AMERICAN PSYCHOLOGICAL ASSOCIATION

Division of Clinical Neuropsychology

Newsletter 40

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President's Message

For this issue's column, I wanted to provide an update on Division activities and focus on advocacy in the service of neuropsychology.

First, congratulations and deep gratitude to all of you for your votes and our success in the apportionment ballot. We will now have five seats on the Council of Representatives from Division 40. We can all look forward to advancing our agenda and working with others to attain our goals.

William Barr was elected President of Division 40; he will begin his year as President-elect at the APA Convention in August. Julie Bobholz was elected to a second term as member at large. Robert Bilder, Corwin Boake, and Deborah Loftis were elected as representatives for the Division to the Council of Representatives. We are indebted to these talented individuals for their contributions and efforts in the service of Division 40. We are fortunate to have such a wonderful slate of candidates for office and of members devoted to advancing our field.

As many of my predecessors have written in this space in prior years, I wanted to again bring up the issue of the importance of advocacy for our profession. In my roles in various organizations in psychology and neuropsychology, I have attended numerous presentations regarding advocacy. I've been reminded that psychologists as a group are in the lowest tier with respect to making financial contributions to their organization for advancing the profession as compared to other professional groups (medicine, social work, nursing). As a group we may not truly appreciate that we are all stewards of our profession and of our future.

In helping write our petition for renewal of specialty recognition for Clinical Neuropsychology, I was overwhelmed by the variety, sophistication, and impact of what we do as neuropsychologists. In stepping back to summarize science, practice, education, and advocacy in our specialty, I was struck by the thought that we certainly have not been successful in communicating the value of what we do to a number of audiences, including other psychologists, legislators, and the general public, as well as ourselves. As we work together to expand efforts to advance our specialty and inform others of the value of our work, we can contribute to and consult an increasing literature on advocacy in neuropsychology and evidence based practice to guide our endeavors.

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In This Issue

Newsletter 40 is the official publication of Division 40.
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Past issues of the Division 40 Newsletter and Division 40 Executive Committee meeting minutes are now available online at the Division 40 Website. The URL address is: http://www.div40.org/.

From the Editor

Dear Members of Division 40:

My name is Brian Yochim and I am the new Editor of the Division 40 Newsletter. Dr. Michael McCrea has graciously handed the reins over to me after carefully showing me all the steps that lead up to publication of this newsletter. It is my hope that I maintain the high quality of the newsletter that we have enjoyed over the years.

I am an assistant professor at the University of Colorado at Colorado Springs (UCCS). At UCCS we offer a Ph.D. in clinical psychology with emphasis in aging. I have a unique position of conducting research in clinical neuropsychology, teaching courses in the area, and supervising graduate students completing neuropsychological assessments. I am fortunate to have a position in which my research feeds into my clinical work and teaching, and my clinical work and teaching guide my research.

We have recently transitioned from mailing the newsletter to emailing it to the Division 40 listserv, which is saving your dues money as well as paper and energy involved in shipping. I am in the process of taking steps to ensure that all members receive the newsletter even if they are not on the listserv.

In this issue I am excited to present to you Dr. Rey-Casserly's President's column, a listing of all Division 40 activities at the upcoming APA convention, a fascinating article on pediatric mild traumatic brain injuries, announcements about two awards, and updates from the Early Career Psychologist Committee. Enjoy the reading, and we hope to see you in San Diego at the APA convention!

Brian Yochim, Ph.D., ABPP

Summary of Upcoming Division 40 Program at APA Convention

Thursday, August 12, 2010

7:30 – 10:50	Executive Committee Meeting (Dr. Rey-Casserly)
11:00 – 11:50	Fellows' Addresses – Drs. Schefft and Levine (Dr. Baron)
12:00 – 12:50	Paper Session (Sumowski et al.)"*Cognitive Leisure Activity Protects Against Cognitive Decline in Multiple Sclerosis"*
1:00 – 1:50	Invited Address: Dr. Elizabeth Sowell, "*Impact of Prenatal Drug Abuse: Imaging the Developing Brain"* (Introduction: Dr. Belanger)
1:00 – 1:50	Symposium: *"Ethical Considerations in Nonstandard Neuropsychological Assessment of Individuals with Disabilities"* **Sponsored by Public Interest Advisory Committee**
2:00 – 2:50	Invited Address: Dr. Dean Delis, "*Advances in the Neuropsychological Assessment of Executive Functions"* (Introduction: Dr. Rey-Casserly)
3:00 – 3:50	Invited Address: Dr. Melissa Bauman, "*Animal Models of Autism"* (Introduction: Dr. Rivera Mindt)

