PSYCHOPHYSIOLOGY

THE INTERNATIONAL JOURNAL OFTHE
SOCIETY FOR PSYCHOPHYSIOLOGICAL RESEARCH

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VOLUME 57 ■ OCTOBER 2020 ■ NUMBER S1

2020 Virtual Annual Meeting of the Society for Psychophysiological Research

Virtual Pre-Conference Workshop: October 4–6
Virtual Annual Meeting: October 7–9
Virtual Post-Conference Workshop: October 10–11
Website: www.sprweb.org

The 2020 Virtual Annual Meeting Program includes one Pre-Meeting Workshop, one Invited Address, Big Idea Sessions, Symposia, and a Post-Meeting Workshop. Specific research topics will be covered in the Symposia. The majority of the research reports will be discussed at the Poster Sessions.

This Supplement contains the abstracts from each presentation in the Symposia, Big Ideas, and Poster Sessions.

All authors are listed in the Index to Abstract Authors. In addition, abstract topics are listed in the Index to Abstract Descriptors.

We thank all contributors for sharing their research and making this meeting a rich and stimulating event!

Dan Foti
2020–2021 Program Committee Chair

Program Highlights

Sunday, October 4, 2020, 11:00 a.m.-3:00 p.m., EDT
Monday, October 5, 2020, 11:00 a.m.-3:00 p.m., EDT
Tuesday, October 6, 2020, 11:00 a.m.-3:00 p.m., EDT
Pre-Meeting Workshop
Mini ERP Boot Camp
Organizer and Presenter:
Steven J. Luck, PhD, Center for Mind & Brain and Department of Psychology, University of California, Davis

Wednesday, October 7, 2020

10:00 a.m.-11:00 a.m., EDT
Invited Address
Chemistry of the Adaptive Mind: Lessons from Dopamine
Roshan Cools, PhD
Principal Investigator, Motivational and Cognitive Control Lab, Donders Institute for Brain, Cognition and Behavior, Professor of Cognitive Neuropsychiatry, Radboud University Medical Center, Nijmegen, The Netherlands

11:00 a.m.-12:00 p.m., EDT
Symposium #1: RISKY BUSINESS: USING PSYCHOPHYSIOLOGY TO UNDERSTAND RISK AND REWARD IN HEALTH AND ILLNESS

12:30 p.m.-1:30 p.m., EDT
Big Ideas Session #1: Sex Differences and Women's Health

1:30 p.m.-2:30 p.m., EDT
Poster Session 1

2:30 p.m.-4:00 p.m., EDT
Diversity and Outreach Committee Event, co-sponsored by the Australasian Cognitive Neuroscience Society
Building Diversity Pipelines
Dr. Kim R. Bobby, D,E,&I Leadership Consultant, Higher Education
The effectiveness of implementation of institutional policies and practices aimed at increasing representation from diverse groups in academic and research environments is often hampered by weak recruitment and retention of faculty, staff and students from diverse backgrounds. Dr. Bobby will lead an interactive workshop targeting barriers and enablers of wider diversity pipelines in academia.

Thursday, October 8, 2020

10:00 a.m.-10:30 a.m., EDT
Early Career Award Address
Kyle E. Mathewson
University of Alberta

10:30 a.m.-11:30 a.m., EDT
Symposium #2: TO PREDICT OR NOT TO PREDICT: MODELING EEG DATA, PROMISES, AND LIMITATIONS

11:30 a.m.-12:30 p.m., EDT
Big Ideas Session #2: Understanding Laboratory and Real-world Behavior

12:30 p.m.-1:30 p.m., EDT
Poster Session 2

5:00 p.m.-6:00 p.m., EDT
Workshop: New Reviewer Do's and Don'ts
Monica Fabiani, Editor-in-Chief, *Psychophysiology*
Frini Karayanidis, Associate Editor
Lisa Gazke-Kopp, Senior Editor

In this workshop, the Editor-in-Chief of *Psychophysiology* and members of the Editorial Board will provide some tips and resources for new reviewers of journal articles, including how to get invited to do your first review, and what to do once you are, including best practices and typical problems.

