

Samantha M Vervoordt<sup>1</sup>, Umesh Venkatesan<sup>2</sup>, Andrew Cwiek<sup>1</sup>, Amanda Rabinowitz<sup>2</sup>, Frank G. Hillary<sup>1</sup>

<sup>1</sup>The Pennsylvania State University, University Park, PA, USA. <sup>2</sup>Moss Rehabilitation Research Institute, Philadelphia, PA, USA

**Objective:** Apathy, or loss of motivation and interest, is a common sequela of moderate to severe traumatic brain injury (msTBI) and has been associated with frontal lesions and with executive dysfunction in a sample an average of one year post injury (Andersson & Bergdalen, 2002). In older adults sustaining msTBI in particular, the appearance of apathy is more likely to be comorbid with depression when compared to injury in younger adults (Kant et al., 1998). However, studies have consistently shown an important dissociation between apathy and depression, despite overlapping symptoms, with apathy in particular associated with frontal lobe damage (Worthington & Wood, 2018). The present study holds two primary goals. First, to examine the relationship between current apathy ratings and cognition after controlling for ratings of depression and perceived changes in apathy, to account for the unique relationship of injury-related apathy on cognition. Second, to examine the potential variable role of APOE4 carrier status on depression and apathy ratings.

**Participants and Methods:** 110 older adults with a lifetime history of msTBI (M=9.5 years post-injury) were included as part of a cross-sectional study. Apathy was measured using the Frontal Systems and Behaviors Scale (FrSBe) for both current apathy ratings and perceived change in apathy from pre- to post-injury.

Depression was measured using the depression subscale of the Brief Symptom Inventory (BSI). Outcome measures included normed scores for learning (HVLt-R total recall), retention (HVLt-R percent retention), processing speed (Trails A), set-shifting and working memory (Trails B, Digit Span Backwards), and phonemic and category fluency (D-KEFS letter and category fluency). The main independent variable of interest was current apathy ratings. Depression and perceived apathy change were included as control variables for all analyses. Vif scores were calculated for all analyses to ensure that variables were not multicollinear. Finally, we ran an ANOVA to examine the relationship between apathy, depression, and APOE4 carrier status.

**Results:** When controlling for depression and perceived changes in apathy, current apathy

ratings were associated with poorer performance on learning ( $p=.04$ ,  $\eta^2=.04$ ), processing speed ( $p=.001$ ,  $\eta^2=.10$ ), set-shifting ( $p=.02$ ,  $\eta^2=.05$ ), attention ( $p=.04$ ,  $\eta^2=.04$ ), phonemic fluency ( $p=.001$ ,  $\eta^2=.09$ ), category fluency ( $p=.001$ ,  $\eta^2=.10$ ). Current apathy ratings were not associated with retention or working memory. Apathy was significantly associated with depression ( $p < .001$ ), but was not associated with APOE4 carrier status or the interaction between depression and carrier status.

**Conclusions:** Despite overlap between depressive symptoms and apathy questionnaires (i.e., loss of interest/pleasure), by controlling for depressive symptoms and perceived changes following injury, we demonstrate the significant independent association of apathy and cognition in an older sample with chronic msTBI. Further, although previous work has shown strong associations between depression and APOE4 carrier status in chronic msTBI samples (Vervoordt et al., 2021), there was no significant relation with apathy directly in our sample, providing further evidence that these are neurobiologically distinct syndromes.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

**Keyword 1:** traumatic brain injury

**Keyword 2:** apathy

**Keyword 3:** cognitive functioning

**Correspondence:** Samantha M. Vervoordt The Pennsylvania State University  
smv5469@psu.edu

## 28 Cognitive, Emotional, and Interactional Determinants in Loneliness, in a Heterogeneous Sample of Puerto Ricans with ABI in the Chronic Phase

Santiago J. Palmer-Cancel<sup>1,2</sup>, Julio Jimenez<sup>1</sup>, Christian Salas<sup>3</sup>

<sup>1</sup>School of Behavioral & Brain Sciences, Ponce Health Sciences University, Ponce, Puerto Rico, Puerto Rico. <sup>2</sup>Brain and Behavioral Associates, P.C., Albuquerque, New Mexico, USA. <sup>3</sup>Clinical Neuropsychology Unit, Center for Human Neuroscience and Neuropsychology, Faculty of Psychology, Diego Portales University, Santiago, Chile, Chile