Friday, August 13, 2010

8:00 – 8:50	Invited Address: Dr. Roberta White, "*Chemical Exposures and Brain Damage: Epidemiology, Clinical Diagnosis, and Politics"* (Introduction: Dr. Cimino)
8:00 – 8:50	Symposium: *"Introduction to the NIH Toolbox for the Assessment of Behavioral and Neurological Function"* (Wagster, Carlozzi, Tulsky, Heaton)
9:00 – 9:50	Invited Address: Dr. Mark Bondi, "*Neuropsychology and Neuroimaging of the Prodromal Period of Alzheimer's Disease"* (Introduction: Dr. Bieliauskas)
9 :00-9 :50	Paper Session (Barkley & Fischer) *Executive Functioning and Adaptive Impairment in Hyperactive Children at Adulthood"*
11:00 – 11:50	Discussion: "*Neuropsychology Supervision - - -A How -to from Expert Women*" **Sponsored by Women in Neuropsychology (WIN)**
2:00 – 2:50	Paper Session (Keller et al.) "*Effects of Cortisol and Hippocampal Volume on Cognition in Depression"*
2:00 – 2:50	Invited Address: Dr. Helena Chui, "*Vascular Cognitive Impairment: Diagnosis and Prognosis"* (Introduction: Dr. Yochim)
3:00 – 3:50	Invited Address: Dr. Vilayanur S. Ramachandaran, "*Neurological Reflections on Human Nature"* (Introduction: Dr. Brickman)
4:00 – 4:50	Early Career Award – Dr. Nancy Chiaravalloti: "*Cognition in MS: Identifying and Treating the Deficit"*
4:00 – 4:50	Invited Address: Dr. Dan Mungas, "*Modern Psychometric Methods in Neuropsychological Assessment"* (Introduction: Dr. Manly)
5:00-5:50	Blue Ribbon Awards – Moran, Delano-Wood, Gomez, Fields (Introduction: Dr. Belanger)
5:00-5:50	Paper Session (Puente, Geourgoulakis, Pliskin) "*Latest Information Regarding Testing Codes: Implications for a Developing Model for Neuropsychological Services"*

Saturday, August 14, 2010

8:00 – 8:50	Paper Session (Jak et al.) "*Effort Testing, PTSD, and Depression in OEF/OIF Veterans with TBI"*
8:00-8:50	Paper Session (Taylor et al.) *"Improving Outcomes for Children with Traumatic Brain Injury"*

9:00 -9:50	Paper Session (Thompson) "*Bulimia Nervosa From a Neuropsychological Perspective: Impulsivity and Binge‐‐Purge Behaviors"*
9:00-9:50	Symposium *"Adulthood Transition for Children with Medical and Neurological Conditions‐‐‐Clinicians and Caregivers"* (Rey-Casserly et al.)
10:00-10:50	Division 40 Poster Session I
10:00-10:50	Invited Address: Dr. Keith Yeates, "*Social Outcomes of Traumatic Brain Injury in Children"* (Introduction: Dr. Attix)
11:00 – 12:50	Symposium: *"Building Your Research Career in Neuropsychology‐‐‐Technologies, Transdisciplines, and Funding"* **Sponsored by Scientific Advisory Committee (SAC)**
12:00 – 12:50	Invited Address: Dr. Tamar Gollan, "*Bilingual Alzheimer's Disease"* (Introduction: Dr. Rivera Mindt)
1:00-1:50	Discussion: *"Road to a Career in Neuropsychology‐‐‐A Panel Discussion"* **Sponsored by Ethnic Minorities Affairs Committee**
1:00 – 1:50	Invited Address: Dr. Kyle Boone, "*Need for Continuous and Comprehensive Assessment of Response Bias"* (Introduction: Dr. Donders)
3:00 – 3:50	Division 40 Presidential Address (Dr. Rey-Casserly)
4:00 – 4:50	Division 40 Business Meeting (Dr. Rey-Casserly)
5:00 – 6:50	Joint Division 40/22 Social Hour & Student Award Posters

Sunday, August 15, 2010

8:00 – 8:50	Paper Session (Trettin) "*Predictive Value of Hippocampal Activation and Depression on Verbal Memory"*
9:00 – 9:50	Symposium: *"Emerging Practice Opportunities for Neuropsychologists"* (Drs. Cullum, Forrest, McClintock, Bigler)
10:00 – 10:50	Division 40 Poster Session II
11:00 – 11:50	Division 40 Poster Session III
11:00 – 11:50	Symposium: *"Family‐Based Approaches to Neuropsychological Assessment of Children and Adolescents"* (Doty, Willoughby, Braaten)
12:00 – 12:50	Paper Session (Kangas, Tate, Williams, Smee) "*Posttraumatic Stress and Neurocognitive and Psychosocial Functioning in Brain Tumor Survivors"*

* Note that this schedule is subject to change. Attendees are encouraged to confirm session dates, times, and locations in the final APA Convention program.

