

DAY 1

SYMPOSIUM: Metacognitive aspect of Alzheimer's disease

Emotional reactivity and awareness of task success or failure in Alzheimer's disease

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Objectives: Lack of awareness about performance in tasks is a common feature of Alzheimer's disease (AD). Nevertheless, clinical anecdotes have suggested that patients may show a behavioural response to the experience of failure despite expressing limited awareness, an aspect which has been little explored experimentally. The present study used novel success/failure manipulation paradigms to explore emotional reactions to success or failure in tasks and contrasted this with the level of awareness of performance in AD.

Methods: Computerised tasks which expose participants to systematic success or failure were developed in which performance success was titrated for each participant and then difficulty was set either above or below this level to establish individually success and failure difficulty levels. Two experiments, were carried out, the first with reaction time tasks and the second with a memory procedure. Awareness of performance was measured comparing estimations of performance with actual performance and was contrasted with emotional reactivity, assessed with a self-report questionnaire and filming of facial expressions. A group of early AD patients (n = 23) were compared to normal age-matched controls (n = 21).

Results: In both experiments the results indicated that, relative to controls, AD patients exhibited impaired awareness of performance, but comparable differential reactivity to failure relative to success tasks, both in terms of self-report and facial expressions.

Conclusions: This suggests that affective valence of failure experience is processed despite unawareness of task performance, which might indicate implicit processing of information in neural pathways bypassing awareness. These results are discussed in relation to the revised CAM model concerning neurocognitive processes that contribute to performance awareness in normal people.

Anosognosia correlates of emotional reactivity in people with Alzheimer's disease to viewing film material depicting Alzheimer's disease.

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Objectives: Lack of awareness of illness or neuropsychological deficit in people with Alzheimer's disease (AD) has been shown to have some dissociation with awareness of symptoms when viewing the symptoms of other people. The present study investigated emotional reactivity when viewing a film depicting a person with AD, comparing this to viewing other film material. The correlations with anosognosia were explored.

Methods: A film depicting a person with Alzheimer's disease was shown. Emotional reactivity was compared to that following three other films, a short film with nature footage, predicted to be emotionally neutral, a UK light comedy television program that was predicted to produce positive mood and another film about a person with cancer, predicted to induce negative mood. Emotional reactivity in each case was measured using before and after measurement of self-reported mood state and also by ratings participants' filmed facial expressions with the Emotion Facial Action Coding System (EMFACS). A group of early AD patients (n = 23) were compared to normal age-matched controls (n = 21).

Results: The level of emotional reactivity was slightly less in people with Alzheimer's disease than in normal control participants, including the negative mood state associated with viewing the film about the person with Alzheimer's disease. Facial reaction to this film was negatively correlated with the degree of awareness the people with Alzheimer's disease had in relation to their own illness. Emotional reaction to other film material was not associated with awareness.

Conclusions: In the early stage of AD, there was emotional reactivity to the film material inducing positive and negative mood, including the Alzheimer film. The negative correlation with awareness of illness is interpreted as suggesting that heightened emotional reaction on confronting Alzheimer's disease symptoms might be predictive of less awareness due to emotionally induced inhibition. Alternative explanations for this finding are also considered.

Music and Memory in Alzheimer's Disease: Dissociation of Familiarity and Recollection using Functional Musical Mnemonics

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Objectives: In a previous study (Simmons-Stern, Budson, and Ally 2010), we found that in patients with Alzheimer's disease (AD) visually presented lyrics were better recognized when the lyrics were also sung rather than spoken at encoding. The present study sought to further investigate the effects of music and memory in patients with AD by making the content of the song lyrics relevant for the daily life of an older adult, and examining how musical encoding alters several different aspects of episodic memory.

Methods: Patients with AD and healthy older adults studied visually presented novel song lyrics related to relevant for daily life that were accompanied by either a sung or a spoken recording. Each lyric studied was one of a pair with related content, to allow testing of both general and specific content.

