biomarkers, errorless learning, translational studies in collaboration with neuroscientists using animal models, and clinical trials of methylphenidate, progesterone, CDP-choline. Dr. Levin spent over 30 years researching neurobehavioral outcomes of head injury in children, starting with a small pilot study funded by the Shriners Hospital in 1991 and continuing with several cycles of a multicenter R01 grant funded by the National Institute of Health. In later years, he used his expertise as a member of several large consortiums, including the Long-term Impact of Military-Relevant Brain Injury Consortium \ Chronic Effects of Neurotrauma Consortium (LIMBIC-CENC) funded by the VA and DoD and the Transforming Research and Clinical Knowledge in Traumatic Brain Injury (TRACK-TBI) funded by the NINDS.
During his career, Dr. Levin authored and co-authored more than 400 articles in scientific journals and over 100 books, with one of them, "Levin, H. S., Benton, A. L., & Grossman, R. G. (1982). Neurobehavioral consequences of closed head injury. Oxford University Press, USA", having over 1100 citation, as well as book chapters that advanced knowledge of TBI, epilepsy, neurodegenerative diseases, and other illnesses that affect brain functioning. He was also very active as a reviewer on federal grant panels and as an editor and reviewer for the Journal of Neurotrauma, Journal of Clinical and Experimental Neuropsychology, Archives of Physical Medicine & Rehabilitation, Neuropsychology, Journal of the International Neuropsychological Society, Lancet, JAMA, Pediatrics, and other top-cited journals. He served as president of the International Neuropsychological Society in 1989-1990. Dr. Levin was a recipient of numerous prestigious awards, including the Javits Neuroscience Investigator Award, the Jennett-Plum Award for Research on Traumatic Brain Injury, the Distinguished Career Award by the International Neuropsychological Society, the American Congress of Rehabilitation Gold Key Award, the Distinguished Lifetime Contribution to Neuropsychology Award from the National Academy of Neuropsychology, as well as awards from other head injury and psychological organizations, including the International Brain Injury Association, the National Head Injury Foundation, the North American Brain Injury Society, Texas Psychological Association, and the Defense and Veterans Brain Injury Center.
In addition to his stellar scientific accomplishments, Dr. Levin trained, mentored, and provided supervision to interns, fellows, postdocs, residents, medical and psychology students. He was the Director of an NCMRR/NIH T32 Postdoctoral Research Program, and training supervisor in neuropsychology for Baylor College of Medicine and for the Memorial Hermann TIRR Neuropsychology Postdoctoral Fellowship Programs. A passionate educator, he taught classes at Baylor College of Medicine, the University of Houston, and the National and Kapodistrian University of Athens Medical School in Greece and served as an evaluator for the American Board of Clinical Neuropsychology/American Board of Professional Psychology. He was often invited as a lecturer at numerous scientific organizations.
The main objective of this symposium is to provide an overview of the current state of research in TBI while highlighting Dr. Levin's contributions to this field. The symposium will start with a brief overview of Dr. Levin's career (Dr. Randall S. Scheibel), followed by presentations focused on the assessment of adult TBI, including posttraumatic amnesia (Dr. Felicia C. Goldstein), the current state of pediatric TBI (Dr. L. Ewing-Cobbs), and novel imaging in TBI (Dr. Erin D. Bigler). There will be a brief discussion session at the end lead by Dr. Elisabeth A. Wilde.

Symposium 07: Early Development in Infants and Toddlers with Agenesis of the Corpus Callosum

4:00 - 5:25pm
Thursday, 2nd February, 2023
Town & Country Ballroom B

Chair

Lauren Haisley
University of Minnesota, Minneapolis, USA
Lynn Paul
California Institute of Technology, Pasadena, USA

Summary Abstract:

https://doi.org/10.1017/S1355617723005349 Published online by Cambridge University Press

The corpus callosum is the largest transverse white matter fiber tract connecting the two hemispheres of the brain. It plays an essential role in the interhemispheric transfer and bihemispheric coordination involved in perception and sensory-motor integration, as well as higher level cognition (e.g., memory, executive functioning). The corpus callosum forms prenatally (10-15 weeks gestation) and continues to develop through early adulthood. Damage to the corpus callosum throughout the lifespan, but especially later in life, can result in sensory and motor coordination deficits and produces disconnection syndromes.
However, individuals born with a partial or fully absent corpus callosum, known as Agenesis of the Corpus Callosum (ACC), do not exhibit a full disconnection syndrome and may, in fact, demonstrate many intact skills including broadly average intellectual abilities. Agenesis of the corpus callosum (ACC) is a relatively common congenital brain malformation that occurs in 1 out of ~4000 live births (Glass, Shaw, Ma, & Sherr, 2008; Paul et al., 2007). There is significant heterogeneity in outcomes for these individuals, often related to the presence of additional neuropathology, and the presence of co-occurring medical and genetic conditions. In adults for whom ACC is the primary neurological finding, there is a core constellation of cognitive symptoms that include reduced interhemispheric transfer, slowed processing, and difficulty with complex novel problem solving (Brown & Paul, 2019). There is also an elevated likelihood of autism spectrum disorders in this population as well (Paul et al, 2014).
Modern ultrasound technology facilitates diagnosis of ACC in utero, offering a unique opportunity to study these individuals' development from infancy. However, no studies to date have examined early development in this population using validated measures, leaving neuropsychologists, neurologists and primary care providers to make educated guesses about what families should expect and appropriate therapies/treatment.
This symposium presents a series of studies examining the early development of individuals with primary ACC across domains including language, adaptive skills, autism symptomology, and temperament/anxiety. We will provide the first in-depth prospective characterization of development in ACC relative to typically developing children at 6, 12, 18 and 24 months and discuss what these findings reveal about brain development and plasticity more broadly (e.g. how does early disruption in interhemispheric connection impact cognitive development across key domains?).
Finally, while ACC is defined specifically by corpus callosum anatomy, the corpus callosum has been implicated in other neurodevelopmental conditions (Paul, 2011). Utilizing extant comparison, we also assess how early development in ACC both overlaps and differs from two monogenic conditions (e.g. Fragile X and Down Syndrome) and a developmental behavioral diagnoses (e.g. autism) and discuss how early disruptions in interhemispheric transfer may contribute to shared behavioral phenotypes in these conditions.

Keyword 1: corpus callosum
Keyword 2: pediatric neuropsychology

Keyword 3: brain development

1 Early Development of Adaptive Skills in Young Children with Agenesis of the Corpus Callosum: A Comparison to Monogenetic and Neurodevelopmental Conditions

Lauren D Haisley[1], Lana Hantzch[1], Jasmin Turner[2], Kelly N Botteron[3], Stephen Dager[4], Annette M Estes[5], Lisa Flake[3], Heather Hazlett[6], Robert T Schultz[7], Joseph Piven[6], Lynn K Paul[2], Jed T Elison[1]
[1]University of Minnesota, Minneapolis, MN, USA. [2]California Institute of Technology, Pasadena, CA, USA. [3]Washington University School of Medicine, St. Louis, MO, USA. [4]University of Washington, Seattle, WA, USA. [5]University of Washington, SeattleWA, WA, USA. [6]University of North Carolina- Chapel Hill, Charlotte, NC, USA. [7]Children's Hospital of Philadelphia, Philadelphia, PA, USA

Objective: Differences in adaptive functioning present early in development for many children with monogenic (Down Syndrome, Fragile X) and neurodevelopmental disorders. At this time,

https://doi.org/10.1017/S1355617723005349 Published online by Cambridge University Press