

Health Notes

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Message from the Chair

Another exciting program at the annual meeting in Victoria !

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On behalf of the Section Executive, I would like to welcome all new and returning members to the section and summarize what a great program we had this year! We held a pre-conference workshop on mental health and addiction by two outstanding clinician-scientists, Drs. Sherry Stewart (Dalhousie) and Kim Corace (U of Ottawa).

We were also very pleased to welcome Dr. Eli Puterman (UBC) to present on *Stress and Resiliency* in the context of chronic disease prevention as our Section Invited Speaker. We learned that fetal programming and early life exposure to stress can be reversed through lifestyle change including eating a healthy diet and regular physical activity. We were also delighted to feature two member-driven symposiums – one on improving empathy in cancer care and another on optimizing your research productivity on a budget! Both were very well attended and well received.

Our awards program continued this year; we were proud to award our Mid-Career Investigator Award to Dr. Simon Bacon (Concordia U), for his work on chronic disease prevention and improving the quality and impact of behavioral interventions (trials). The award

was presented by our awards Chair, Dr. Wolfgang Linden (UBC) at our annual Wine and Cheese Reception that was attended by new and returning section members. Finally, we are pleased to announce the two winners of our student poster award competition: Ms. Jenna Thomas (U of Calgary, supervised by Dr. Tavis Campbell) and Will Lee (UBC, supervised by Dr. Thomas Kerr) for their work on infant stress reactivity and adherence in HIV-positive patients, respectively.

Overall, the Section program was a huge success. We had a total of 48 submissions that included 39 posters, 2 symposia, 1 workshop and 1 digital poster – and we look forward to receiving your submissions again next year when we meet in Toronto! Our awards program will continue, with our Early Career Investigator Award (we are accepting nominations through January 15th, 2017) and student poster competition. Looking forward to seeing you there!

Kim Lavoie,
Health Psychology and Behavioral
Medicine Section Chair

Memorable talks at the Victoria convention !

Stress and resiliency in the aging population

ELI PUTERMAN, PhD
(British Columbia)

Eli Puterman completed undergraduate degrees in Physiology (McGill) and Psychology (Concordia), a MA in Clinical Psychology and PhD in Health Psychology (UBC). He completed his postdoctoral work and held his first Assistant Professor position at The University of California San Francisco, with the support of the highly competitive NIH K99/R00 Pathway to Independence Award. In 2015, he was awarded a Canada Research Chair Tier 2 in Physical Activity and Health and moved to UBC as an Assistant Professor in the School of Kinesiology. He was won several international young investigator awards, including from The Society of Behavioural Medicine in 2014 and The Academy of Behavioural Medicine Research

2015.

His research focuses on aging population in Canada and across the globe, bringing with it an ever-increasing prevalence of preventable diseases of aging. The experience of adversity across the lifespan can accelerate the development of such diseases, in part through a series of biological and psychological systems that are worn down in response to repeated or continuous stressors. In this talk, UBC's Eli Puterman, PhD, focused on several of these biological pathways, including cortisol reactivity to acute stressors and telomere biology. He presented a novel model that re-conceptualizes physical activity as stress resiliency, with an overview of his work that highlights the multiple of ways habitual physical activity prevents the biological and psychological degradation often

seen in high stressed populations. He further outlined a model that included other factors, such as sleep quality, food intake, social connections and psychological resilience, that, when combined, provide even greater protection from the damaging effects of stress. He explored the major limitation of current work on resiliency: that without intervention studies designed to manipulate behaviours, it is impossible to know whether resiliency is malleable or not or whether accelerated aging can be mitigated in high stressed individuals.