APA Division 40
Program Committee Members 2009-10

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Ruth Yoash-Gantz, PsyD
Brian P. Yochim, Ph.D.

Division 40 Early Career Psychologist Committee
Lauren K. Ayr, Ph.D. - Chair

Division 40 currently has the highest number of Early Career Psychologists (ECPs) in APA, which defines ECPs as being within seven years of the receipt of their doctorate degree. Current Early Career Psychologist Committee Members include:

- Lauren K. Ayr, Ph.D.
- Karin Hoth, Ph.D.
- Barry R. Ardolf, Psy.D
- Christy Emmons, Psy.D.
- Heidi Bender, Ph.D

We are now recruiting new members for this committee! Please contact me at laurenkayr@gmail.com if you are interested in becoming a committee member, finding out more about how you can be involved in Division 40, or sharing your thoughts and ideas for ECPs.

Convention News

The APA 117th Annual Convention will be held in San Diego, California August 12th – 15th, 2009. Developed by APA's Committee on Early Career Psychologists, sessions directed towards early career psychologists include:

Thursday, August 12

2:00 PM – 3:50 PM	Life as Early Career Academic Pediatric Psychologists: Rewards, Challenges, and Surprises—Christine T. Chambers, PhD, et al.,

Friday, August 13

7:00 AM – 7:50 AM	Panel Discussion on Training and Early Career Development—Laura Lee McIntyre, PhD,
10:00 AM – 10:50 AM	Thriving on the Tenure Track: Tips for Early Career Psychologists—Roxanne A. Donavan, PhD, et al.,
11:00 AM – 11:50 AM	Early Career Psychologists Around the Globe: International Research and Collaboration—Oksana Yakushko, PhD, et al.,
12:00 PM – 1:50 PM	Financial Nuts and Bolts of Starting an Independent Practice—Josephine S. Minardo, PsyD,
6:00-6:50 PM	Network with your peers at the Social Hour for Early Career Psychologists, Co-sponsored by the CECP and the APA Insurance Trust.

Saturday, August 14

10:00 AM – 10:50 AM	Early Career Counseling Psychologists: Member Insights and Membership Recommendations—Nathan G. Smith, PhD,
10:00-11:50 AM	If I Knew Then What I Know Now! Lessons for Early Career Psychologists—Paul Schutz, PhD,
11:00 AM – 11:50 AM	Pathways to Success for Psychologists in Academic Health Centers: From Early Career to Emeritus—William Robiner, PhD, and Barry Hong, PhD,
2:00 PM – 2:50 PM	Making Your Website Work for You—Linda Sapadin, PhD and Pauline Wallin, PhD,
2:00 PM – 2:50 PM	Understanding the Structure of APA and Finding Ways to Get Involved—Michael C. Edwards, PhD, et al.,
3:00 PM - 4:50 PM	I Didn't Know I Could Do That! Using Technology to Advance Your Practice—Josephine S. Minardo, PsyD,

Sunday, August 15

12:00-12:50 PM Career Adaptability in a Struggling Economy—Donna E. Schultheiss, PhD, et al.,

ECP Event at INS

Planning is underway for an event at the 2011 INS meeting in Boston, Massachusetts. We hope to use the results and feedback from the needs assessment survey to choose topics most relevant for ECPs. If you are interested in helping to develop this event, please feel free to contact me.

List Serve

You can join the CECP Early Career Listserv, a forum dedicated to the needs of early career psychologists that includes ECPs from across APA Divisions and the State and Provincial Psychological Associations. To subscribe to the list, send an email to listserv@lists.apa.org with the following text in the body of the message: **SUBSCRIBE EARLYCAREER** (example: SUBSCRIBE EARLYCAREER Robert Smith).

Call for nominations for awards: Division 40 Early Career Award

Division 40 is accepting applications for the Early Career Award in Neuropsychology. Eligible candidates are APA member psychologists not more than ten years post doctoral degree, who have made a distinguished contribution to neuropsychology in research, scholarship, and/or clinical work.

Application requirements: A letter of nomination and one supporting letter (from a nationally-known neuropsychologist familiar with the candidate's work and its impact on the field) should be included along with a copy of (1) a CV, (2) three supporting documents providing evidence of national/ international recognition (e.g., major publications, research grants, assessment, clinical, or teaching techniques, treatment protocols), and (3) the candidate's 500-word statement describing professional accomplishments, personal long-term goals, and future challenges and directions in the field of neuropsychology that they wish to address.

Application procedure: All materials provided by applicant are to be submitted electronically to Laura A. Flashman, Ph.D., Chair, Div 40 Awards Subcommittee, at flashman@dartmouth.edu. Please submit all application materials in a single file. A .pdf file is preferred, although other formats will be accepted. The letter of nomination and supporting letters may be included in the application file, or e-mailed directly to Dr. Flashman. If hard copies of the letters are being sent, please have them mailed directly to: Laura A. Flashman, Ph.D., ABPP-Cn, Director of Neuropsychology, Department of Psychiatry, HB7750, Dartmouth Hitchcock Medical Center, Lebanon, NH 03756.

