
Student prize winning abstracts for 2015 INS/ASSBI 5th Pacific Rim Conference

The Kevin Walsh Encouragement Award for Honours or Masters Research was awarded to Bridget Hoey for the following presentation

Comparison of the Production of Formulaic Language by Adults with Traumatic Brain Injury (TBI) and Healthy Controls

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Background and aims: Views on language processing have evolved from being solely focussed on newly created, novel sentences, to recognising the substantial role that “prefabricated” formulaic expressions have in conversational dialogue. Neuro-linguistic studies have concluded that a dual process model of language processing exists, whereby novel and formulaic expressions are processed by distinct cerebral structures. The aim of this study was to systematically evaluate the proportion of formulaic language used by adults with severe TBI and to compare this usage with that of healthy matched control participants.

Method: Participants were 15 adults with TBI and 15 gender, age and education matched controls. Language samples were analysed using established formulaic language analysis techniques. Proportions of total formulaic language produced and proportions across seven formulaic language subcategories were calculated and compared.

Results: Participants with TBI and control participants were observed to use similar total proportions of formulaic language and no significant difference was detected ($U = 109.50, p = 0.901$). Participants with TBI showed some difference in their use of formulaic language compared to controls in two subcategories. The difference in the proportions of formulaic distortion errors produced by the two groups reached statistical significance ($U = 75.00, p = 0.017$) and the difference in the proportions of expletives produced approached significance ($U = 90.00, p = 0.073$).

Conclusions: These findings are not consistent with the neural substrates that are proposed to underlie formulaic language production in the dual process model. In line with this model, individuals with TBI would be expected to have a deficit in their overall production of formulaic language. However, this was not observed, as the TBI and control participants in this study produced the same proportions of formulaic language.

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The Luria Award for Doctoral Research was awarded to Alicia Dymowski for the following presentation

A comparison of computerised attention training and individualised strategy training after traumatic brain injury: a single-case series

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Background and objectives: Deficits in attention are common following traumatic brain injury (TBI) and can interfere with daily functioning. This study aimed to compare effects of computerised training using Attention Process Training 3 (APT-3) with individualised strategy training on attention, and to examine participants' subjective experience of these approaches, using single case experimental design.

Method: The ABCA (baseline, APT-3, strategy training, follow-up) design was repeated across 3 participants with severe TBI who were ≥ 1 year post-injury. APT-3 and strategy training (such as Time Pressure Management and environmental modification) comprised 9 1-hour sessions. Alternate versions of the oral Symbol Digit Modalities Test (SDMT) and Ruff 2 and 7 Selective Attention Test (2&7) were administered 9 times per phase by blinded researchers. Generalisation was assessed with the Test of Everyday Attention (TEA) and self and significant other (SO) ratings on the Rating Scale of Attentional Behaviour (RSAB) after each phase. Semi-structured interviews assessed participant experiences of interventions.

Results: Planned Tau-U analyses revealed improvements in automatic cognitive processing on the SDMT and 2&7 automatic condition after APT-3 and follow-up, but more so after strategy training. There was limited generalisation on TEA subtests or self-RSAB ratings. SO-RSAB ratings were mixed after APT-3, but demonstrated definite improvement after strategy training. At final interview, two participants indicated preference to continue with strategy training over APT-3.

Conclusions: Considerable variability in attention deficits and everyday attentional requirements between patients necessitated individualised goals and approaches to rehabilitation, and incorporation of additional strategies for memory and executive difficulties. This study exemplifies the need for individualised rehabilitation of attention to improve everyday functioning following TBI.

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The ASSBI Travelling Award was awarded to Michael Gascoigne for the following presentation

Autobiographical memory in children with epilepsy

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B **background and aims:** Recall of personally experienced events involves recall of event specific information (episodic memory) and facts (semantic memory). The ability to recall autobiographical events relies on the integrity of a distributed brain network. In adults, temporal lobe epilepsy (TLE) has been associated with impaired recall of event specific information. Little is known, however, about autobiographical memory in children with epilepsy, which was examined in the current study.

Method: Twenty-one children with TLE, 18 with idiopathic generalised epilepsy (IGE) and 42 controls were administered the Children's Autobiographical Interview (CAI; Free Recall and Specific Probe conditions) that provided separate scores for episodic and semantic details.

Results: Kruskal-Wallis tests revealed significant between-group differences for episodic recall during Free Recall and Specific Probe conditions ($p = 0.02$ and 0.003 , respectively) but not for semantic recall ($p = 0.41$ and 0.27 , respectively). Compared to controls, the TLE group recalled fewer episodic details in the Free Recall condition ($p = 0.04$), while the IGE group recalled fewer episodic details in both the Free Recall ($p = 0.02$) and Specific Probe conditions ($p = 0.001$). Age correlated with Free Recall among controls ($r = 0.50$, $p = 0.001$), but not in children with either IGE ($r = 0.34$, $p = 0.11$) or TLE ($r = 0.41$, $p = 0.09$).

Conclusions: In children with epilepsy recall of autobiographical memory is selectively impaired (involves episodic, but spares semantic details) irrespective of the site of epilepsy focus. Thus it appears that even in the absence of temporal lobe pathology/seizure focus generalised seizures alone could compromise memories for personally-experienced events.

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General INS/ASSBI conference abstract

Spatial attention is modulated by chronotype and time of testing

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B **background and aims:** Spatial attention is modulated by a person's level of vigilance and alertness. There is ample evidence that a decrease in vigilance/alertness is associated with a rightward shift of attention. Levels of alertness fluctuate over the course of a day, and peak times of alertness differ between individuals. Some individuals feel most alert in the mornings ('larks'); others feel more alert in the evenings ('owls'). Our aim was to investigate the influence of chronotype (larks, owls) and time of testing on spatial attention. It was predicted that attention would shift rightwards when individuals are tested at their non-optimal time (larks in the evening, owls in the morning) as compared to tests at peak times.

Method: Drawn from Amazon Mechanical Turk, 531 right-handed participants took part in the experiment between 6 am and 11 pm. Participants answered demographic questions, filled in questions from the Ostberg Morningness/Eveningness Scale, and performed a landmark task. For the landmark task, participants indicated whether the left or right segment of each of 72 pre-bisected lines was longer. The side of the longer segment was counterbalanced. We calculated a response bias for each participant by subtracting the 'number of left responses' from the 'number of right responses', and dividing by the number of trials (72). Negative values thus indicate a leftward attentional bias, positive values a bias towards the right side.

Results: Controlling for participants' age, the response bias was submitted to an ANOVA with the factors 'chronotype' (larks, owls) and 'time of testing' (morning = 6 am–2.30 pm, evening = 2.30 pm–11 pm). There was a significant interaction between chronotype and time of testing ($p < 0.05$). Posthoc tests showed a relative rightward shift of attention from peak to off-peak times of testing for the larks, but not the owls.

Conclusions: The deployment of spatial attention was modulated by an individual's peak time (chronotype) and time of testing. This novel observation corroborates previous research demonstrating a close coupling between non-spatial and spatial attentional functions.

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