Results: Overall, participants performed better on the test of general content for lyrics that were sung versus spoken. Participants performed equally well, however, with sung and spoken lyrics for their memory of the specific content. Additionally, in a test of basic recognition memory for the lyrics, we found that sung lyric presentation resulted in a conservative recognition response bias and spoken lyric presentation resulted in a liberal recognition response bias for patients with AD. On the same test, healthy older adults demonstrated conservative response bias for both sung and spoken stimuli. Patients with AD demonstrated equal discrimination for sung and spoken stimuli, and healthy older adults had better discrimination for spoken stimuli than for sung stimuli.

Conclusions: We interpret these results in terms of a dual-process model of recognition memory such that the general content questions represent a familiarity-based representation that is preferentially sensitive to enhancement via music, while the specific content questions represent a recollection-based representation unaided by musical encoding. We propose that the perceptual distinctiveness of musical stimuli enhanced metamemorial awareness in AD patients via a non-selective distinctiveness heuristic, thereby reducing false recognition while at the same time reducing true recognition and eliminating the mnemonic benefit of music. These results will be discussed in the context of potential music-based memory enhancement interventions for the care of patients with AD.

FREE PAPERS

A Voxel Based Morphometric Approach To Saliency Mediated Global Local Processing: Beyond Traditional Cognitive Neuropsychology

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Objectives: Previous neuropsychological investigations have found conflicting evidence regarding lesion-symptom relations in global/local visual processing. While early neuropsychological studies found brain lateralization with respect to global/local processing, later work has suggested that lateralization might be mediated by the need to suppress salient irrelevant information in these tasks. One limitation of previous investigations is the exclusiveness of the sample, as studies have focused on patients showing a particular deficit in global/local processing without taking a 'whole brain' analysis by evaluating a non-selective patient sample. This study aimed to find common neural regions correlated with behavioural performance deficit in salience mediated global/local processing.

Methods: We used an inclusive voxel-based approach with 31 neuropsychological patients with lesions in various locations to assess lesion-symptom relations for global/local processing and salience-based responding to stimuli. Patients performed a global/local task in which the relative saliency of the global and local levels was manipulated (i.e., both globally salient and locally salient displays were used).

Results: We found no evidence for brain lateralization (or localization) for local or global processing per se. In contrast, grey matter integrity in the left inferior parietal lobule and white matter integrity in parieto-occipital tracts were linked to impaired ability to ignore salient distracters (regardless of level). Ability to resolve conflict in general was also associated with bilateral precuneus damage.

Conclusions: Multiple regions in the posterior parietal cortex seem to be engaged in resolving conflict with the inferior parietal lobule and parieto-occipital circuitry particularly important in resolving conflict through salience suppression.

Long-lasting improvement of visual neglect by visuomotor feedback training: a controlled rehabilitation study

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Objectives: Each year stroke affects an estimated 150,000 people in the UK and up to 70% of these patients are left with visual neglect. This severe and disabling condition is characterized by a loss of awareness of the side of space opposite to the brain lesion. Although over the last 40 years, many techniques have been developed to rehabilitate the condition, so far very few have shown long-lasting effects. Here we investigated the short and long-term effects of a simple training of central grasping and lifting responses to different sized rods (visuomotor feedback training).

Methods: An intervention group of stroke patients with neglect (N=8) was asked to reach, lift and balance rods at the centre readjusting until satisfied with the judged central grip, whilst stroke patients in the control group (N=10) reached and lifted the right-hand side of rods only. Effects of the training were assessed with neglect tests and measures of functional disability before the training (baseline), after 2 sessions of training led by the experiment, after 10 sessions of self-administered training and at 4 months post-training.

Results: Significant improvements of the intervention over the control group were found after the 2 experimenter-led sessions, after the 10-day self-administered sessions and even after 4-months post-training.

Conclusions: These findings are very encouraging for using this simple training technique to rehabilitate visual neglect as this condition has been shown to be the best single predictor of poor recovery after stroke and very difficult to treat.

The Timing of Anterior Temporal Lobe Involvement in Semantic Processing

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Objectives: There is a growing consensus that the anterior temporal lobe (ATL) is involved in semantic processing. However, there are still questions regarding its precise role. So far there have been no investigations of when the ATL is necessary for semantic processing. We assessed this using chronometric TMS of the ATL in two novel experiments.

