

PSYNAPSE



THE NEWSLETTER OF THE CPA'S PSYCHOPHARMACOLOGY SECTION

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A Message from the Editor

Bryan Butler, M.A.

McGill University

Dear members of the Psychopharmacology Section,

I am excited to present you with the latest issue of *PSYNAPSE*! I am a Ph.D. student at McGill University and have joined the section as the new Student Representative and Newsletter Editor. I discovered the psychopharmacology section while completing the CPA continuing education course *A Psychologist's Guide to Psychopharmacology* and was eager to join the section and contribute to this important area of applied psychology. Shortly after completing this course I became aware of the current RxP (prescription authority for psychologists) movement in the USA. I am interested in exploring RxP in Canada and facilitating discussions amongst Canadian graduate students and licensed psychologists. Currently, I am working towards creating an official relationship between our section and Division 55 of the APA, the American Society for the Advancement of Pharmacotherapy (ASAP). I look forward serving the section and working with you all!

Kind regards,

Bryan



Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives

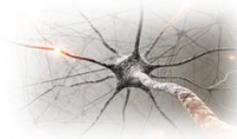
David Nussbaum, Ph.D., C. Psych.

University of Toronto

As we are all attempting to cope, and thrive as much as possible, with the present COVID epoch, it behooves us to look at where we were prior to this chaos, and think about how we might proceed after the COVID chaos passes. My initiation into the area of specifically trained psychologists obtaining psychotropic prescription privileges (RxP) occurred in 1995 when APA Division 55 colleague, Dr. Robert Ax met with me in downtown Toronto. Being that my Ph.D. was in Biological Psychology, I was naturally interested in helping and motivating fellow psychologists to appreciate the power and complexity afforded by behavioural neuroscience, and the potential, down the road of expanding their practice and ability to more completely serve the needs of their clients or patients dealing with mental disorders. From its' inception, the Section supported the RxP initiative (currently referred to as Prescriptive Authority PA.)

The CPA Board did not share the Section position on RxP. In 2001, likely because I was Chair of the Section, the Editor of Canadian Psychology (CP) asked me to review a submission by G.D. Walters that took a decidedly negative perspective on the RxP initiative. My analysis of that manuscript was that although it satisfied criteria for acceptance, it contained a number of what I saw as flawed arguments that I enumerated in my review. The editor suggested that I write my comments in publication form so that CP readers could evaluate the data and arguments presented in both papers. That is exactly what happened.

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Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives (continued)

David Nussbaum, Ph.D., C. Psych.

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However, what did happen was that in June 2007, the CPA Board commissioned a Task Force to examine the RxP issue. Professor Lorne Sexton of the University of Manitoba who was the CPA Board member in charge of Professional Affairs chaired the 10 person-Task Force. In September 2008, the Task Force began its work after reaching the finalized terms of reference and Task Force membership. Five Section Chars (including me) and four representatives of other psychological associations rounded out the Task Force. We met roughly monthly by conference calls for approximately a year and published "The CPA Task Force on Prescriptive Authority for Psychologists in Canada" in November 2010.

My recollection is that I was the only psychologist on the Task Force solidly in favour of RxP/Prescriptive Authority for our profession. Reasons for rejecting RxP/PA ranged the pragmatic (extensive costs of mounting an advocacy campaign for an uncertain outcome) to the dubious (how it would confuse our professional identities), to what I considered as absurd (how we would jeopardize our positive relationships with psychiatrist colleagues).

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Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives (continued)

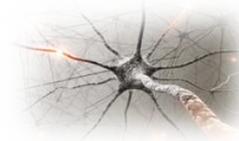
David Nussbaum, Ph.D., C. Psych.

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After a number of sessions, I realized that simply pointing out the merits of expansion of our scope of practice (ability to help underserved populations across our country, providing complete mental health treatment to a broader array of clients/patients, prescribing more conservatively as an adjunct to psychotherapy when appropriate and even terminating inappropriate medications) was having little impact. Given that the Task Force was looking for a “consensus”, I believed that a positive outcome would not be forthcoming.

