to state or trait anxiety. In contrast, PCS scores were found to have an inverse relationship with self-reports of depression and distress. The PCS appears to be a useful measure of post concussion difficulties, and may be used in the assessment of depression or distress, which often accompanies such difficulties.

At depth computerized assessment of neurocognitive changes in divers
Lowe MA, Reeves DL, Kane RL.

Diver subjective reports of cognitive impairments are frequently not reflected in the results of cognitive tests. As a result, we evaluated a computerized assessment tool, the ANAM 2000, to assess its ability to monitor cognitive changes in divers. The advantages of using a computerized instrument include increased precision of measurement and the availability of alternate forms for repeated assessment. During the 1998 1000 fsw Deep Dive at NEDU, both traditional neurocognitive measures and a subset of ANAM 2000 were used at various depths to determine the effects of pressure on cognitive performance.

Nine U.S. Navy Divers were subjects during Deep Dive 98. Assessments were done at the surface, during compression, at storage depth, during decompression and then again at the surface. All testing was done in the saturation habitat.

Results from the traditional assessments showed significant (p<0.01) improvement of group performance from baseline to post-dive, suggesting an overall practice effect. There was a noted decrease in performance with increasing depth on Part A of the Trail Making Test (p<0.05) but not on Part B. Upon ascent, these scores improved and on the post-dive assessment were significantly better (p<0.001) than baseline. Results from most ANAM 2000 measures showed a trend of decrement as depth increased and then showed improvement during decompression. However, there were significant (p<0.05) depth-related decrements in both mean reaction time and throughput (a purported measure of mental efficiency) on the Matching-to-Sample subtest. This same ANAM measure was sensitive to the early effects of decompression sickness in 1 diver and has also been shown to be sensitive to hypoxic effects in an altitude study. Decrements in mean reaction time and throughput on the ANAM Simple Reaction Time and Continuous Performance tests were found, though not statistically significant.

These findings suggest that pressure affects selected aspects of cognitive performance. It appears that memory isn’t affected as much as the constructs of sustained attention and visual working memory. Though these results favorably support the use of computerized assessments in diving, further evaluation is desirable.

Pre-menstrual syndrome: brain functional correlates to dysphoria in PMS
Cantor DS.

Premenstrual syndrome constitutes a health problem for up to 50% of American women of childbearing age. The majority of women with PMS suffer primarily from physical symptoms while about 18% of women have dysphoria associated with their menstrual onset. Premenstrual magnification syndrome (PMM) is another type of perimenstrual syndrome characterized by ongoing emotional symptoms throughout the menstrual cycle with a marked increase in dysphoric symptom perimenstrually. A vast number of these women are typically diagnosed as having a major affective disorder and are treated as such with mixed results. These figures suggest health care costs
in excess of one billion dollars a year for nearly 15 million women are used for less than optimal
treatment. In an effort to better understand the interactive roles of daily stresses, patterns of
hormonal activity, personality types, and brain function, a 4-year study funded by NIH examined a
total of 255 women during 2 phases of their menstrual cycle (luteal and non-luteal phases).
Quantitative EEG as assessed by neurometric analyses was used to evaluate neurofunctional
differences between groups of women defined as: (1) normal control (no evidence of PMS); 2)
non-dysphoric PMS group (women exhibiting physical symptoms only); 3) women exhibiting
dysphoria associated with PMS; 4) women exhibiting premenstrual magnification syndrome; and 5)
women exhibiting abnormal MMPI-2 not associated with PMS. ANOVAs determined no significant
differences between groups on age and IQ. Repeated measures ANOVAs identified a number of
neurometric QEEG differences between groups during the non-luteal and luteal phases. Thus, a
multivariate analysis of covariance comparing groups for QEEG measures during the luteal phase
while controlling for the group differences during the non-luteal phases was used to assess the
hypothesis that the dysphoric PMS group was significantly different in a number of measures from
the normal control, non-dysphoric PMS group, and the mental disorder non-PMS groups. As would
be anticipated, the majority of significant differences between groups included measures of function
in the frontal and temporal regions of the cortex associated with changes in attention, concentration,
and mood regulation. Other concurrent analyses examining MMPI-2 measures, hormonal activity,
and measures of daily stress are being conducted to also examine other covariates in this complex
brain–behavior dynamic relationship.

Diagnostic profiles in acalculia: contrasting case studies in a post-secondary setting
Dagenhart MC, Hutchens TA.

The purpose of this poster is to provide information via research and case study data on the properties
of mathematical learning disabilities at the post-secondary level. Research has contributed to
diagnostic accuracy by yielding increasing evidence of academic and behavioral correlates with
neuropsychological skills and deficits. Common characteristics of mathematics dysfunction are briefly
described in a review of the literature, including the tetrad of symptoms associated with Gerstmann
syndrome: finger agnosia, right–left disorientation, agraphia, and acalculia. All 4 symptoms have been
shown in clinical groups with implications for a single area of the left hemisphere, that surrounding the
angular/supramarginal gyri. Recently, acalculia and neuropsychological skills have been linked for
more definitive information about both neural substrates and component skills in complex arithmetical
performance. Consistency in the presence of behavioral characteristics as a significant part of
differential diagnosis in math disability is also addressed. Problems of attention, memory, and self-
monitoring have been associated with difficulty in math performance; however, discrimination
between cognitive processing deficits and input or performance is essential to avoid diagnostic
confusion and inappropriate interventions. Neuropsychological evaluation results of 3 individuals who
presented themselves for disability assessment at The Assessment Center (TAC) at the University of
Tennessee are discussed. The resulting contrasting case data exemplify the more frequently occurring
visuo-spatial deficits in acalculia including Gerstmann syndrome. Psychometrics, error analysis,
behavioral observations and underlying neuropsychological principles are presented. Psychologists
in post-secondary academic settings should be cognizant of commonly occurring constellations of
behavior and processing patterns associated with difficulties in math. It is hoped that the data
presented will assist these professionals in discerning differential diagnoses and, ultimately, ensure
integrity in programming.