New Application deadline: January 4, 2011 @ 5:00 EST

Award: The awardee will receive $1,000 and an invitation to present a paper at the APA Convention.

President's Message
(continued from page 1)

As president of our Division, I've learned about and participated with a range of advocacy efforts and opportunities to voice our opinions around critical issues affecting psychology and our Specialty. We are all indebted to the neuropsychologists who work tirelessly advocating for the individuals we care for and for neuropsychology on local, regional, national, and international levels. The Division 40 leadership and countless members have been instrumental in these endeavors, ranging from advocating for helmet laws in California, providing comment on proposed changes to the DSM-V, and helping influence insurance companies' authorization processes for neuropsychology services.

Many of you are familiar with the practice assessment portion of your APA dues, the recent controversy over the issue of whether this assessment is "mandatory", and the transparency around this. Many psychologists have been disappointed or dissatisfied with the advocacy efforts of APA in relation to practice issues, and the practice assessment controversy now adds fuel to that fire. The response to these disappointments is often to criticize, complain, or withdraw. I would hope that some of this energy can be refocused on productive and constructive efforts to effect positive change. This cannot happen in an atmosphere of divisiveness and isolation. There are many areas in which we will not have an influence unless we work collaboratively.

We have made good inroads in advancing neuropsychology within the American Psychological Association. The reach of our voice is expanding in committees, boards, and task forces. In addition, Division 40 is working with other neuropsychology organizations and with APA in highly collaborative and effective ways, addressing issues of education and training, practice standards, and insurance benefits for neuropsychological services. There is an active and vibrant atmosphere in these collaborations which serves larger goals for the specialty of neuropsychology and the discipline of psychology.

We can modify how we are perceived externally and use our tremendous talents and knowledge to influence change. For example, when pediatricians provide comment or testimony on critical issues affecting the lives of children, their words carry an enormous weight. We can promote our specialty and our contributions in that same vein. Educators in counseling psychology doctoral programs seamlessly instill in their students the importance of advocacy and service to the community and to psychology. We can learn from this example.

Again, as many of my predecessors have done, I am advocating for advocacy. I hope that you all will consider taking on this role from the local to the national level. Look for opportunities to work with others to publicize the needs of the individuals you serve, to demonstrate the value of neuropsychology, and to advance science and practice issues. As educators, we need to train our students and socialize them into this critical area of professional development, helping them negotiate the landscape of professional organizations, community involvement, and legislative structures. Please take the time to consider this request and to support all of the committed neuropsychologists working on behalf of our Specialty.

Announcements

From Ida Sue Baron, Fellows Committee Chair: Division 40 is proud to announce the appointment of three new Fellows: Bernice Marcopulos, Brian Levine, and Bruce Schefft

Division 40 Scientific Development Awards

Division 40 is committed to advancing the scientific study of brain-behavior relationships and applying this knowledge to clinical practice, by offering **Junior Investigator Pilot Grants.** Information about application materials and **deadlines** is provided below.

Junior Investigator Pilot Grant

One to two awards of up to $10,000 will be granted to support pilot research investigation by early-career neuropsychologists in a basic science or clinical area relevant to neuropsychology and the mission of Division 40. The goal of this award is to facilitate collection of preliminary data, which could then be used to secure additional funding for sustained research within the topical area.

ELIGIBILITY REQUIREMENTS

The Award is intended for investigators who are within 7 years of having completed their doctoral degree and who demonstrate a commitment to basic or clinical research in the field of neuropsychology. Candidates must:

- Be a member, associate, or student affiliate of APA
- Develop a research project that will generate pilot data for continuing work in basic or applied neuropsychology.
- Commit to presenting findings of the awarded research project at the annual APA convention within two calendar years of the award date.
- Commit to participate in the activities of a relevant Division 40 Committee (Early Career, Awards, Science, Education) for at least one year.
- Identify (or request) a mentor who will help facilitate their project.

APPLICATION MATERIALS

Completed application face-page form (available on the APA Div 40 website).

- Brief abstract of the proposed project.
- Detailed research plan, not to exceed five pages, including specific aims, background, significance, design, methods, and project timeline. The research plan should include a clear indication of the proposed project's relevance to the profession.
- Detailed budget and budget justification (Note: Travel expenses to attend the APA convention must be included in the budget).
- Summary of resources in the applicant's setting that are available to support the proposed research.
- Applicant's NIH Biosketch
- Mentor's NIH Biosketch (or CV)
- Letter of support from an identified mentor acknowledging his/her (a) awareness of the proposed study, (b) willingness to support and advance the proposed research project, and (c) ability to provide mentorship through their expertise in the proposed topic area and/or knowledge of research design and methodology. The mentor's letter of support should indicate in what way he or she will be able to facilitate the proposed project.