It was then that I decided to change strategy. Basically, I pointed out to my colleagues that unless they had a familiarity with the basic mechanisms and effects of drugs on neural information processing and subsequent behaviour, they could not function as competent psychology professionals. The logic behind this assertion is that many people that we psychologists assess and treat are either taking medication prescribed by their family physician or psychiatrist, or taking some recreational drug. Both licit and illicit drugs can have powerful effects on perception, cognition, (including attention and memory processing), motivation, emotions, motor function and energy levels. Absent knowledge concerning the effects of psychotropic drugs on psychological functions, one cannot tell the extent that a measured IQ, Memory Quotient, personality T Score or level of engagement and processing during a particular therapy session is explained by the individual’s capacities, characteristics, the effects of the drugs, or an interaction of the two.

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Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives (continued)

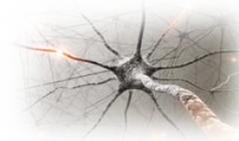
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Although this did not sway the colleagues with respect to RxP/PA, it did impress upon them the inadvisability of remaining unaware of basic clinical psychopharmacology. The Task Force report (see URL in the reference list below) recommended that Graduate Clinical Programs in Canada require a Clinical Psychopharmacology course to provide basic training in the mechanisms and effects of major therapeutic and recreational drug classes. Additionally, CPA mounted an on-line Clinical Psychopharmacology Course for interested members. I delivered the basic science lectures and Dr. Morgan Sammons, one of the original graduates of the Department of Defense Demonstration Project and a fully licensed medical (prescribing) psychologist provided the clinical lectures. Approximately 300 psychologists have taken this CPA course. I have been privileged to teach CPS 1809, Clinical Psychopharmacology semi-annually since 2018 in the Clinical Psychology Science Graduate Program at the University of Toronto Scarborough.

It is at the state or provincial level that RxP/PA initiatives are advanced, consistent with the delegation of health-care responsibility to states and provinces in the United States and Canada respectively. Through a concerted OPA initiative headed by neuropsychologists Drs. Diane Velikonja and Jane Storrie, Ontario was reasonably close to achieving RxP/PA status, but then Premier Kathleen Wynne changed Health Ministers and the impressive progress made with the former Health Minister was abrogated, necessitating a re-start under a less sympathetic Health Minister.

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Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives (continued)

David Nussbaum, Ph.D., C. Psych.

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Drs. Storrie and Velikonja did their “homework” by obtaining support from nursing and physician groups in Ontario. Across medical jurisdictions, General Practitioners, write about 85% of psychotropic medication prescriptions. Having clinical psychologists take some of that sticky, time-consuming load off their hands is something that general and family physicians would welcome. Psychiatrists? Not so much. The story in Ontario is being written still and OPA has always had the support of our Section in that endeavor.

In any case, as members should know, CPA is holding its Convention on-line this year because COVID-19 precautions preclude our meeting “in vivo.” Our Section will put on our complete program. Highlighting this year’s program is a special presentation by Dr. Beth Rom-Rymer, who spoke to us almost a decade ago when she initiated an RxP/PA campaign in Illinois. It is gratifying to note that under Beth’s talented guidance and perseverance, Illinois is successfully now another state where psychologists, with appropriate training can prescribe psychotropic medications. She will grace us with a description of the process involved in her success. Dr. Rom-Rymer is an engaging speaker and a consummate leader. Please stay tuned for the date and time that will follow when CPA finalizes the ZOOM Convention schedule.

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Reflections on the CPA Section on Psychopharmacology: Historical and Future Perspectives (continued)

David Nussbaum, Ph.D., C. Psych.

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I have been Chair of this Section since its inception in 1996. It has been a great experience and provided the opportunity to meet so many good- and forward-looking colleagues over the almost 2 and half decades. Although I will continue to serve as a member of the Section Executive, I have searched for a Candidate to replace me and I now have one exemplary candidate, Dr. Amir Sepehry, who teaches graduate level Clinical Psychopharmacology at Adler University in Vancouver, among the other psychology/counselling faculty hats he wears. Amir is a highly competent and very knowledgeable psychology faculty, who is dedicated to the aims and goals of the Section. Anyone else wishing to run for the position should inform me of your intentions within the next 2 weeks and we will hold an "e-election." I can be contacted at: dr.david.nussbaum@gmail.com

Additionally, we have a new Student Representative and Newsletter Editor, Bryan Butler, who is a Ph.D. student at McGill University. Bryan is a bright, energetic and enthusiastic. Best wishes to all Section Members, stay well and safe and we look forward to seeing you on ZOOM.