Methods: In the first experiment TMS was delivered whilst participants performed a synonym judgement task. In the second, participants completed a category verification task at differing levels of specificity. During each trial two pulses of TMS were delivered at a baseline time point before stimulus presentation or at one of the experimental time points.

Results: TMS applied to the ATL at 400 ms or later significantly disrupted both semantic tasks but not a control task. Different levels of specificity did not show a difference in timing but did show a difference in susceptibility to TMS. Performance on basic and specific level items was affected more than on general items. This led to a negation of the basic level advantage when TMS was delivered 600 ms after stimulus presentation.

Conclusions: The ATL is necessary for semantic processing from 400 ms regardless of task-specific demands or specificity level. Disruption of the healthy semantic system led to impaired semantic processing and a loss of the basic level advantage, simulating two key features of semantic dementia.

Enhancing generalization of learning in semantic dementia: rehabilitation strategy based on conceptual enrichment

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Objective: Previous studies regarding rehabilitation in semantic dementia (SD) have shown successful relearning in naming, but the gains are also restricted to the pictures exemplars with poor generalization of learning. Based on previous authors findings describing the undergeneralization produced by breakdown in conceptual knowledge, we developed a new treatment programme aimed at decelerating the effects of progressive anomia in SD patients, based on what we have called "conceptual enrichment" (COEN) of semantic network. COEN is a method that uses realistic coloured images that signify the function, position, or visual properties of objects in order to re-generate an item related network.

Our aim is to demonstrate that rehabilitation therapy based on COEN improves appropriate generalization compared with standard rehabilitation naming therapies.

Method & Results: A 57 year old woman who satisfied criteria for SD underwent a traditional rehabilitation program based on simple line drawings + labels on which she scored well for the trained items (81%). She was also quite successful on a visual generalization task but poor at describing these objects after them (54%). On a second rehabilitation program based on COEN, she not only got high naming scores for trained items (83%), but also scored significantly higher on visual generalizations tasks (93%, $p=0.025$). Most importantly, she did much better at producing descriptions to names (78%, $p=0.001$).

Conclusion: Our results suggest that COEN therapy may improve generalization of learning in SD and also provides convergent evidence for relation between conceptual knowledge and successful generalization.

Different patterns of spoken and written word comprehension deficit in aphasic stroke patients

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This study presents neuropsychological evidence for differences in the semantic representations underpinning spoken and written word comprehension. Potential modality-based discrepancies in the semantic system were examined by testing whether spoken word (auditory-verbal input) and written word (visual-verbal input) comprehension exhibited the same effect profile on variables typically used to distinguish so-called access and storage disorders (e.g. response consistency, sensitivity to item frequency). The study was based on the premise that damage to a common set of semantic representations should have an equivalent impact upon comprehension performance irrespective of input modality, whereas damage to partially dissociable semantic representations may give rise to different qualities of deficit (access/storage) in the comprehension of stimuli presented in different input modalities (spoken/written). The study involved two patients with global aphasia following left middle cerebral artery stroke (FBI and HOP). The two patients showed matched performance on conventional tests of single word comprehension with clear evidence of semantic impairment for stimuli presented in both the spoken and written input modalities. However, in HOP spoken and written word comprehension was affected in the same way by variations in stimulus category, frequency and multiple stimulus presentations, whilst in FBI there were clear differences between input modalities with all three variables. More specifically, FBI's written word comprehension was significantly affected by category (living>non-living) and frequency (high>low) but not multiple presentations (single=multiple), more consistent with degradation of stored representations (storage deficit). By contrast, his spoken word comprehension was unaffected by category (living=non-living) and frequency (high=low) but was affected by multiple presentations (single>multiple; serial position effects), more consistent with impaired access to stored representations (access deficit). These spoken/written input modality differences were observed on tasks matched closely for output modality, stimulus identity and executive control requirements. It is argued that subtle differences in comprehension performance for stimuli presented in different input modalities may reflect damage to multimodal representations which are intermediate between unimodal and amodal representations on a continuum of convergence within the semantic system. These ideas are discussed in the context of existing 'distributed-only', 'distributed-plus-convergence' or 'distributed-plus-hub' models of conceptual knowledge.

