the role of speed of central processing and goal maintenance. By using measures such as goal-neglect tasks, and altering the speed of those tasks, it may be possible to estimate and predict fluid intelligence more accurately.

rTMS —New Directions in Depression Treatment

Dr Greg Price (CCRN, right) and **Dr Joseph Lee** (Graylands Hospital, left), have been working on a clinical trial using repetitive transcranial magnetic stimulation (rTMS) as a therapy for depression.

The trial, featured on Channel 7's *Today Tonight* program on 22 January this year, has sparked a great deal of consumer and carer interest. CCRN received numerous phone calls from consumers wanting to volunteer for future clinical trials for rTMS.

In the recent clinical trial (see *CCRN News*, September 2008), 44 people with treatment-resistant major depression were treated with two different sets of rTMS parameters. One set used 'interactive' treatment, where the administered treatment would automatically change depending on the brain's response to it, using a simultaneous EEG to detect the changes. The other set used 'standard' treatment, which is the form of rTMS treatment most commonly used in other trials.

The participants' depression was rated before the testing, two weeks after they began receiving the treatment, and then again once the treatment was completed. The 'interactive' group showed a trend towards greater efficacy than the 'standard' group, showing a reduction up to 40% in the severity of their depression.

The research team can see encouraging directions for the use of rTMS therapy, and some interesting new research prospects.

"While such treatment will continue, either as a subsequent clinical trial or as an accepted treatment, we plan next to investigate the use of TMS/rTMS in research, and as a potential treatment in schizophrenia," said Dr Price.

CCRN's research focus has principally been centred on schizophrenia, so this project dovetails with existing projects and infrastructure. But it also represents an original direction: Dr Price plans to use the CCRN electrophysiological data, which has been exploring similar ERP (event-related potential) expressions of potential 'schizophrenia genes', to aid his trial of rTMS.

"There are no previous studies of therapeutic efficacy that can simultaneously explore ERP endophenotypes and genetic variation," he said.

Today Tonight : <http://www.7perth.com.au/view/today-tonight-articles/depression/>

G Price, J Lee, C Garvey, N Gibson, The use of background EEG activity to determine stimulus timing as a means of improving rTMS efficacy in the treatment of depression: a controlled comparison with standard techniques. *Brain Stimulation*, in press.



Obsessive-compulsive disorder: why intrusive and unwanted thoughts?

Obsessive compulsive disorder (OCD) is characterized by intrusive and unwanted thoughts, and researchers are exploring what cognitive brain processes could be responsible for these experiences.

A recent study carried out at CCRN investigated whether people with OCD would show 'inhibitory dysregulation', which may help to account for why they feel they cannot control their intrusive thoughts. 14 people with obsessive compulsive disorder (OCD) and 24 people without OCD (the 'control' group) participated in the study. Participants were asked to undergo some tasks where the ability to voluntarily suppress mental associations and thoughts was assessed.

The participants with OCD did show 'impaired intentional inhibition', which might certainly contribute to their intrusive thoughts. But on the positive side, the study found that people with OCD had intact context memory abilities. Context memory is one aspect of memory which helps people remember the details surrounding memories (who was there, when it happened, etc). The finding that OCD may be linked to good context memory may explain why people with OCD experience intrusive thoughts as being a product of their own mind, unlike people who are experiencing hallucinations.

The study also found that the group of people with OCD had significantly higher IQ and more years of education than the control group, and higher levels of depression and anxiety. These findings are helpful for researchers working with both OCD and with conditions involving hallucinations, such as schizophrenia. They help to improve scientific understanding about how the human brain processes information, and how memory functions. This knowledge helps researchers to target ways in which brain function impairments might be improved or corrected.

J Badcock, F Waters, M Maybery (2007) On keeping 'intrusive' thoughts to oneself: testing a cognitive model of auditory hallucinations, *Cognitive Neuropsychiatry*, 12(1), 78-89.

Professor Nicos Stefanis at CCRN



Professor Nicos Stefanis, (left) of the Mental Health Research Institute at the University of Athens, is currently visiting CCRN.

Professor Stefanis last visited CCRN in April 2008, when he delivered a seminar on his research into the subclinical potential for schizophrenia diagnosis in the general population. Stefanis' project has studied a group of over 2000 male Greek Air Force conscripts, undertaking eight assessments over a two-year period. The project, which examined each individual's schizotypy, cognitive abilities and genetic profile, has produced results indicating that stress is a significant factor in triggering psychotic episodes in the general population.

Professor Stefanis will be in residence at CCRN for the month of July. Please contact CCRN for details of forthcoming seminars and opportunities for scholarly collaboration, on (08) 9347 6429, or via email at Lorraine.Bahri@health.wa.gov.au

News and Notes

Staff Changes: **Sarah Howell** will be working on a project investigating a potential clinical service to support hostel accommodation for people with a mental illness. Sarah will be based in Moore House, Graylands Hospital, two days a week for the next 6 months. **David Vile**, a psychologist and long-time CCRN associate, is currently working full-time on the North Wing as coordinator of the WA Family Study of Schizophrenia. **Craig Sinclair** has been employed to assist with the new Sleep-Wake Project with Dr Flavie Waters, which will examine sleep patterns in people with schizophrenia and healthy controls. Craig is completing his PhD in Psychology at UWA, supervised by Dr Geoff Hammond.

Research grants: **Dr Flavie Waters** has received an Ada Bartholomew Medical Research Trust Grant of \$30,000 to develop the project 'Sleep-wake disturbances in schizophrenia' with the collaboration of Dr Katharina Wulff (see *CCRN News* November 2008).

Conferences: CCRN staff will be presenting at the following forthcoming conferences -

- **Australian College of Mental Health Nurses, Winter Sunshine Symposium, Perth, 13-14 July:**

Yvonne Hauck, Carole Harrison, Gayle Corbould, Deb Faulkner: 'The Clinical Applications Unit: applying research findings to care coordination' (workshop)

Carole Harrison: Debating Panel

Philippa Martyr, 'A Lot of History: what can mental health history in Western Australia tell us about the future?'

- **19th theMHS Conference, Perth, 2-4 September**

Daniel Rock, Yvonne Hauck, Vera Morgan: 'The Clinical Applications Unit: applying research findings to care coordination' (workshop)

Deb Faulkner and **Gayle Corbould** will also give poster presentations.

Philippa Martyr, 'The Graylands History Project: community, stories, recovery' (paper)

Vera Morgan, 'Women with severe mental illness and their children: providing an evidence base for clinical intervention', (workshop).

- **Australian Society of the History of Medicine Annual Conference, Perth, 28 September – 2 October**

Philippa Martyr, 'The strange case of Matron Shawcross: an episode in Western Australian mental health history' and "Behaving wildly": diagnoses of lunacy among Indigenous Western Australians, 1870-1908' (paper)