General Information

- All application materials must be submitted electronically **in a single file**. The only exception is the letter of support, which may be submitted in a separate file if sent directly from the

mentor. A .pdf file submission is preferred, although a single word document is acceptable.

- Note that recipients of the Junior Investigator Pilot Grant will be expected to submit an annual progress report accounting for the use of funds and summarizing study's progress.

Deadlines & Notification

- Deadline for Receipt of Applications: September 15, 2010 (must be received electronically by 11:59pm to flashman@dartmouth.edu)
- Notification of Award: December 1, 2010

For further information, please contact:

Laura A. Flashman, Ph.D., ABPP-Cn, Chair, Div 40 Awards Committee
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Pediatric Mild Traumatic Brain Injury: A Complicated Case Illustrating the Clinical Complexities

Michael W. Kirkwood, Ph.D., ABPP/CN,[1] & Keith Owen Yeates, Ph.D., ABPP/CN,[2]

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[2] Center for Biobehavioral Health, The Research Institute at Nationwide Children's Hospital & Department of Pediatrics, The Ohio State University

In the U.S., approximately 475,000 children between the ages of 0 and 14 years are treated annually for traumatic brain injury (TBI) in hospital settings. Of these, 435,000 (91.5%) receive care and are released from the emergency department (Langlois, Rutland-Brown, & Thomas, 2006). These data correspond to other estimates indicating that mild injuries account for 80 to 90% of all treated pediatric TBI (Cassidy et al., 2004). Because of the sheer frequency of mild TBI and its potential for disruptive effects, these cases are a frequent reason for referral to pediatric neuropsychologists.

The neurobehavioral outcomes of mild TBI were largely ignored historically, because mild TBI was assumed to produce transient functional impairment not associated with underlying brain damage or lasting problems. For children, these assumptions changed most dramatically in the 1980s after several studies and reviews drew widespread attention to the idea that pediatric mild TBI might lead to long-lasting cognitive, behavioral, somatic, and educational problems. This early work helped raise awareness about the importance of studying mild TBI, even though many of these initial concerns were based on flawed data from studies that lacked methodological rigor (Satz et al., 1997).

In the last two decades, considerable progress has been made in understanding the impact of pediatric mild TBI. Experimental animal work indicates that, following such injury, the brain responds with a multi-layered metabolic response (Giza & Hovda, 2001). This physiologic disruption can include unchecked ionic shifts, abrupt neuronal depolarization, widespread release of excitatory neurotransmitters, alteration in glucose metabolism, reduced cerebral blood flow, and disturbed axonal function. The pathophysiological effects most often result in temporary cellular and neural system dysfunction, rather than permanent cell damage or destruction (Iverson, Lange, Gaetz, & Zasler, 2007). Thus, dynamic restoration over time typically occurs as the system re-regulates. As injury at the cellular level becomes more severe, the expectation for slow or incomplete recovery increases.

Loss of consciousness has traditionally been considered the cardinal sign of mild TBI. However, sport-related concussion studies have clearly indicated that a large percentage of mild TBI cases do not involve a witnessed period of unresponsiveness (McCrea et al., 2003). Other acute signs and symptoms of mild TBI include headache, dizziness, confusion, visual disturbance, mental slowing, amnesia, and emesis. With or without a period of unconsciousness, in the first days and weeks after injury, a constellation of neurobehavioral changes can be seen in children, not unlike those apparent in adult populations. These postconcussive symptoms can involve a combination of somatic, cognitive, and emotional/behavioral difficulties. Frequently reported symptoms include headache, dizziness, fatigue, sensitivity to light and noise, difficulty concentrating, trouble remembering, and increased anxiety.

The expected duration of postconcussive problems after mild TBI is a topic of considerable scientific controversy, in part because of the variable methodological designs and quality of previous research (Kirkwood & Yeates, 2010; Yeates & Taylor, 2005). Most critical reviews have suggested that by 2 to 3 months post-injury, and oftentimes much sooner, deficits are no longer apparent when measured by standardized performance-based neurocognitive or academic tests (Carroll et al., 2004; Satz et al., 1997). This conclusion is consistent with the general findings of one meta-analytic study focused on pediatric TBI (Babikian &Asarnow, 2009) and several meta-analytic studies focused on mild TBI in adults (Belanger, Curtiss, Demery, Lebowitz, & Vanderploeg, 2005; Binder, Rohling, & Larrabee, 1997; Schretlen & Shapiro, 2003).