David

David Nussbaum, Ph. D., C. Psych.

https://cpa.ca/docs/File/Task_Forces/CPA_RxPTaskForce_FinalReport_Dec2010_RevJ17.pdf

Nussbaum, D. (2001.) Psychologists should be free to pursue prescription privileges : A reply to Walters. *Canadian Psychology*, 42, 126-130.

Walters, G.D. (2001.) A meta-analysis of opinion data of the prescription privilege debate. *Canadian Psychology*, 42, 119-125.



Vaping-Related Brain Injury: A Review of Case Studies

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

Adler University

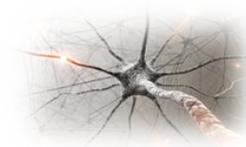
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Electronic cigarettes (e-cigarettes) are increasingly popular battery powered devices that deliver an inhalable aerosol- or vapor- to users by heating up a liquid containing flavouring chemicals, propylene glycol and/or glycerin, and often nicotine (Hua & Talbot, 2016). Invented in China in 2004 by a pharmacist and then made available to North America in 2006, e-cigarettes are currently patented in the United States as an electronic atomization cigarette that was widely marketed as a substitution for quitting cigarette smoking (Grana, Benowitz, & Glantz, 2014), or Tetrahydrocannabinol (THC) or cannabidiol (CBD) delivery (Singh, & Lippmann, 2018; Park, O'Sullivan, Vallarino, Shumyatcher, Himes, Park, Christiani, Allen, & Lu, 2019).

The prevalence of e-cigarette use is growing. A 2017 study estimated that 272,000 Canadians aged 15 to 24 years used e-cigarettes over a 30-day period (Ottawa, 2019). Despite the wide use of e-cigarettes- commonly known as vaping, confusion around the effects of vaping abounds, and research on their short- and long-term impact on health remains scarce. This issue deserves attention as more adults and youth seek to use the conventional cigarette alternative as a means of quitting smoking and preserving wellness.

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

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Recently, a limited number of studies examine the possibility of serious health implications linked to e-cigarette beyond emerging serious lung concerns to include oral, cardiovascular, immunologic, hematologic, allergic reactions, infant exposure complications, and potentially altered pharmaco-dynamics and pharmaco-kinetics (Tzortzi, Kapetanstrataki, Evangelopoulou, & Beghrakis, 2020; Garcia, Gornbein, & Middlekauff, 2020), in addition to brain injury and eventual brain death.

The predominance of research into e-cigarettes has examined their various ingredients as scientists attempt to question if these cigarette alternatives cause as many health problems as they purport to prevent. Studies have shown that cytotoxic effects vary among their fluid refills with some flavours demonstrating discernible levels of toxicity (Bahl et al., 2012). Specifically, it has been established that a high percentage of e-cigarette fluid contains toxicants like diacetyl and diethylene glycol and that the aerosols contain formaldehyde-hemiacetals, ultrafine particles, and metals (Hua & Talbot, 2016). Of note, not all fluid and aerosol products are created equal and that levels of toxicity vary between products and remain widely untested for long term health effects.

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

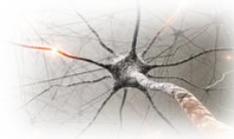
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In August 2019, the Centers for Disease Control (CDC) and Prevention identified that e-cigarettes have been the cause of a unique, new lung disease called e-cigarette or vaping product use-associated lung injury (EVALI) (Krishnasamy, 2020). The exact link between e-cigarettes and EVALI remains yet unproven though much of the research on the matter has found that most samples of afflicted individual's vaping products tested positive for THC as well as vitamin E acetate (CDC, 2020). Work continues on examining if other ingredients in e-cigarettes are associated with the disease, with a recent study into vitamin E acetate finding that when vaped, it produces exceptionally toxic ketene (ethenone) gas, and carcinogenic alkenes and benzene (Wu & O'Shea, 2020). It was found that vaping products from informal sources like in-person purchases or online were further likely to contain more potentially dangerous chemical substances, often with poor concordance between labeled and actual ingredient content (Grana, Benowitz, & Glantz, 2014). EVALI is a general term describing various causes of acute lung damage due to vaping and is considered a diagnosis of exclusion as no test currently exists to identify it. Several patterns of adverse reactions to vaping have been reported under the term EVALI, including hypersensitivity pneumonitis, diffuse alveolar hemorrhage, organizing pneumonia, acute eosinophilic pneumonia, and lipoid pneumonia, and in some cases, death (Kalininskiy et al., 2019; Landman et al., 2019).

