Objective: Primary headache disorder is characterized by recurrent headaches which lack underlying causative pathology or trauma. Primary headache disorder is common and encompasses several subtypes including migraine. Vestibular migraine (VM) is a subtype of migraine that causes vestibular symptoms such as vertigo, difficulties with balance, nausea, and vomiting. Literature indicates subjective and performance-based cognitive problems (executive dysfunction) among migraineurs. This study compared the magnitude of the total effect size across neuropsychological domains to determine if there is a reliable difference in effect sizes between individuals with VM and healthy controls (HC). An additional aim was to meta-analyze neuropsychological outcomes in migraine subtypes (other than VM) in reference to healthy controls.
Participants and Methods: This study was a part of a larger study examining neuropsychological functioning and impairment in individuals with primary headache disorder and HCs. Standardized search terms were applied in OneSearch and PubMed. The search interval covered articles published from 1986 to May 2021. Analyses were random-effects models. Hedge's g was used as a bias-corrected estimate of effect size. Between-study heterogeneity was assessed using Cochran's Q and I2. Publication bias was assessed with Duval and Tweedie's Trim-and-Fill method to identify evidence of missing studies.
Results: The initial omnibus literature search yielded 6692 studies. Three studies (n=151 VM and 150 HC) met our inclusion criteria of having a VM group and reported neuropsychological performance. VM demonstrated significantly worse performance overall when compared to HCs (k=3, g=-0.99, p<0.001; Q=4.41, I2=54.66) with a large effect size. Within-domain effects of VM were: Executive Functioning=-0.99 (Q=0.62, I2=0), Screener=-1.15 (Q=3.29, I2=69.59), and Visuospatial/Construction=-1.47 (Q=0.001, I2=0.00). Compared to chronic migraine (k=3, g=-0.59, p<0.001; Q=0.68, I2=0.00) and migraine without aura (k=23, g=-0.39, p<0.001; Q=109.70, I2=79.95), VM was the only migraine subgroup to display a large effect size. Trim-and-fill procedure estimated zero VM studies to be missing due to publication bias (adjusted g=-0.99, Q=4.41).
Conclusions: This initial attempt at a meta-analysis of cognitive deficits in VM was hampered by a lack of studies in this area. Based on our initial findings, individuals with VM demonstrated overall worse performances on neuropsychological tests compared to HCs with the greatest level of impairment seen in visuospatial/construction. Additionally, VM resulted in a large effect size while other migraine subtypes yielded small to moderate effect sizes. Despite the small sample of studies, the overall effect across neuropsychological performance was generally stable (i.e., low between-study heterogeneity). Given than VM accounts for 7% of patients seen in vertigo clinics and 9% of all migraine patients, our results suggest that neuropsychological impairment in VM deserves significantly more study.

Categories: Medical/Neurological Disorders/Other (Adult)
Keyword 1: cognitive functioning
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76 Differential Performance in Visual Learning and Retrieval in a Validity Controlled Chronic Pain Sample

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Objective: Individuals with chronic pain frequently report diminished cognitive functioning. Prior cross-sectional studies have demonstrated strong associations between chronic pain and neurocognitive impairment, most notably in memory, attention, processing speed, and executive functioning. However, there is a paucity of research evaluating visual learning and memory abilities in this population. Further, while current practice standards advocate for the use of performance validity tests (PVTs) to assess the credibility of neuropsychological test performance, they have infrequently been incorporated into studies examining chronic pain samples, despite a

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higher observed rate of noncredible performance in the literature. This study aimed to compare visual learning and memory performance between a mixed neuropsychiatric (MNP) group and a chronic pain group in a validity-controlled sample.
Participants and Methods: The study consisted of 371 adults referred for outpatient neuropsychological evaluation. Between groups, various PVTs were administered, which included, at minimum, one freestanding and four embedded PVTs. All patients were administered the Brief Visuospatial Memory Test-Revised (BVMT-R) as part of a comprehensive neuropsychological evaluation. Only patients classified as valid performers (≤1 PVT fails; n=295) were included in the analyses (Pain: n=109; MNP: n=186). The overall sample was 69% female and racially diverse (22% non-Hispanic Black, 43% non-Hispanic White, 30% Hispanic, 3% Asian/Pacific Islander, and 2% other race/ethnicities), with a mean age of 46.8 (SD=14.8) and mean education of 13.7 years (SD=2.7). Independent samples t-tests were performed to investigate the differences in visual learning and memory abilities between the chronic pain and MNP groups.
Results: Chi-square analyses revealed significant differences between the pain and MNP groups on race, with more non-Hispanic White and Hispanic patients represented in the MNP group. There were also modest group differences in age and education. For the chronic pain group, patients scored lower on both BVMT-R Total T-Score (mean difference = 9.65T, p<.001) and BVMT Delayed Recall T-Score (mean difference = 8.97T, p<.001). The effect size was robust for both for Total T-Score (d = 0.682) and Delayed Recall T-Score (d = 0.632). In contrast, the difference in BVMT Recognition Discriminability was not statistically significant.
Conclusions: This study demonstrated significant differences in performance between mixed neuropsychiatric and chronic pain patients. Preliminary evidence indicated that chronic pain patients displayed lower visual mediated encoding and retrieval performance, although their recognition is comparable. Although the nature of this study was targeted toward visual learning and retrieval, it is likely that the known impact of chronic pain on attention, working memory, and processing speed accounts for this relationship. Future studies will benefit from further elucidating these potential mechanisms and better inform clinical decision-making and neuropsychological testing performance in patients with chronic pain.

Categories: Medical/Neurological Disorders/Other (Adult)
Keyword 1: chronic pain
Keyword 2: performance validity
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77 Development of Parent- and Teacher-Reported Executive Dysfunction and Inattention in Youth with Spina Bifida

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Objective: Youth with spina bifida (SB) are at increased risk of neuropsychological deficits, including executive dysfunction and inattention. While these deficits are well-documented cross-sectionally, little research has considered the development of these difficulties longitudinally. The limited research on executive dysfunction over time in youth with SB has been mixed, with some studies suggesting stable, elevated executive dysfunction (Tarazi et al., 2008) and others demonstrating improvements in inhibition and shifting in particular (Zabel et al., 2011). In contrast, no research has examined inattention over time in SB. Understanding the development of these constructs is critical for early identification of dysfunction and intervention development. This study thus aims to characterize the development of executive dysfunction and inattention in youth with SB.
Participants and Methods: One hundred forty youth with SB were recruited as part of a larger, longitudinal study. Mothers, fathers, and teachers of participants (Time 1: $M_{youth\ age}$ = 11.4 years, 53.6% female) completed questionnaire-based measures of executive dysfunction (Behavior Rating Inventory of Executive Function, BRIEF; inhibit, shift, working memory, plan/organize subscales) and inattention (Swanson, Nolan, and Pehlam Teacher and Parent Rating Scale – Fourth Edition, SNAP-IV). Data were collected over five time points occurring at two-year intervals. Growth curves were estimated using linear mixed effects models to estimate development over time.

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