How specific a deficit accounts for letter-by-letter reading? Preserved reading in the presence of comprehensive visual impairment

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Objectives. Accounts of letter-by-letter (LBL) reading differ in terms of the role of general visual processing. Some theories attribute this phenomenon to the unavailability of word form units (Warrington & Shallice, 1980), whilst others propose it as a consequence of a general underlying visual deficit (Behrmann et al., 1998). This study questions whether early visual processing deficits necessarily play a causal role in conditions such as LBL, by

presenting the case of two individuals who display preserved reading ability in the presence of gross visual impairments.

Method. Two patients with a diagnosis of posterior cortical atrophy and two matched control groups read aloud 4 corpora comprised of a total of 442 words. The corpora featured different levels of letter spacing, size, case, summed confusability, length, frequency, concreteness and regularity. Participants were also assessed on tests of visual complexity, rapid letter identification, crowding and a battery of neuropsychological tests relating to visuoperceptual, visuospatial and early visual processing.

Results. Results demonstrate impairments in the patients' performance on every task of visual function relative to controls or normative data. By contrast, reading data identifies one patient as reading both as accurately and as quickly as controls on all corpora; the other patient made no errors but was slower than controls on 3 of the 4 corpora.

Conclusions. The current findings point to the preservation of reading, despite impairments to diffuse areas of the visual system. At least one of the two patients exhibits a pattern of behaviour that is incongruous with a general visual account of LBL reading.

DAY 2

ORAL PRESENTATIONS

Towards a Novel Ecologically-Valid Assessment of Executive Functions in Children and Adolescents: Could Virtual Reality be the Answer?

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Objectives: Childhood is a time of rapid cognitive change. As the prefrontal cortex expands, associated improvements in executive functions are especially marked. Most executive function assessment is laboratory based. JEF© (Jansari assessment of Executive Functions) provides a novel ecologically-valid assessment of executive functions in adults using virtual reality to assess impacts of brain injury (Jansari et al, 2004). We aimed to develop and evaluate a children's version, (JEF-C©) to assess executive function in children.

Methods: JEF-C© was designed to assess eight cognitive constructs; planning, prioritisation, selection, creative-thinking, adaptive-thinking, action-based prospective memory (PM), event-based PM and time-based PM. Resembling a computer game, participants roleplay, running their own birthday party. Thirty typically-developing children aged 10-12 (5F, 7M), 13-15 (3F, 6M) and 16-18 (5F, 4M) completed JEF-C©.

Results: Significant positive correlations of age with prioritisation, event and time based PM and total score were found. Further, a one-way MANOVA on performance revealed a significant main effect of age (Wilks' $\lambda = .151$, $F(18, 38) = 3.3$, $p < .005$). Therefore, JEF-C© demonstrated a robust ability to accurately identify differences in individual cognitive constructs and overall executive function as a function of age during adolescence.

Conclusions: JEF-C© offers an assessment of executive function and its developmental trajectory, providing a profile across a range of cognitive constructs that current assessments cannot. Further, it is the first ecologically valid tool for assessing executive functions in childhood and adolescence. There is potential to use JEF-C© as an assessment tool for typical and atypical development or executive dysfunction due to traumatic brain injury.

Dopamine can improve visual working memory precision in Parkinson's disease

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Objectives: To investigate the effects of dopaminergic medication on precision of working memory (WM) recall in Parkinson's disease (PD).

Methods: Eight recently-diagnosed PD patients were assessed both before and three months after being established on daily dopamine agonist therapy. Precision of visual WM was measured using a serial order task in which participants observed four differently coloured oriented bars presented sequentially at screen centre (Gorgoraptis et al., J Neurosci 2011). Afterwards, they were asked to adjust a coloured probe bar's orientation to match the orientation of the bar with the same colour in the sequence.