Far fewer pediatric studies have systematically examined outcomes using postconcussive symptom reports from parents or children, though available research suggests that a minority of pediatric patients display more persistent problems than might be expected if examining test-based results alone. As Table 1 highlights, understanding the nature of post-injury problems is complicated by the fact that postconcussive symptoms are nonspecific and can be seen for multiple reasons aside from brain injury (Asarnow, Satz, Light, Lewis, & Neumann, 1991). Premorbid problems, the emotional or physical effects of trauma more generally, post-injury difficulties unrelated to the trauma, motivational factors, and particular fears and expectations associated with cerebral injury can all produce problems that may be mistaken for neurologically-based postconcussive symptoms (Asarnow, Satz, Light, Zaucha, Lewis, & McCleary, 1995; Goldstrohm & Arffa, 2005; Kirkwood & Kirk, 2010; Nacajauskaite, Endziniene, Jureniene, & Schrader 2006).

That postconcussive symptoms are nonspecific, however, does not rule out the potential explanatory power of injury-related or neurogenic variables in some cases. A number of studies have found that children who display evidence of more severe injury (e.g., loss of consciousness, neuroimaging abnormalities, need for hospitalization) are at increased risk for experiencing more pronounced or persistent postconcussive symptomatology (Mittenberg, Wittner, & Miller, 1997; Taylor et al., 2010; Yeates et al., 2009). In adult populations, the presence of intracranial abnormalities on conventional neuroimaging is widely recognized as one severity variable that can negatively affect outcome (Iverson, 2006; Kashluba, Hanks, Casey, & Millis, 2008; Williams, Levin, & Eisenberg, 1990). As such, injuries associated with intracranial pathology are now commonly referred to as "complicated" mild TBI. Distinguishing between complicated and uncomplicated injuries has

Table 1. Potential explanations for symptoms seen after mild TBI

Relationship Between Symptoms and TBI	Example
1) Symptoms predate TBI	* Poor concentration seen post-injury reflects a premorbid learning or attentional disorder.
2) TBI exacerbates pre-existing condition	* Premorbid sleep problems are worsened by TBI.
3) TBI triggers symptoms in a predisposed individual	* Dizziness is first seen after TBI in individual with an underlying Chiari malformation.
4) Symptoms result directly from TBI	* De novo headaches develop after TBI.
5) Symptoms are a secondary effect of trauma or TBI	* Irritability reflects a post-traumatic stress response to injury circumstances or pain from orthopedic injury. * Initial memory problems after TBI persist because of secondary gain.
6) Symptoms appear after trauma but are unrelated to TBI	* Personality change is due to coinciding familial dysfunction or social stressors.

received less attention in pediatric populations, though initial work supports this intuitively sensible distinction (Fay et al., 2010; Levin et al., 2008).

Regardless of the exact etiology, the existence of post-injury symptomatology is likely to have functional consequences for the child and family (Ganesalingam et al., 2008). Thus, the development of clinical care models designed to promote early recognition of injury and address symptoms in an empirically grounded fashion is indicated (Gagnon, Galli, Friedman, Grilli, & Iverson, 2009; Gioia, Collins, & Isquith, 2008; Kirkwood et al., 2008; Ponsford et al., 2001). Future research focused on identifying specific risk and protective factors at the level of the individual child will be needed to further refine clinical care in a manner that not only optimizes patient outcomes but also minimizes resource expenditure.

Case Background *(Note: select details in the case description were modified to protect patient confidentiality.)*
GD was a 15 year old Caucasian male who presented for neuropsychological evaluation 6 weeks after he had been struck in the head with a baseball. GD and his mother attended the evaluation. GD and both parents attended a feedback session.

GD lived with his parents and two older siblings. His mother was college educated and employed as a retail manager. His father completed high school and owned a landscaping business. Family history was notable for ADHD in a sibling. GD's father described himself as having difficulties remaining consistently focused and motivated throughout his schooling, though he had never been diagnosed with any attentional or learning disorder.

From the time GD was a toddler, he was reportedly "constantly on the go." He was diagnosed with ADHD by his pediatrician at age 5 years and had since been treated with stimulant medication. GD was currently in the latter half of 9th grade. In the elementary years, his academic marks were in the A to B range. Since middle school, academic performance was much more variable, hampered by significant organizational difficulties. The transition to high school was described as quite academically challenging for GD. Psychosocially, he was well-adjusted throughout early childhood but displayed some internalizing adjustment problems in the face of the recent school challenges.

Approximately 6 weeks prior to the evaluation, GD and a friend were playing catch with a baseball. During an attempted catch by GD, the ball apparently grazed off his glove and struck him in the right frontal area. He did not lose consciousness but described having only a fuzzy memory for some minutes after the injury. He seemed "out of it" to his friend and was unsteady on his feet. He was transported to a local emergency department by his mother, where he was oriented, engaged in conversation, and was able to ambulate independently. He was described as moderately lethargic and slow to respond. His major complaints were headache and nausea. Neurological exam was non-focal and Glasgow Coma Scale (GCS) score was 15. A head CT revealed a small right frontal hemorrhagic contusion. He was observed overnight and discharged in good condition the following morning.

