

controls. Sound sequences containing duration, intensity and frequency deviant sounds at low (6%) or high (20%) probability were presented while participants viewed a movie with low-level soundtrack.

Results: A repeated-measures ANOVA was used to compare MMN amplitude across groups (patients/controls) and deviant type (duration/frequency/intensity) and probability (low/high) with age as a covariate. There were significant main effects of probability and deviant type both modified by age and a main effect of group modified by probability. Patients produced significantly smaller MMN responses to low- but not high-probability deviants. Age was a significant covariate in the low-probability but not the high-probability condition with the differences being more pronounced for frequency and intensity MMN than duration MMN.

Conclusions: MMN amplitude was significantly reduced in schizophrenia vs. controls for the low-probability condition only (ie when under conditions of increased repetition of the standard sound). The age-related decline in MMN was also most pronounced under these conditions. The results are discussed with respect to current research into memory-based and discrimination-based conceptualizations of the MMN.

Depression and anxiety in cardiac rehabilitation patients: characteristics, treatment and outcome

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Background: The past decade has seen a growing body of evidence to support independent links between depression and coronary heart disease. Despite this evidence, depression is rarely assessed in cardiac rehabilitation programs and there are few published studies of psychological interventions for depression with this population. The aim of the present evaluation was to first determine levels of depression and anxiety symptoms among cardiac rehabilitation patients in John Hunter Hospital (JHH), Newcastle, and second to link those scores with demographic, lifestyle and medical variables. Additionally, it was aimed to evaluate a group cognitive behaviour therapy intervention (BraveHeart), specialized for treatment of depression in people with cardiac disease.

Methods and Results: The Hospital Anxiety and Depression Scale is being used to screen cardiac rehabilitation patients at JHH at week 4 of their

program. Over 650 patients have been screened with this tool, with results suggesting that around a third are experiencing significant levels of anxiety and/or depression. These scores have been linked with available patient information kept on an epidemiological database, the Heart and Stroke Register, to determine the characteristics and medical outcome of those with high vs. low symptom scores. A randomized controlled trial of BraveHeart has commenced and preliminary data from the study will be presented.

Conclusions: Results from screening support prior research suggesting that significant levels of emotional distress exist among cardiac rehabilitation participants. Depression is known to lead to worse outcomes among this patient population, and development of efficacious psychological treatments is indicated.

Differential effects of antipsychotic drugs on serotonin-1A receptor-mediated disruption of prepulse inhibition

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Background and Methods: Serotonin-1A (5-HT_{1A}) receptors have been implicated in the symptoms of schizophrenia. However, there is limited *in vivo* evidence for an interaction of antipsychotic drugs with 5-HT_{1A} receptor-mediated behavioural effects. We therefore investigated in rats the action of several antipsychotic drugs on prepulse inhibition (PPI), a measure of sensorimotor gating, which is deficient in schizophrenia. Disruption of PPI was induced by treatment with 0.5 mg/kg of the 5-HT_{1A} receptor agonist, 8-hydroxy-di-propyl-aminotetralin (8-OH-DPAT).

Results: In rats pretreated with 0.25 mg/kg of haloperidol or raclopride, the disruption of PPI was no longer significant. Of the atypical antipsychotic drugs clozapine, olanzapine, risperidone, amisulpride and aripiprazole, only aripiprazole significantly reduced the effect of 8-OH-DPAT on PPI. This effect was mimicked by pretreatment with the 5-HT_{1A} receptor partial agonist, buspirone. On the other hand, some of the antipsychotic drugs and other pretreatments showed complex, prepulse-dependent effects on their own, both on PPI and prepulse facilitation at the 30 ms ISI (clozapine, risperidone, amisulpride) and PPI at the 100 ms ISI (olanzapine, risperidone, MDL 73,005EF).

Conclusions: These data show little *in vivo* interaction of several atypical antipsychotic drugs with the

disruption of PPI mediated by 5-HT_{1A} receptor stimulation. The action of haloperidol and raclopride suggests a major involvement of dopamine D₂ receptors in this effect, possibly downstream from the initial serotonergic stimulation. The action of aripiprazole could be mediated by its partial agonist properties at 5-HT_{1A} receptors or its dopamine D₂ blocking properties.

Longitudinal increases in gamma-phase synchrony contrasts with progressive gray matter atrophy in first-episode schizophrenia

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Background: Our integrative neuroscience model of first-episode schizophrenia (FES) emphasizes a dysfunction in the coordinated neural activity required for selective attention in the disorder. This study investigated the longitudinal changes in neural connectivity (assessed by means of 40-Hz gamma synchrony) and neuroanatomy [assessed by magnetic resonance imaging (MRI)] exhibited by patients with FES.

Method: Twenty-three FES patients underwent an EEG recording in response to an auditory oddball task, both at baseline and 2–3 years subsequently. Gamma-phase synchrony was extracted from the EEG signal for L/R frontal, temporal and posterior brain regions. Thirteen of these patients also underwent an MRI scan at baseline and follow-up, and an automated masking procedure was used to calculate the GM volumes of the analogous cortical regions. A 2 × 6 ('time' × 'region') repeated-measures ANOVA was used for statistical analysis.

Results: An inverse relationship was observed between the longitudinal changes in gamma synchrony and the longitudinal changes in GM volume. While the patients with FES lost significant frontal and parietal GM over the follow-up interval, they also showed a corresponding increase in posterior gamma-phase synchrony.

Conclusions: These results indicate that while gamma-phase synchrony increases over the initial years of illness in patients with FES, GM volume decreases in corresponding cortical regions. Given the role that gamma-phase synchrony has been proposed to play in the integration of discrete perceptual events, these findings support the idea that schizophrenia is caused by a dysfunction in neural connectivity.

Late-onset bipolar disorder: preliminary results from Sydney

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Background: Previous studies have suggested that there may be bipolar disorder subtypes according to age at onset (AAO), including a late-onset (LO) group with onset in the fifth decade of life. LO presentations may be associated with greater cerebrovascular disease and increased neuropsychological deficits. Different AAO may also explain some of the genetic heterogeneity associated with bipolar disorder.

Method: We have commenced recruitment of participants aged 40 years and over, with the aim of assessing early-onset bipolar I, late-onset bipolar I and healthy control groups. Assessment tools included the following: sociodemographic and disability questionnaires, SCID, HDRS, YMRS; cerebral magnetic resonance imaging scan; a neuropsychological battery and venepuncture for genetic testing.

Results: Preliminary results for the first 15 participants with bipolar disorder (mean age 53.9 years, range 46–66 years, 66% women) have shown an average latency of 11 years between the first affective episode and the first episode of mania, and of 17 years before a formal diagnosis of bipolar disorder. There was a high rate of comorbidity with anxiety disorders. Contrary to study hypotheses, the participants tended to be relatively physically healthy with minimal vascular disease burden. Neuropsychological assessment of euthymic participants showed no differences in language and memory, but significant differences in visuospatial organization and self-monitoring tasks.

Conclusions: These preliminary results suggest deficits in frontal executive dysfunction in this sample of older bipolar participants. The recruitment of a relatively young and ambulatory sample may have led to the finding of minimal vascular disease.

SSRI use and bone mineral density in women with a history of depression: Geelong Osteoporosis Study

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Background: Selective serotonin reuptake inhibitors (SSRIs) are a first-line treatment for depression.