An additional 'filtering' condition tested patients' ability to selectively encode one of the 4 bars while ignoring the others in the sequence. A sensorimotor task using the same stimuli controlled for perceptual and motor factors. MMSE, forward and backwards digit and spatial spans were additionally administered.

Results: There was a significant deficit in WM precision in drug-naïve PD patients compared to age-matched controls. However, this deficit normalized on dopamine agonist therapy. There was no change in other control task performance pre- and post-medication, and compared to age-matched controls.

Conclusions: Dopaminergic stimulation can improve cognitive function – specifically WM precision– in recently-diagnosed PD patients.

Selective impairment of familiarity in Temporal Lobe Epilepsy

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Objectives: The aim of the present research was to explore the role of the parahippocampal gyrus in the processes of recollection and familiarity. To achieve this objective, the performance of patient MR, who has a selective impairment of the left anterior parahippocampal gyrus, was compared to that of matched controls.

Methods: The recognition performance of MR was compared to a set of matched controls on two experiments, one with words and one with unfamiliar faces. In both experiments, participants studied lists of items, followed by a distractor task and then completed an Old/New recognition test in which they had to additionally make recollection/familiarity judgements.

Results: The results found that MR performed normally in the face recognition experiment. However in the word experiment, whilst MR performed similarly to control participants in terms of recollection, she showed a marked impairment in the process of familiarity.

Conclusions: These results suggest that selective impairment of the parahippocampal gyrus leads to a selective impairment in the process of familiarity whilst leaving the process of recollection intact.

The Effects of Focal Medial Temporal Lobe lesions on Short-term Memory

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Objectives: A highly influential view of Medial Temporal Lobe (MTL) function claims that it does not contribute to short-term memory but is critical for long-term memory. An alternative proposal is that the MTL is involved in establishing novel associations processed by distinct brain regions, regardless of memory duration. Here, we address this debate using a task that probes memory for locations of objects over delays lasting a few seconds.

Methods: Unlike many previous studies in this field, which have assessed patients with brain anoxia or herpes encephalitis, we tested an unusual case of focal, bilateral MTL damage associated with Voltage Gated Potassium Channel (VGKC) antibodies. We used a novel experimental procedure which probes object identity and location performance separately, as well as the strength of veridically binding objects to their correct locations.

Results: When multiple items reside in memory, our MTL patient was just as likely as controls to identify a previously presented item. However, he was significantly worse in localizing objects to their remembered locations. Crucially, this increased error was specifically due to an increased likelihood of misreporting an object to the locations of other objects in the memory array, not simply from failure to remember object locations.

Conclusions: Over short retention intervals, the MTL does not participate in retaining the identity and location of objects, but it is necessary for associating the two. These findings provide important support for the view that the MTL is involved in binding different kinds of information regardless of retention duration.

Rapid semanticization of episodic memories

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Objectives: What dictates how well an event is remembered? Merely experiencing an event is often not sufficient to ensure its subsequent retrieval. To lay down durable episodic memories, it may be necessary to re-encode the memory whilst it is still fresh, allowing the content to be organised and integrated with pre-existing knowledge (semanticization). In a series of studies, we investigated the effects of re-encoding memories on their durability and the brain regions recruited whilst encoding and re-encoding took place.

Methods: Participants viewed short video clips showing interesting events, involving multiple characters interacting in rich, spatiotemporal contexts (encoding phase). In a series of experiments, participants were required to describe the video clips aloud, silently rehearse the clips, watch the clips again (re-encoding phase) or do nothing. After a one week retention interval, participants were required to describe all video clips (retrieval phase). Encoding and silent rehearsal phases were also carried out in an fMRI experiment.

Results: Describing aloud or silently rehearsing the video clips had a large effect on the durability of the memory, resulting in very little forgetting of the content over the week-long retention period. These memories appeared to have become rapidly semanticized. By contrast, video clips that were not re-encoded at all were very poorly retained. A network of brain regions were uniquely associated with re-encoding and interactions between these regions are likely to be necessary for semanticization of episodic memories.

Conclusions: Whilst episodic memories are likely to decay rapidly if not re-encoded, re-encoding allows rapid semanticization of episodic memories and halts their decay. The possible brain systems mediating schematization are discussed, as are the implications for current models of long-term memory.