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

Adler University

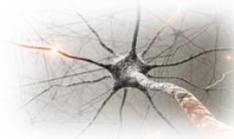
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As of February 4, 2020, 2,758 cases of hospitalized EVALI and EVALI deaths were reported by all 50 states in the United States as well as the District of Columbia and two United States territories (CDC, 2020). Specifically, 64 deaths had been confirmed at that time across 28 states and the District of Columbia (CDC, 2020). Currently, the CDC and the Food and Drug Administration (FDA) urges individuals to avoid e-cigarettes that contain THC. As well, the FDA has cautioned against adding substances to vaping products and to ensure the purchase of the material from established sources (Siegel et al, 2019).

With regards to the brain, the link between lung injury and brain dysfunction has long been established (e.g., Schultz, Sepehry, Greer, 2018), and e-cigarettes continue to be studied for their possible deleterious effects. Research on this area have looked in particular at the risk to adolescents and pregnant women who use e-cigarettes often as a smoking alternative and the results have focused on the risk of damage to stem cells. Zahedi's 2019 study of e-cigarette induced stem cell toxicity have labeled the phenomenon as stress-induced mitochondrial hyperfusion (SIMH). Described as a protective survival response, the researchers identify e-cigarettes, their liquid and aerosol as producers of a response that leads to SIMH.

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

Adler University

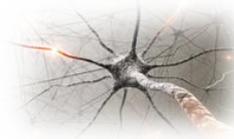
Izabela Z. Schultz, Ph.D., ABPP, ABVE, FACP

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They stipulate that this risk occurs in both the short- and long-term e-cigarette use as the high levels of nicotine in the products lead to a nicotine flooding of special receptors in the neural stem cell membrane where nicotine binds to these receptors, causing them to open up which allows for calcium and other ions to enter the cell, ultimately leading to a calcium overload which harms the mitochondria (Zahedi, 2019). This stem cell and mitochondria damage is linked to accelerated aging and neurodegenerative diseases - which Zahedi argues is a particular risk for adolescents and pregnant women whose brains are in critical developmental stages.

Reports of brain death related to e-cigarettes remain low; however, three cases are selected here as particularly illustrative of the complexity and seriousness of the clinical issues involved. A 29-year old female with a history of severe depression subcutaneously injected 10mL of liquid nicotine from an e-cigarette cartridge after consuming 75mg of diazepam and alcohol in a suicide attempt (Räsänen et al., 2017). The vaping material caused brain death by nicotine intoxication after respiratory arrest and hypoxic-ischemic encephalopathy. In conventional cigarettes, the nicotine content is between 10 and 30mg and the absorbed amount of nicotine from smoking a cigarette is between 0.05 and 3mg.

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

Adler University

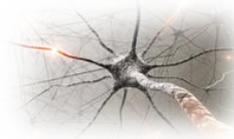
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The female who injected herself with e-cigarette fluid did so at a rate of 100 to 400mg. A second case of brain death was reported by Lee et al. (2020), describing a 26-year old male patient with a history of severe depression who ingested 10mL of e-cigarette fluid at a rate of 990mg/mL in a suicide attempt. In his article, Lee and colleagues compared the conventional cigarette's nicotine to the accessibility of vaping liquid concentrate. They warned that e-cigarette fluid can be dangerous as a lethal dose of the fluid has been estimated to be as little as 40mg in adults and 1mg/kg in children. A third case of brain death was studied by Thornton, Oller, and Sawyer in 2014, as a 29-year old man with a history of depression was found with a suicide note indicating he had intravenously injected himself with e-cigarette fluid. Ultimately, he was diagnosed with anoxic encephalopathy and declared brain dead after five days of treatment at the hospital.