How to develop behavioral interventions: Insights from new international advances



Invited speaker Eli Puterman (left) and 2016 Mid-Career award winner Simon Bacon (right)

As many people will be aware, poor health behaviours, namely physical inactivity, smoking, excessive alcohol consumption, a poor diet, and medication non-adherence, are the cause of most non-communicable chronic diseases (NCDs, e.g., cardiovascular disease, cancer, respiratory disease, etc.) affecting the world today. Whilst there is significant robust epidemiological data demonstrating these relationships, attempts to intervene on these behaviours have generally been less fruitful. For every Diabetes Prevention Program (DPP) there is an ENRICHD or a Look AHEAD trial. When looking at the behavioural intervention literature there have been a string

of null trials which have left many wondering if there are actual causal relationships between health behaviours and NCDs or if it just impossible to consistently change these behaviours to influence NCD outcomes. Of course, these conclusions are predicated on the assumption that the null trial is actually a failure of the hypothesis. Unfortunately, too often it is just as likely that the null finding reflects a failure of the intervention rather than the hypothesis. Taking a closer look at the Look AHEAD trial suggests that this maybe a null trial due to the failure of the intervention rather than the hypothesis. Look AHEAD, for

which the main paper was published in the New England Journal of Medicine in 2013, was a trial assessing the impact of a lifestyle-based weight loss intervention on incident major cardiovascular events over 10 years in overweight patients with type 2 diabetes. Theoretically, it was a kind of second phase to the DPP study. Over 5,100 patients from 16 centres across the US were randomised to the intervention (6 months of weekly counseling focused on calorie intake reductions and increased physical activity, then a reduced interaction after that) or a comparison (diabetes education 3 times per year) arm. Over the 10

“How could it have changed cardiovascular outcomes if it didn’t change the behavioral mediators of those outcomes ?”

year follow-up there were no differences in cardiovascular events between the groups (HR=0.95 [95% CIs, 0.80-1.09]). So what evidence is there that this is a failure of the intervention? Firstly, if you look at the behavioural targets for the intervention, they are a 7% decrease in weight from baseline (vs. comparison) and 175 minutes per week of moderate intensity physical activity. The paper reports that there was a significant reduction in weight in the intervention group compared to the comparison group but this only reached 4%, so that target wasn’t achieved. Unfortunately, the physical activity data was not reported in the main paper (though subsequent papers seem to indicate that the goal was not achieved). As such, it would seem from a basic behavioural perspective the intervention did not do what it was supposed to do, and as such, how could it have changed cardiovascular outcomes if it didn’t change the behavioural mediators of those outcomes? Of course, it could be that the pilot testing provided overly optimistic expectations for the main trial which were not eventually realised (which does happen). A close review of the methodology of the Look AHEAD trial suggests that the intervention was modeled on the DPP but with the addition of “strategies that have been shown to be most effective for long-term weight-loss.” This has the feel of throwing everything, but the kitchen sink, into the intervention. However, the more concerning issue is that it would seem that the “it seemed like a good idea at the time” intervention wasn’t even piloted. An analogy to this would be conducting a massive “polypill”

drug trial combining an antihypertensive, lipid lowering, and anti-platelet medications, on the hunch that they should all work well together. So there are enough red flags to suggest that the null Look AHEAD trial might be as much a failure of the intervention as it could be a failure of the hypothesis. Given that such a large behavioural trial has such question marks, the next question could legitimately be what can we do to ensure this doesn’t happen again? There have been a number of recent major efforts to provide guidance and structure to this process, including the MRC’s complex intervention framework and the NIH’s ORBIT model, these are great documents to read to anyone doing or interested in behavioural trials. Another emerging effort is the development of the International Behavioural Trials Network (<http://IBTNetwork.org>), which is an open group interested in improving the quality and quantity of behavioural trials being conducted across the world. I would recommend that all trialists, both those conducting trials as well as those thinking about it, take a look at the website and sign-up the newsletter.



2016 Awards Winners

Mid-Career investigator award: Dr. Simon Bacon

KIM LAVOIE, PhD
(Montreal)

Dr. Simon Bacon (Dept. of Exercise Science, Concordia University in Montreal) is the winner of this year's Mid-Career Award for the Health Psychology and Behavioral Medicine Section that recognizes and celebrates significant and sustained contributions in health psychology in Canada over a career.