POSTERS

Accelerated Long-term Forgetting in Transient Epileptic Amnesia: an acquisition or consolidation deficit

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Objectives: Accelerated Long-term Forgetting (ALF), whereby newly acquired memories are rapidly forgotten over days to weeks, has been associated with epilepsy, in particular with Transient Epileptic Amnesia (TEA). The cognitive basis of ALF is still uncertain, yet a disturbance of memory acquisition or memory consolidation is often cited. To help adjudicate between these possibilities, we investigated whether ALF can still be detected when learning conditions are matched between TEA patients and controls.

Method: 24 TEA patients and 24 matched controls learned a wordlists of 15 unrelated words to a criterion of 90% accuracy, with a minimum of 5 and a maximum of 15 learning trials (LTs). To match learning conditions, we included only those participants receiving 5 or 6 LTs in the analysis. Further, within these participants, recall performance – at 30 minutes and 1 week after acquisition – was measured only for words that were recalled correctly 4 or 5 times correctly across LTs.

Results: The number of words meeting these criteria immediately after wordlist learning was indistinguishable between groups ($p = .779$). Under these matched learning conditions, recall performance 30 minutes after learning was similar in TEA patients and controls ($p = .560$). After one week however, accelerated forgetting of this newly acquired information was observed in TEA patients ($p = .001$).

Conclusions: A disruption of memory consolidation is more likely than a deficit in memory acquisition to be the cognitive mechanism of ALF, given that ALF was still observed in TEA patients when learning conditions were matched.

Assesment of explicit and implicit linguistic impairment in patients with chronic subdural hematoma of the left cerebral hemisphere after surgical treatment.

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Objectives: In contemporary interpretations, the aphasic syndromes are explained by disturbed access of the syntactic and semantic representations to the awareness system. Such an approach requires use of different types of tasks: direct, involving explicit language processes, and indirect, based on implicit language representations.

Aim of the study is to describe explicit and implicit language processes in patients with the chronic subdural hematoma (chrSDH) of the left cerebral hemisphere treated surgically, and to characterize relations between explicit and implicit language processes.

Methods: Eighty-three right-handed patients were examined, divided into two study groups: clinical (chrSDH) and control (lumbar disc degeneration). Four tasks were applied, for assessment and comparison of the status of language processes: lexical decisions (at

explicit and implicit levels), sorting of picture captions and word monitoring. Also, MMSE and BDAE (the short form) tests were applied.

Results: In direct tasks, the aphasic patients provided less number of correct lexical decisions and captions of situational pictures. In the clinical group, the priming effect was observed in tasks which required implicit lexical decisions. The inter-group differences were observed with regard to word monitoring task. Patients with aphasia were found to have longer reaction times in all type of sentences (of different grade of language correctness), with respect to low- and high frequency words.

Conclusions: Patients with aphasia after evacuation of chrSDH demonstrate partial deficit of explicit language processes and do not differ from the control subjects with regard to implicit language processes. The priming effect was observed in patients with aphasia.

Eye tracking in Posterior Cortical Atrophy: a new insight into the visual syndrome.

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Objectives: Visual disorientation is a common and disabling symptom in Posterior Cortical Atrophy (PCA). However few studies of point localisation skills have been conducted, and it remains unclear to what extent such deficits in PCA are attributable to visuospatial deficits or impoverished eye movement control.

Methods: Three tasks were administered: (i) fixation stability task (ii) pro-saccade task for 8 close and 8 distant targets; and (iii) motion pro-saccade task (localisation of static targets and targets containing motion information). Participants in experiments (i) and (ii) were 7 patients with a clinical diagnosis of PCA and 6 healthy controls, 4 PCA patients and 3 controls undertook experiment (iii). Eye movements were measured using the Eyelink II pupil tracking system.

Results: i) Patients demonstrated shorter fixation durations and greater fixation location error than controls. ii) Patients' saccade latency and distance of first saccade was greater than that of controls for distant but not close targets. iii) Patients showed a trend towards lower latency for the jittering stimulus. The jitter stimulus in controls, and the looming stimulus in patients showed a trend towards lower directional accuracy.

