

comorbid substance use in observational studies and clinical practice.

## The impact of accommodation status on the hospitalization of mentally ill patients

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**Background:** The importance of suitable and stable housing has long been recognized for people suffering mental illness. In recent years, there has been a steady decrease in the availability of housing options for this group of people. Anecdotal evidence suggests that this is now impacting on their length of hospitalization and health outcomes.

**Method:** Patients were enrolled over a 3-month period during their admission to the Alfred Hospital psychiatric ward. In-patient social workers collected information for every consecutive admission regarding patient's current accommodation situation and their attempt to secure appropriate housing for these patients. Demographic information was also collected. Consultant psychiatrists measured symptom severity using the Brief Psychiatric Rating Scale.

**Results:** Data presented will include a summary of the appropriateness of the current housing situation of participants at admission, the accommodation options available for discharge, the time taken to secure the accommodation, the time spent in hospital after medical clearance for discharge and the length of hospitalization. An analysis will assess whether patients who are considered to be in unstable accommodation are experiencing longer hospital stays as compared with those in stable housing.

**Conclusions:** The results will examine how the decreases in accommodation options are impacting on the use of hospital resources and patient outcomes. This information is imperative given the limited in-patient psychiatric resources available.

## Keep the heart in mind: the interplay of heart and brain activity over the life span

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**Background:** Affective disorders are associated with both visceral and neurophysiological changes, but few studies report simultaneous measurement and analysis of these systems. We used an integrative neuroscience approach to explore relationships between heart and brain activity for healthy controls, as a benchmark for studying the interplay of these systems in affective disorders.

**Methods:** Participants were recruited in collaboration with the Brain Resource International Database ([www.brainresource.com](http://www.brainresource.com)). Simultaneous EEG and ECG were recorded from 2092 healthy individuals while they rested with their eyes open. EEG power was calculated in standard frequency bands, averaged across sites and correlated with average heart rate for each decade of the life span.

**Results:** Heart rate was significantly correlated with EEG power in young people (10–20 years old) but was less evident in people outside this age range. In this age group, heart rate and EEG power had a positive correlation across all frequency bands (delta, theta, alpha, beta  $r = +0.25, +0.20, +0.14, +0.19$ , respectively;  $n = 675, P < 0.001$ ).

**Conclusions:** This study shows the imperative of using an integrative neuroscience approach in the study of brain function and dysfunction. Without taking account of the manifold influences on brain function, neurophysiological studies might be confounded by variance in these factors. Simultaneous measurement across systems can also disclose their interaction in health and disease. The observed change in interplay between the heart and brain over age might prove an important factor in the understanding of affective disorders.

## Reduced fMRI activity in response to salient stimuli in first-episode schizophrenia

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**Background:** Our integrative neuroscience model of schizophrenia highlights the lack of coordinated neural activity required for effective processing of salient and task-relevant stimuli. The 'auditory oddball' task taps the fundamental mechanisms of selecting and responding to salient stimuli, and disturbances on this task are a trait-like marker for schizophrenia. The objective of

this study was to use functional magnetic resonance imaging (fMRI) to identify the neural circuits underlying disturbances processing oddball stimuli in first-episode schizophrenia (FES).

**Method:** fMRI data were collected from 24 people with FES (within 3 months of service contact) and 24 matched healthy controls while performing an auditory oddball task comprising 15% target (high) tones and 85% standard (low) tones. Data were analyzed in SPM2, with event-related analysis of the supramarginal gyrus, thalamus, and limbic and prefrontal cortical areas.

**Results:** The FES group showed significantly reduced activity in the thalamus, hippocampus, dorsal lateral prefrontal cortex and supramarginal gyrus, but a pattern of enhancement as well as reduction in medial prefrontal/anterior cingulate activity, compared with controls.

**Conclusions:** These findings suggest that schizophrenia is associated with impairments in networks for processing salience as well as context from the first episode of this illness. Dysregulation of medial prefrontal areas may reflect an attempt to compensate for a fundamental breakdown in the coordination of these processes.

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## Functional brain imaging of auditory prepulse inhibition

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**Aims/Background:** Inhibition deficits are consistently shown in a broad spectrum of neuropsychiatric conditions, such as schizophrenia, implicating altered dopamine neurotransmission. This results in impaired 'sensorimotor gating', a physiological measure of inhibitory brain processes. We investigated the neural networks underlying sensorimotor gating.

**Methods:** Sensorimotor gating was measured using prepulse inhibition (PPI) of the acoustic startle eye-blink response through bipolar EMG from the left orbicularis oculi muscle and functional magnetic resonance imaging (fMRI). fMRI images were acquired using sparse temporal sampling techniques to minimize stray masking noise interfering with the auditory processing. Trial types: (A) startle probes alone (baseline), (B/C) startle probes preceded by a prepulse at 120 or 480 ms and (D) 'scanner-noise only'. Significant BOLD contrasts were assessed using one-sample *t*-tests [ $P > 0.001$  (uncorrected) and exploratory data analyses at  $P > 0.01$ ].

**Results:** Data from 16 healthy volunteers (9 men:7 women, age:  $23 \pm 4$  years) were included. Cortical peak BOLD activation was confirmed for the superior temporal (STG), inferior frontal (IFG), precentral gyri and quadrangularis lobule for the baseline vs. scanner-noise only. No changes were detected for the STG and IFG in baseline vs. 120 or 480 ms prepulse condition, whereas increased right IFG activation was confirmed for the short vs. long lead interval contrast. Exploratory analyses suggested concurrent decrease of activation in the right anterior STG in the 120 vs. 480 ms condition. When correlating the electromyographically recorded PPI effect with hemodynamic responses, the activation was mediated by thalamic activation (bilateral).

**Conclusions:** Thalamic activation mediates auditory PPI. The potential relationship with impaired sensorimotor gating in clinical populations remains to be investigated.

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## Values of cross-cultural research: insights gained from the validation of the 'Depression Screening Measure DMI-10 Chinese version'

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**Background:** Depression measurement tools in cross-cultural research require careful design and thorough validation to ensure that cognitive concepts in one culture can be appropriately translated and applied to a differing culture. The aim of this paper was to report the validation of the Chinese version of a screening measure of state depression, the DMI-10.

**Method:** Three interdependent studies were conducted: 1) an initial bilingual test-retest study identified four (of the ten) items as having poor cross-cultural validity, 2) a second study involved focus group participants exploring the meaning of translated items with Chinese speakers and 3) the third study repeated the bilingual test-retest analyses on the modified DMI-10.

**Results:** Study 3 showed improved correlation coefficients on all items and an excellent overall correlation ( $r = 0.87$ ) between the Chinese and English versions.

**Conclusions:** The findings have significant implications for cross-cultural research. Subsequently, our research team undertook a study to validate the Chinese DMI-10 against the Chinese versions of the BDI-II and the CIDI. The DMI-10 should prove useful in identifying Chinese people at risk of clinical depression.