The studies into the purported health of e-cigarettes continue to recommend more research and investigation. However, current science suggests the short-term and long-term possible damage to stem cells and mitochondria which can lead to neurodegenerative diseases as well as the risk of nicotine intoxication and brain injury and death as a result of the high levels of nicotine and other substances in e-cigarette fluid.

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Vaping-Related Brain Injury: A Review of Case Studies (continued)

Adam Rollins, M.Ed. & Amir A. Sepehry, M.Sc., Ph.D.

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Izabela Z. Schultz, Ph.D., ABPP, ABVE, FACP

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Although substantial research evidence has been collected on the adverse neuropsychological impact of a wide range of anoxic and hypoxic factors (Schultz, Sepehry & Greer, 2018) and neurotoxicity of variety of commonly accessible substances, it is not certain what is the unique mechanism by which the e-cigarettes affect individual's brain and their neuropsychological function. Interaction of substance related characteristics of e-cigarettes, including chemical composition, dose, duration of use and potential neurotoxicity likely interact with individual characteristics, such as age, brain health, and medical and mental health comorbidities. The nature of these interactions remains virtually unknown, which calls for more research evidence to lead public education and intervention efforts.

Contact Amir A. Sepehry, Ph. D. for a full list of references

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Review of Select Abstracts for the CPA-2020

Amir A. Sepehry, M.Sc., Ph.D.

Adler University

From the Adler University (Vancouver campus) several abstracts for the CPA-2020 annual Conference, poster presentation, were submitted. Herein, a brief review of the abstracts are presented here.

Two abstracts were highlighting treatment efficacy of Eye Movement Desensitization and Reprocessing (EMDR) for depression signs and symptoms via meta-analysis. The initial meta-analysis examined the effect of EMDR versus other treatment modalities (e.g., Psychopharmacology, waiting list/treatment as usual, biofeedback), on depression. This is the largest meta-analysis to date that specifically examined dose-response for primary and secondary depression. The subsequent meta-analysis examined the treatment efficacy of EMDR for cognitive and neurovegetative symptoms of depression. In sum, studies have shown that the EMDR is an efficacious tool for management of depression (primary or secondary), yet the examination of the effect of EMDR for the cognitive and neurovegetative symptoms of depression remain, relatively unexplored.

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Review of the Abstracts for the CPA-2020 and Psychopharmacology Newsletter

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Amir A. Sepehry, M.Sc., Ph.D.

Adler University

These two abstracts were written in collaboration between Psychology and Counseling programs from the Adler University, and suggested that future studies, examining the various psychopharmacological treatments approaches [add-on therapy (poly-pharmacy, or polytherapy), or augmenting therapy] versus EMDR by taking into account of depression factor loadings (neurovegetative and cognitive, irrespective of affective symptoms) are needed.

From the psychology department of the Adler University, we have also underscored the effect of vaping (e-cigarette aimed at substituting smoking tobacco, or recreationally used) related brain injury, and vaping-related death/suicide, via two studies. The first study, a meta-analysis descriptively examined published cases (individually or series) on vaping-related deaths/suicide. The second study, a review of the literature, showed the relationship between vaping, lung injury, and subsequent brain injury. In brief, the two studies underscore the impact of vaping (holding substances of including over 40 classified and unclassified potentially harmful chemicals) on death/suicide, and related brain injury.

Additional abstracts were also submitted to the CPA under different divisions that examined risk and protective factors related to resilience in youth and psychometrically examining suicide risk assessment measures.



A Call for Contributions for the Upcoming Psynapse Issue

Bryan Butler, M.A.

McGill University

I hope that you all enjoyed the articles included in this issue of Psynapse!

1. We are accepting contributions for our next issue scheduled to be distributed later this summer. The theme of the next newsletter will be: *an overview of psychopharmacology: from science to practice*. Submissions may range from informal commentaries to reviews of interesting articles, or abstracts.
2. We are also looking to hear from members regarding section ideas and future directions.

Please contact Bryan or Amir if you have any questions and/or comments:

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