Conclusions: The results demonstrate poor fixation stability and eye control in PCA. The pro-saccade results are consistent with the suggestion of reduced effective field of vision in PCA. Eye tracking provides insight into mechanisms behind key deficits in PCA and permits evaluation of cues to improve localisation.

DRPLA and aggression

Objectives: We present the case of a thirty eight year old female patient with a known diagnosis of Dentatorubral pallidoluysian atrophy (DRPLA). The patient presented with increasingly aggressive behaviour over the past year. It was noted that the patient had insight into her increased aggression and recognised that this was not in keeping with her normal self. The patient was admitted under mental health services and commenced on 2mg haloperidol twice a day. This medication was effective and patient was discharged free from aggressive episodes two weeks after admission.

Methods: The authors look at previous literature to investigate the relationship between DRPLA and aggression. Various case reports mention the incidence of short temper or aggression in many patients with DRPLA however none associate this symptom as pathogenic and attribute it to psychosis.

Results: An explanation could be the anger was a manifestation/presentation of an underlying psychosis that was not diagnosed and settled with the haloperidol. Another previously not considered explanation for the aggression could be a manifestation of the DRPLA disease process. Though there have been many documented cases relating to DRPLA, aggression associated with psychosis, there is no previous literature on aggression specifically in DRPLA.

Conclusion: One hypothesis relating DRPLA and aggression could be that mechanisms noted in basal ganglia disorders and especially in Huntington's disease may have relevance to aggression in DRPLA. However, more research and investigation into the biochemistry and pathophysiology of the disease is required looking at aggression specifically.

Improving word reading speed in a group of patients with pure alexia: A computer-based approach

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Objectives: Pure alexia, an acquired reading impairment following left occipitotemporal damage, has no agreed rehabilitation method in current clinical use. Case studies have indicated that rapid presentation of single words with feedback may be effective at improving word reading speed (Friedman and Lott, 2000). We tested the efficacy of a computer-based training programme using a similar approach in 11 patients with pure alexia.

Methods: Training was self-paced over 6-weeks (average use=49 minutes/day). Participants were trained on one of two matched word lists of 500 common 3-6 letter words. Training consisted of repetitive presentation of written and spoken word pairs, perceived passively in training blocks, and actively in testing blocks using a same/different decision task. Written words were presented briefly (500ms) to prevent letter-by-letter reading. Correct responses received a monetary reward to maximise engagement with the training.

Reading speed for trained and untrained words was assessed twice before and twice after training, with 2-4 week intervals between repeated measurements.

Results: A repeated-measures ANOVA showed that trained words were read significantly faster after training than before. Untrained words did not improve. The training was most effective for long words, and hence reduced the word length effect that is characteristic of pure alexia.

Conclusions: This is the first reported group training effect for pure alexia. It demonstrates that item-specific improvements in reading speed, and a reduction in the word length effect, can be achieved using an intensive computer-based training approach.

Familiarity memory for non-words is impaired in a Patient with Right-sided Medial Thalamic Pathology

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Background: The aim of the current study was to determine whether a patient (OG) with a selective right-sided mediadorsal thalamic lesion (MDT) showed a familiarity deficit.

Methods: The remember/know procedure was used to measure familiarity and recollection and to maximise the sensitivity of this procedure a recognition task was used in which performance is primarily driven by familiarity. This contrasts with many recognition tasks in which performance is strongly driven by recollection. OG's MDT lesion was mapped in the horizontal plane using published stereotactic drawings.

Results: The patient showed a significant decline in overall recognition memory and familiarity, but not recollection, and this was evident following both short (40second) and long (7-day) retention periods. Detailed mapping of OG's lesion, revealed extensive damage in the magnocellular subdivision of the MDT, the central medial and paraventricular midline nuclei, and, to a lesser extent, within the parvocellular subdivision of the MDT also.

Conclusions: The implications of these findings are discussed with reference to the Aggleton and Brown (1999) model, which may need to be modified to take full account of the connections between the perirhinal cortex and the MDT.