Simon studied Chemistry at de Montfort University, then went on to study Exercise Science and Applied Psychophysiology at Warwick University and the University of Birmingham in the UK. He was awarded his PhD in 2002 from the University of Birmingham, working with Health Psychology pioneers Doug Carroll, PhD and Chris Ring, PhD. He went on to complete two post-doctoral fellowships, one with Jim Blumenthal, PhD at Duke University and another with Blaine Ditto, PhD at McGill. He has been a Professor in the Department of Exercise Science at Concordia University since 2005, where he was recently promoted to Full Professor.

Simon's early research in cardiovascular psychophysiology helped identify the bio-behavioral mechanisms through which stress contributes to hypertension and cardiovascular disease. More recently, he has been working in the area of behavioral interventions for chronic disease, including the impact of exercise and weight loss on asthma and early lifestyle intervention in those at risk for chronic disease. This work has received continuous support from CIHR, FRQS, CPAC and many others, and he has been exceptionally productive with over 130 peer-reviewed publications (many in top journals including *JAMA*, *CHEST*, and *Psychosomatic Medicine*).

Throughout his career, Simon has held several important leadership positions, including Graduate Program Chair at Concordia University, Co-Director of the Montreal-Behavioral Medicine Center, Co-Lead of the Behavioral Science Platform at the Canadian Respiratory Research Network, President of the

Canadian Association of Cardiovascular Rehabilitation and Prevention, and Co-Lead of the International Behavioral Trials Network. He has been an active member of CPA for years and has served on the Section Executive since 2013 as Treasurer.

Simon has made an outstanding contribution to mentoring and training, having supervised over 40 post-docs, graduate and undergraduate students. Many of his former trainees have gone on to become successful researchers in major Universities across North America including Jennifer Gordon (U Regina), Anthony Austin (U Birmingham, USA) and Gregory Moullec (U of Montreal).

We congratulate him on being awarded CPA's Health Psychology and Behavioral Medicine Section Mid-Career Investigator Award for 2016!



Student Poster Award : Jenna Thomas

JENNA THOMAS, PhD Candidate
(Calgary)

I am currently a Clinical Psychology doctoral candidate at the University of Calgary. My research is based on data from the Alberta Pregnancy Outcomes and Nutrition (APrON) study cohort, which collected measures of maternal mental health and nutrient status during pregnancy and child health and developmental outcomes. Studies focus on elucidating the impact of maternal stress during pregnancy on child development, with a particular focus on identifying protective factors that can

serve as intervention points to promote healthy emotional, behavioural, and cognitive development. There is promising new research that has shown that essential nutrient intake during pregnancy may reduce the amount of maternal stress hormones (i.e. cortisol) that reach the fetus, and therefore may protect the developing fetal brain from the harmful effects of stress. Thus, my doctoral thesis will examine whether maternal dietary quality during pregnancy is protective against the effects of psychological and biological stress on child neurocognitive devel-

opment. This research will contribute to a growing body of research that can inform public health initiatives to improve prenatal health. Upon completion of my doctoral degree in Clinical Psychology my career goal is to hold a clinical research position and to conduct research that informs integrative prenatal mental health initiatives that will improve policy, practice, and health service planning for pregnant women and families in Alberta.

Expert Report

Ce « p » qui nous rend dingue !

Quelle est la probabilité que le hasard explique **à lui tout seul** une différence au moins aussi importante que celle qui est observée ? C'est LA question à laquelle les 6 millions de chercheurs de cette planète¹ (et oui, ça en fait !...) cherchent continuellement à répondre. C'est le fameux « p value » ! C'est une valeur qui fascine, qui obsède, et qui nous fait souvent oublier que les conditions ne sont pas toujours réunies pour l'interpréter avec justesse. Cette valeur de probabilité est issue des non moins célèbres « tests d'hypothèse » ou « tests statistiques » : p. ex., le test t de Student, les tests de régression linéaire, et de régression logistique. Mais pourquoi notre interprétation de ce « p » est-elle souvent considérée comme abusive ? C'est une question brûlante qui a donné lieu ces dernières années à de nombreux éditoriaux et articles de sensibilisation.²⁻⁷

Une première situation qui complique l'interprétation du « p » est lorsque les chercheurs n'ont pas recours au tirage au sort pour constituer leur groupe d'étude. Ils utilisent alors les tests statistiques en faisant *comme s'il y avait eu ce tirage au sort* – c'est ce caractère probabiliste qui justifie l'emploi de ces tests. Cela n'est pourtant pas vrai et cela entraîne un affaiblissement de la validité des conclusions des études. La prise en compte des variables d'ajustement dans un modèle multivarié permet toutefois de limiter la portée du problème.