Friday, October 9, 2020

10:00 a.m.-11:00 a.m., EDT
Psychophysiology Editorial Board Meeting

11:00 a.m.-12:00 p.m., EDT
Symposium #3: HOW AND FOR WHOM: FUNCTIONAL MECHANISMS IN COGNITION AND MOOD CONSIDERING SEX AND IDENTITY-RELATED FACTORS

12:30 p.m.-1:30 p.m., EDT
Awards Ceremony and Business Meeting

1:30 p.m.-2:30 p.m., EDT
Poster Session 3

Saturday, October 10, 2020, 10:00 a.m.-11:30 a.m., EDT
Sunday, October 11, 2020, 10:00 a.m.-11:30 a.m., EDT
Post-Meeting Workshop: ERP Decoding Methods
Organizer and Presenter:
Steven J. Luck, PhD
Center for Mind & Brain and Department of Psychology, University of California, Davis

Gi-Yeul Bae, PhD
Arizona State University

Aaron M. Simmons, BS
University of California, Davis,

Poster 3-055

SHIELDING CHIPS REDUCE EFFCTS OF ELECTROMAGNETIC RADIATION EMITTED BY HEADSETS ON EEG BRAIN ACTIVITY DURING AEROBIC EXERCISE AND IN THE RECOVERY PHASE

Diana Henz
University of Mainz, Germany

Descriptors: EEG, Electromagnetic Fields, Shielding Chips

Current research shows alterations in EEG brain activity induced by electromagnetic fields (EMFs). More specifically, increases in EEG alpha, beta, and gamma activity have been observed. In this study, we investigated the effects of EMFs emitted when wearing a headset during endurance training, and in the recovery phase, and application of a shielding chip on the headset. Subjects performed a running training on a treadmill at 80 % of maximum performance. We tested the following experimental conditions when wearing a headset during exercise and in the recovery phase: (a) headset switched on, (b) headset switched on plus music app without sound, (c) headset switched on with application of a shielding chip, (d) headset switched on plus music app and application of a shielding chip, and (e) headset switched off (control condition). High-density EEG was recorded from 128 electrodes applied according to the international 10–20 system before, during, and after each experimental condition. EEG beta and gamma activity increased in frontal, central, and temporal areas when subjects were exposed to headset-emitted EMFs compared to the control condition. When running the music app, increases in brain activity were significantly higher than headset use without music app. Additionally, these increases in EEG activity decreased significantly slower during the recovery phase when previously exposed to EMFs than in the control condition. Applying a shielding chip to the headset reduced the observed increases in brain activity during aerobic exercise and in the recovery phase.

Poster 3-056

MOTOR SEQUENCING TRAINING HAS A POSITIVE EFFECT ON SENSORIMOTOR FUNCTIONS IN PRESCHOOL CHILDREN

Eleonora Mirzajonova[1]; Sergey KIselev[2]
[1]Fergana State University, [2]Ural Federal University

Descriptors: Sensorimotor Development, Motor Sequencing Training, Neuropsychological Assessment

It is known that during preschool age there is high rate of sensorimotor development. It is important to establish the effective ways for developing this abilities in preschool children. The goal of this study was to reveal the effect of motor sequencing training on sensorimotor functions in 5–6 years age children. We compared the efficacy of two methods of training (motor sequencing training for children vs. conventional motor exercises) in a randomized controlled pilot study. The participants were 20 typically developing children aged 5–6 years. Children were randomly assigned to the intervention and comparison group. Children from intervention group participated in 12 weeks of motor sequencing training. This training trains the child to plan, sequence and process information more effectively through repetition of goal-directed movements. We used 3 subtests from Luria's child neuropsychological assessment battery to assess the sensorimotor functions (Kinetic praxis, Design coping, Imitating Finger Positions). The ANOVA has revealed ($p < .05$) that for all 3 subtests on sensorimotor functions the motor sequencing training was superior to the conventional motor training, with effect sizes in the medium-to-high range (0.53–0.90). The findings from this pilot study suggest that motor sequencing training can be used as an effective approach for development of the sensorimotor functions in preschool children. However, it is necessary to do further research for revealing the impact of motor sequencing training on neurocognitive development children.