During the first days after discharge, GD reported significant headache and fatigue, as well as less pronounced difficulties with dizziness and nausea. He remained out of school for 5 days. During medical follow-up a week after injury, GD was told not to participate in any physical activities in which he could strike his head but was encouraged to return to school. Over the next few weeks, GD's headaches, fatigue, and dizziness improved, though he began to complain of more significant cognitive problems. He described getting lost at school, not being able to find his locker anymore, and not being able to understand what he was reading or remember how to complete math assignments. The response of school personnel had been mixed, with certain teachers being flexible and supportive but others continuing to expect GD to complete all

assignments and tests in the usual fashion. Because of the school problems, a follow-up MRI was conducted, which revealed the contusion was nearly resolved. Neurological exam continued to be unremarkable. Neuropsychological consultation was recommended.

Evaluation Findings

GD presented as a subdued young man who was socially engaged, well-spoken, and likable. He displayed no overt dysmorphology. He was oriented in all spheres and consistently compliant with requests. Language comprehension was judged intact during conversation, as were form and content of expression. Speech was well-articulated. No difficulties with basic visual-perceptual processes were reported or observed. Gait and balance were judged intact. He used his preferred right hand for writing and drawing, employing a dynamic tripod grasp.

GD was administered a focused neuropsychological test battery, consistent with the tiered mild TBI evaluation and management model we have outlined previously (Kirkwood, Yeates, et al., 2008). Test results are presented in Table 2.

GD was administered two stand-alone symptom validity tests (SVT), the MSVT and the TOMM. He unexpectedly but unequivocally failed both measures, with performance near chance levels. His estimated IQ on the two-subtest WASI was within the Low Average range, with a pronounced discrepancy favoring Vocabulary over Matrix Reasoning. Performance was far below average on the WISC-IV Digit Span, WISC-IV Coding, and TEA-Ch Code Transmission subtests. Initial learning over five trials on the CVLT-C was adequate, as was free recall after a delay; however, the number of false positives during the recognition trial was quite atypical. Single word reading was age-appropriate.

From a psychosocial perspective, GD's mother's ratings on the BASC2 revealed "at risk" concerns on the Depression, Attention Problems, and Hyperactivity subscales. GD's own ratings on the BASC2 revealed "at risk" to clinically significant elevations on the Attitude to School, Sense of Inadequacy, and Attention Problems subscales. Validity indicators for both raters fell within normal expectations. During clinical interview, GD endorsed multiple postconcussive changes including ongoing daily headaches, severe memory impairment, and frequent confusion at school. Socially, he did not report any concerns. Family life was said to be "okay," although he reported some tension with his parents regarding what they viewed as his academic underachievement. Emotionally, he endorsed mild depressive symptomatology. He denied post-traumatic stress related to his injury and all other psychiatric problems.

Case Discussion

Compared with other youth who sustain mild TBI, GD's presentation was similar in some respects but different in a number of others. Immediately after the blow to the head, he displayed several of the most common acute injury characteristics of mild TBI, including appearing dazed and experiencing headache, balance instability, and memory disturbance. In the initial days and weeks after injury, GD also displayed some classic post-injury symptoms such as headache and fatigue. However, in contrast to most children who sustain mild TBI, GD's injury was associated with intracranial findings on imaging and thus would fall on the more severe end of the mild injury spectrum. Some of GD's eventual cognitive complaints were also unusual for individuals who suffer mild TBI of any severity, including navigational confusion in a well-known school environment and loss of certain academic skills.

During neuropsychological evaluation, multiple inconsistencies were noted, including widely varying neurocognitive performance and SVT failure. Ultimately, GD was deemed to have put forth insufficient effort during the exam. The etiology of the poor effort was not entirely clear, although it was judged related at least in part to his

Table 2. Test scores from GD's abbreviated neuropsychological battery

Test	Score	Performance Description
Green's Medical Symptom Validity Test		
Immediate Recall	50%	Fail
Delayed Recall	55%	Fail
Consistency	75%	Fail
Test of Memory Malingering		
Trial 1	Raw = 26	---
Trial 2	Raw = 27	Fail
Retention Trial	Raw = 27	Fail
Wechsler Abbreviated Scale of Intelligence		
Estimated 2-subtest IQ	SS = 88	Low Average
Vocabulary	T = 62	High Average
Matrix Reasoning	T = 24	Below Average
California Verbal Learning Test – Children's Version		
Total Trials 1-5	T = 44	Average
Short-Delay Free Recall	z = -2.0	Below Average
Long-Delay Free Recall	z = -1.0	Low Average
Recognition Hits	z = -1.5	Below Average
Recognition Discriminability	z = -4.0	Below Average
Wechsler Intelligence Scale for Children-Fourth Edition		
Digit Span	ss = 3	Below Average
Coding	ss = 4	Below Average
Test of Everyday Attention for Children		
Sky Search Attention score	ss = 8	Average
Code Transmission	ss = 1	Below Average
Delis-Kaplan Executive Function System		
Trail Making Visual Scanning	ss = 7	Low Average
Trail Making Number Sequencing	ss = 5	Below Average
Trail Making Letter Sequencing	ss = 5	Below Average
Trail Making Switching	ss = 6	Below Average
Letter Fluency	ss = 11	Average
Grooved Pegboard		
Right (preferred)	z = -1.9	Below Average
Left	z = -1.6	Below Average

