Introduction Human factors have been reported as the reason behind the majority of car accidents. However, to date, no studies at least in the Arab world generally and Gulf area specifically, conducted a comprehensive examination of cognitive functioning as potential predictors of car accidents and driving violations.
Objectives Examining the role of cognitive functions e.g., verbal working memory, attentional control as predictors of traffic accidents and driving violations.
Aims Examining the predictability of individual's cognition of occurrence of driving violations and accidents.
Methods The study was carried on a sample of hundred and thirty two participants whose age ranged between 24 and 31 years. They were classified into groups of violators and non-violators, accident free and accident involved as well. Cognitive functioning were measured using self-reports and task performance, and a series of ANOVAS as well as stepwise multiple regressions were conducted to test the research hypothesis.
Results Findings showed significant differences between violators and non-violators and between the accident free and accident involved groups in almost all of the considered factors, except for the decision making factor. Moreover, Pearson product-moment correlations showed that there were significant negative correlations between age, driving violations, and cognitive performance and the accidents.
Conclusions Human cognition such as executive functioning and mental planning are key factors for predicting driving behavior and traffic accidents. The study results have many implications in diagnosing and preventing or at least reducing driving violations and road accidents.
Disclosure of interest The author has not supplied his/her declaration of competing interest.

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EW105

Effects of negative autobiographical memories retrieval on corticospinal excitability and sensorimotor integration

L. Mineo[1], C. Concerto[2], D. Patel[3], T. Myorga[3], D. Coira[4], E. Chusid[3], E. Aguglia[2], F. Battaglia[1,*]
[1] *Seton Hall University, Health and medical sciences, South Orange, USA*
[2] *Clinical and experimental medicine, Psychiatry Unit, Catania, Italy*
[3] *New York College of Podiatric Medicine, Preclinical Sciences, NY, USA*
[4] *Hackensack University Medical Center, Psychiatry and Behavioral Medicine, Hackensack, NJ, USA*
* *Corresponding author.*

Introduction Previous transcranial magnetic stimulation (TMS) studies indicate that exposing the subjects to an emotionally valent stimulus results in larger motor evoked potentials (MEP). Up to date, no TMS studies have been conducted in order to investigate the effect of personal memories with emotional value on corticospinal excitability.
Objects To investigate changes in corticospinal excitability and sensorimotor integration induced by retrieval of negative or neutral autobiographical memories (AM).
Aims To contribute to a further characterization of neural circuits involved during the evocation of negative AM.
Methods In 12 healthy volunteers, we recorded motor evoked potentials (MEPs) elicited by TMS pulses during the retrieval of negative AM or neutral AM. Furthermore, we also tested Short-interval Intracortical Inhibition (SICI), Intracortical facilitation (ICF), Short and Long afferent Inhibition (SAI and LAI) in the two different experimental conditions.
Results Retrieval of negative AM induced a larger increase in MEP amplitude (35.01%) compared to neutral AM ($F_{(1,22)} = 7.04$, $P = 0.013$). Furthermore we showed that retrieval of Negative AM increasedn ICF ($F_{(1,22)} = 5$, $P = 0.03$) and decrease SAI ($F_{(1,22)} = 7.04$, $P = 0.039$). The other TMS parameters were different between conditions.
Conclusions Our results indicate that evocation of negative AM induce a complex modulation of excitatory and inhibitory sensorimotor networks. Further studies are needed to explore the link of these electrophysiological biomarkers with the strength, valence and specificity of negative AM.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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EW107

Computational modeling of reinforcement learning using probabilistic selection task and instructional probabilistic selection task

D. Frydecka[1,*], J. Drapala[2], E. Kłosińska[3], M. Krefft[3], B. Misiak[4]
[1] *Wrocław, Poland*
[2] *Wroclaw University of Technology, Institute of Computer Science, Wrocław, Poland*
[3] *Wroclaw Medical University, Department of Psychiatry, Wrocław, Poland*
[4] *Wroclaw Medical University, Department of Genetics, Wrocław, Poland*
* *Corresponding author.*

Introduction Humans learn how to behave both through rules and instructions as well as through environmental experiences. It has been shown that instructions can powerfully control people's choices, often leading to a confirmation bias.
Aim To compare learning parameters in reinforcement learning task with and without instructions.
Methods We recruited 52 healthy adult control subjects (21 males, 31 females, age 30 ± 6.5 years). Participants completed Repeatable Battery of Neuropsychological Status (RBANSS). Twenty-seven participants completed additionally Probabilistic Selection Task (PST) while twenty-five participants completed Instructional Probabilistic Selection Task (IPST). To analyze learning parameters, we used Q-learning model with 3 parameters: learning rate due to positive and negative reinforcements as well as exploration-exploitation parameter.
Results Both groups did not differ with respect to cognitive functioning measured with RBANSS (immediate and delayed memory, visuospatial abilities, language and attention); however, participants who completed PST had trend-level statistically faster learning rates due to positive ($P = 0.099$) and negative reinforcements (0.057) in comparison to participants who completed IPST. Both groups did not differ with respect to exploration-exploitation parameter (0.409).
Conclusion In healthy adults, interference of confirmation bias can influence learning speed independent of cognitive functioning (immediate and delayed memory, visuospatial abilities, language and attention).
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EW108

Risk associated to subtypes of seizure disorders in dementia patients

M. Habeych[1,*], R.C. Castilla-Puentes[2]
[1] *Center for Clinical Neurophysiology, Neurological Surgery, Pittsburgh, USA*

[2] Johnson and Johnson, Global Medical Safety, West Chester, PA, USA
* Corresponding author.