Poster 3-057

SYMPATHETIC ACTIVATION AFTER FEMALE PERSPECTIVE TAKING INCREASES SUPPORT FOR DIVERSITY INITIATIVES AMONG MALE STEM ACADEMICS

Zachary Petzel; Lynn Farrell; Teresa McCormack; Rhiannon Turner; Karen Rafferty; Ioana Latu
Queen's University Belfast

Descriptors: Perspective Taking, Electrodermal Activity, Gender

Women are underrepresented in science, technology, engineering, and mathematics (STEM) and experience heightened activation of the sympathetic nervous system in threatening environments, such as in male-dominated STEM classrooms. Despite growing implementation of initiatives in academia to reduce the consequences of these gender gaps, diversity initiatives may be met with negative or indifferent attitudes among faculty. Using a dual-process framework of persuasion, we used virtual reality to manipulate exposure to information about the causes and consequences of gender bias in STEM and to facilitate taking the perspective of a female scientist. Male STEM academics (faculty, postdocs, PhD students; $N = 70$) took part in a virtual reality experience while electrodermal activity (EDA) assessed sympathetic activation. Participants watched a neutral or gender bias presentation, took the perspective of either a female or male scientist by viewing their virtual avatar in a mirror, and interacted with predominately male attendees during a virtual research conference. Male academics exposed to gender bias information reported more positive diversity attitudes compared to neutral information, particularly when taking the perspective of a female academic. Perspective taking as a female also led to greater EDA compared to male avatars, suggesting male academics exhibited heightened activation of the sympathetic nervous system, similar to women in male-dominated contexts. Lastly, sympathetic activation significantly predicted and indirectly accounted for positive diversity attitudes.

Funding: Research funded by the EPSRC (EP/S011919/1).

Poster 3-058

HEART RATE VARIABILITY CHANGE IN RESPONSE TO KETAMINE IN ADOLESCENTS WITH TREATMENT-RESISTANT DEPRESSION AND ASSOCIATIONS WITH NEURAL ENTROPY

Michelle Thai[1]; Kathryn Cullen[1]; Bonnie Klimes-Dougan[1]; Julian Koenig[2]
[1]University of Minnesota, [2]University of Heidelberg

Descriptors: Ketamine, Heart Rate Variability, Treatment Resistant Depression

Investigation of the neurobiological mechanisms of novel interventions is needed to target poor treatment response in adolescent depression. Neurobiological inflexibility may maintain depression by interfering with adaptive responses. Heartrate variability (HRV) and neural entropy may indicate inflexibility in depression and relate to treatment response. Before and after 6 ketamine infusions, 13 adolescents with treatment resistant depression completed clinical assessments and resting-state fMRI, during which photoplethysmography was used to record pulse-to-pulse intervals at a sampling rate of 50 Hz. Root Mean Square of the Successive Differences (RMSSD) and high frequency (HF)-HRV (absolute power from autoregressive models and a frequency band of .20 to 1 Hz) were calculated. Shannon entropy was calculated from rs-fMRI timeseries from subcortical regions from the Harvard-Oxford atlas. Post-ketamine, HF-HRV significantly increased, $t(11) = 2.10$, $p = .03$. While increase in HRV did not relate to change in depression, change in entropy in the subcallosal cingulate positively correlated with HF-HRV, $r(9) = .79$, $p = .006$. Results show ketamine effects neural and physiological changes, possibly representing increased autonomic flexibility as a mechanism of ketamine treatment response. Increased HRV may interact with neural entropy to target depressive symptoms. Neurobiological flexibility may be critical for treatment changes. Randomized control trials with larger samples are needed to more thoroughly probe the relationship between HRV, entropy, and clinical improvement.

Funding: This research was supported by the National Institutes of Health's National Center for Advancing Translational Sciences (UL1TR002494, 1UL1RR033183, UL1TR000114), Biotechnology Research Center (P41 EB015894), the NINDS Institutional Center Core Grants to Support Neuroscience Research (P30 NS076408), the High Performance Connectome Upgrade for Human 3T MR Scanner (1S10OD017974-01), the NIDA T32 Postdoctoral Training Program (5T32DA037183-05), the University Foundation, Amplatz Scholarship, and the Society for Psychophysiological Research (SPR) Research Training Award.