Table 2. Test scores from GD's abbreviated neuropsychological battery *(continued)*

Test	Score	Performance Description
Woodcock-Johnson III Tests of Achievement		
Letter-Word Identification	SS = 99	Average
Behavior Assessment System for Children, Second Edition		
Maternal ratings	Hyperactivity = 64 Attention Problems = 66 Depression = 65	At risk
Self ratings	Attitude to School = 74 Sense Inadequacy = 70 Attention Problems = 65	At risk to Clinically Significant

recent school struggles. The brain injury and associated symptoms were thought to have compounded what GD perceived as an already taxing school situation, while simultaneously providing an unasked for but perhaps welcomed natural reprieve from the academic demands. The poor effort could have been a plea for more educational assistance or an attempt to maintain a reduced load at school. Regardless, the behavior was viewed as an attempt to adapt to a stressful and unrewarding situation.

Given the paucity of scientific attention focused on non-credible effort after pediatric TBI, some might consider GD's presentation as extremely unusual. However, a number of case reports have indicated that insufficient effort after pediatric TBI does occur (Henry, 2005; Lu & Boone, 2002; McCaffrey & Lynch, 2008), even if the motivating forces for poor effort in children can be expected to differ from those seen in adults and should not be equated simply with "malingering" (Kirkwood, Kirk, Blaha, & Wilson, in press). Despite the lack of historical attention, suboptimal effort may happen with some frequency after pediatric mild TBI. Kirkwood and Kirk (2010) recently examined 193 consecutive clinical pediatric mild TBI cases and found that 17% failed at least one stand-alone SVT, consistent with the judged overall rate of suboptimal effort once potential false positives and false negatives were taken into account.

In the case of GD, his symptoms were almost certainly neither exclusively "physiogenic" nor "psychogenic," but rather reflected an intertwined, complex constellation of both injury and non-injury related factors. Regardless of their exact source, the symptoms were functionally disruptive and necessitated specific support. Recommendations for GD focused first on providing him and his parents with education about TBI and the various factors thought to be playing a role in his current problems.

Psychotherapeutic intervention was also strongly recommended. Further evaluation of GD's mood was considered important, as was support for him in adjusting to the effects of the TBI, as well as the school and family stressors he had been facing. Medical follow-up with a physician with expertise in brain injury management was recommended as well. A medication that could potentially both reduce headache pain and improve mood (e.g., the antidepressant Amitriptyline) was suggested as worth considering.

At school, additional support was recommended, to be formalized in a Section 504 Plan. A primary point person was identified (i.e., counselor) who was to provide assistance in monitoring GD's academic progress and socioemotional adjustment during the remaining months of school and to insure that appropriate accommodations were implemented by classroom teachers. In terms of workload for the rest of the semester, an individualized plan was recommended that would allow GD to complete enough work to maintain

progress with his peers and demonstrate an understanding of the requisite knowledge or skills, but be titrated so that he would not become overwhelmed or overly fatigued. Finally, a repeat neuropsychological evaluation was recommended in 6 to 12 months, to more comprehensively document his neuropsychological status and update the management plan.

Conclusion

Few neurologic disorders have engendered as much historical controversy as mild TBI. Although select topics continue to be debated, scientific opinion in recent years has begun to converge to some consensus. Rigorous research has mostly confirmed that the effects of a single uncomplicated mild TBI are likely to be self-limiting and fairly benign for the majority of school age children. At the same time, neurobehavioral outcomes after pediatric mild TBI are apt to be more complex than assumed historically, especially for children who display evidence of more severe injury (e.g., neuroimaging findings). Because mild TBI is by definition, complexion, and course a construct that involves both neurological and psychological features, neuropsychologists are uniquely positioned to play an important role in its clinical management, given their dual training in the neurological principles of brain injury and the psychological principles of emotion and behavior. As the case of GD illustrates, optimal management requires a sophisticated biopsychosocial conceptualization, because both neurologic and psychosocial factors usually contribute to a child's post-injury presentation. When functional problems or lingering difficulties are apparent, neuropsychological assessment can help to ensure that all relevant domains have been considered and appropriate follow-up and intervention have been implemented.

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