Introduction Seizure disorders have been identified in patients suffering from different types of dementia. However, the risks associated with the subtypes of those seizures have not been characterized.
Objective/aim To compare the occurrence of seizure disorders (partial and generalized) between patients with and without a dementia diagnosis from the OPTUM database.
Methods All ages, and patients with full eligibility between January of 2005 to December of 2014, were included. Data from OPTUM, a de-identified, HIPAA compliant database, made up of 40.7 million private insured patient individual electronic health records from the US, were utilized. Using ICD-9 diagnoses, the occurrence of generalized or partial seizure disorders was identified. A comparison between patients with and without dementia was performed.
Results A total of 150,516 patient records had a dementia diagnosis, and, 56.38% of them were females. Patients with dementia when compared to those without dementia had higher risk for seizure disorders [odds ratio (OR) = 6.5 95% CI = 4.4–9.5]; grand mal status (OR = 6.5, 95% CI = 5.7–7.3); partial seizures (OR = 6.0, 95% CI = 5.5–6.6); motor simple partial status (OR = 5.6, 95% CI = 3.5–9.0); epilepsy (OR = 5.0, 95% CI = 4.8–5.2); complex partial epileptic seizures (OR = 4.9, 95% CI = 4.6–5.2); generalized convulsive epilepsy (OR = 4.8, 95% CI = 4.5–5.0); localization-related epilepsy (OR = 4.5, 95% CI = 4.1–4.9); petit mal status (OR = 4.2, 95% CI = 2.9–6.1); fits convulsions (OR = 3.5, 95% CI = 3.4–3.6); and complex febrile seizure (OR = 2.5, 95% CI = 1.6–3.9).
Conclusions The present study confirms that patients with dementia have higher risks for either generalized or partial seizures disorders when compared with patients without dementia.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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EW109

Effects of BET inhibitor JQ1 on neurotoxicity in rat primary cortical neurons: A potential therapeutic approach in Alzheimer's disease

S.H. Han [1,*], K.J. Kwon [1], C.Y. Shin [2], S.Y. Chung [3]
[1] Konkuk University Medical Center, Neurology, Seoul, Korea
[2] Konkuk University School of Medicine, Pharmacology, Seoul, Korea
[3] The Catholic University of Korea Incheon St-Mary Hospital, Pediatrics, Incheon, Korea
* Corresponding author.

Introduction The neuropathological features of Alzheimer's disease (AD) are deposition of amyloid plaques, neurofibrillary tangles and neuro-inflammation. Among these, neuro-inflammation is a common pathological substrate of neurodegenerative disease, such as AD, and Parkinson disease.
Aims Herein, we tested whether the inhibition of bromodomain and extra-terminal domain (BET) protein, a critical regulators of transcription in neurons, could attenuate the neuronal cell death and amyloid beta aggregation using rat primary cortical neurons. We also investigated whether a BET inhibitor could prevent the inflammatory processes and cognitive decline in an animal model of AD.
Methods The effects of BET inhibition on neuronal cell death were assessed in the followings:
– cell viability and reactive oxygen species generation;
– enzyme activity of tPA/PAI-1 measured by casein zymography;
– the signal pathways including BDNF/CREB and MAPKs using western blotting;
– the effects on inflammatory responses in an animal model of AD using immunohistochemistry.
Results JQ1, an inhibitor of Brd2/4 protein, significantly decreased the neuronal cell death in mixed cortical neurons in concentration-dependent manner but not in pure neurons. JQ1 increased the enzyme activity of tPA, which decreased the expression of Brd2 protein. JQ1 also decreased the ROS generation and decreased cleaved caspase-3 expression. Moreover, Brd2 inhibition by transfection of Brd2 siRNA reduced amyloid beta aggregation.
Conclusion Our results suggested that BET inhibition might have therapeutic potential for AD. That is, Brd2 inhibition by JQ1 can prevent the neuronal cell death and neuroinflammation as well as amyloid beta aggregation through regulation of tPA/PAI-1 system.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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EW110

Cognitive engagement profile of the fluency tasks performance by patients with schizophrenia

H. Karakula-Juchnowicz [1,*], P. Krukow [2], J. Morylowska-Topolska [2], M. Flis [3]
[1] Medical University of Lublin, Department of Clinical Psychiatry, I Department of Psychiatry, Psychotherapy and Early Intervention, Lublin, Poland
[2] Medical University of Lublin, Department of Clinical Psychiatry, Lublin, Poland
[3] Medical University of Lublin, I Department of Psychiatry, Psychotherapy and Early Intervention, Lublin, Poland
* Corresponding author.

Introduction Fluency tasks, e.g. verbal, design fluency test, etc. are often used in the evaluation of cognitive function in patients with schizophrenia. In the standard approach, the test result is the sum of stimuli generated in a given time period. However, this approach does not allow to determinate of what strategies are used by subjects to regulate the cognitive engagement during task execution.
Aim To investigate the specific dynamic profile of fluency tests performance comparing with healthy controls.
Methods Thirty patients diagnosed with schizophrenia and 30 demographically matched healthy controls took part in the study. Participants performed two tests: COWAT (3 trials) and Ruff Figural Fluency Test in accordance with the original instructions. During the generation of these stimuli, the investigator wrote down their quantity in 15-second intervals, which enables the assessment of cognitive engagement variability in different parts of the whole time (1 minute).
Results Comparison of cognitive engagement variation in both fluency tests showed statistically significant differences. The differences in repeated measures ANOVA with group as an independent variables reached $P < 0.0001$. Factor differentiating the profiles in verbal and figural fluency was first 15 seconds after the tasks started.
Conclusions The beginning of task was the most difficult part for patients with schizophrenia, which may indicate that the overall worse performance of fluency tests is associated with significant difficulties in mobilizing the cognitive activity.
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