**Objective:** An acquired brain injury (ABI) is a neurological pathology that generates a physical injury in the brain. These include cerebrovascular accidents (CVA) and traumatic brain injuries (TBI). Brain injuries can cause cognitive, emotional, and social problems, which have the potential to severely alter a person's independence and quality of life. Loneliness, the subjective experience of social isolation, has been shown to be the best predictor of mental health problems and poor quality of life in patients with ABI. This study aimed to explore the relationship between cognitive, emotional, and social determinants and loneliness in Puerto Ricans with ABI in the chronic phase.

**Participants and Methods:** Cross-sectional, exploratory, and correlational methods were implemented. Assessments included the Frontal Systems Behavioral Scale – Spanish version (FrSBe-SP), Perth Emotional Reactivity Scale – Spanish version (PERS), Anticipated Stigma and Concealment (ASC), and the University of California Los Angeles – Loneliness Scale (UCLA-LS).

**Results:** A total of seventeen participated ( $n=17$ ). Twenty-nine percent of participants were female. Forty-seven percent had history of previous CVA and fifty-two percent had history of TBI. Correlational analyses suggest a positive and significant relationship between executive dysfunction (FrSBe-SP) and feelings of loneliness (UCLA-LS) ( $p=.601$ ), as well as a positive and significant relationship between neuroticism-negative emotional reactivity (PERS) and feelings of loneliness (UCLA-LS) ( $p=.736$ ). Correlational analysis suggests there is no significant relationship between anticipated stigma (ASC) and feelings of loneliness (UCLA-LS) ( $p=.282$ ).

**Conclusions:** Our findings suggest that there is a significant relationship between cognitive determinants (executive functions) and emotional determinants (neuroticism) with feelings of loneliness in people with a history of ABI. These results support the connection between executive dysfunction, the tendency to experience negative emotions, and the subjective experience of loneliness, consistent with previous studies. However, our study did not find any significant relationship between interactional determinants, such as stigma and concealment, and loneliness. Understanding the role of cognition, emotions, and social variables in reported feelings of loneliness is important for clinical neuropsychological assessment and rehabilitation interventions.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

**Keyword 1:** executive functions

**Keyword 2:** emotional processes

**Keyword 3:** brain injury

**Correspondence:** Santiago J. Palmer-Cancel, School of Behavioral & Brain Sciences, Ponce Health Sciences University, Ponce, Puerto Rico; Brain and Behavioral Associates, P.C., Albuquerque, New Mexico; palmer@brainandbehavioral.com

## 29 Predictors of Verbal Memory Performance Following Brain Injury Among Survivors of Intimate Partner Violence

Seima I Al-Momani<sup>1</sup>, Christopher S Waller<sup>1</sup>, Matthew Garlinghouse<sup>2</sup>, Peggy Reisher<sup>3</sup>, Kathy S Chiou<sup>1</sup>

<sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, USA. <sup>2</sup>University of Nebraska Medical Center, Omaha, NE, USA. <sup>3</sup>Brain Injury Alliance of Nebraska, Lincoln, NE, USA

**Objective:** Numerous survivors of Intimate Partner Violence (IPV) experience physical violence to the head and neck areas, placing them at high risk of sustaining a brain injury (BI). Studies report that the prevalence of traumatic BI among IPV survivors ranges from 35% to as much as 80%. IPV-related BIs can have debilitating long-term consequences on survivors' quality of life and overall functioning. One important factor impacting quality of life following TBI is verbal memory abilities. Given the link between verbal memory abilities and functional status, identifying predictors of verbal memory performance has important implications for directing support and rehabilitative efforts for survivors of IPV-related BIs. The current aim of the study was to investigate predictors of verbal memory performance following TBI among survivors of IPV.

**Participants and Methods:** A modified HELPS Brain Injury (BI) screener was administered to women receiving services for IPV through community organizations and shelters in two urban, Midwestern cities. Women who screened positive for IPV-related BI ( $n=32$ ) were invited to complete a comprehensive neuropsychological evaluation including the Rey Auditory Verbal