La présence de biais opportunistes est une autre situation où l'interprétation habituelle du « p » devient délicate. Ces biais sont présents lorsque les chercheurs explorent leurs données de multiples façons avant de choisir les analyses qu'ils présenteront dans la version définitive de leurs papiers.⁴ Parmi les procédures conduisant à ces biais opportunistes, il y a notamment le fait d'examiner une longue liste de variables, examiner différentes façons de transformer une variable, vérifier la même hypothèse en utilisant différentes analyses, vérifier la même hypothèse dans différents sous-groupes de participants, examiner plus attentivement les

résultats négatifs que les résultats attendus. Chaque test supplémentaire augmente la probabilité qu'au moins un des résultats significatifs observés soit en fait dû seulement à la chance. Alors qu'après 2 tests, ce risque est de 10 %, il peut monter à 40 % et 93 %, après 10 et 50 tests, respectivement.

Ces interprétations abusives des « p » posent problème pour la reproductibilité des résultats,⁸ la pertinence des modèles théoriques développés, et enfin, plus que tout, pour l'utilité des résultats chez nos patients en souffrance dans le domaine de la santé. Il devient essentiel que les chercheurs prennent véritablement conscience des enjeux liés à ces situations mettant en péril l'interprétation juste et honnête de leurs résultats. Il en va de la confiance accordée aux recommandations faites par la communauté scientifique. L'enregistrement des protocoles en ligne (p. ex., sur ClinicalTrials.gov), le développement des tests d'hypothèse bayésienne, ou encore le report systématique des intervalles de confiance et des tailles d'effet sont les solutions les plus souvent proposées pour remédier à cette « crise du p ».

1. http://www.sssoc.org/2015_02_20_STM_Report_2015.pdf, 2015.2.
Ioannidis JP. Why most published research findings are false. *PLoS Med* 2005;2(8):e124.3. Ioannidis JP, Greenland S, Hlatky MA, et al. Increasing value and reducing waste in research design, conduct, and analysis. *Lancet* 2014;383(9912):166-75.4. DeCoster J, Sparks EA, Sparks JC, et al. Opportunistic biases: Their origins, effects, and an integrated solution. *Am Psychol* 2015;70(6):499-514.5. Kyriacou DN. The Enduring Evolution of the P Value. *JAMA* 2016;315(11):1133-5.6. Chavalarias D, Wallach JD, Li AH, et al. Evolution of Reporting P Values in the Biomedical Literature, 1990-2015. *JAMA* 2016;315(11):1141-8.7. Baker M. Statisticians issue warning over misuse of P values. *Nature* 2016;531(7593):151.8. Open Science C. PSYCHOLOGY. Estimating the reproducibility of psychological science. *Science* 2015;349(6251):aac4716.

Interventions in Health Psychology

Telerehabilitation; a promising strategy to improve rehabilitation in pulmonary oncology

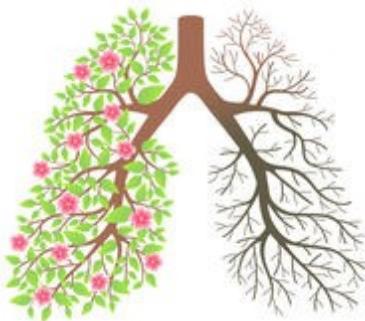
Exercise-based rehabilitation improves physical function, fatigue and quality of life in patients with lung cancer. However, the implementation of this type of intervention is limited because of many barriers such as patients' symptoms and poor accessibility to programs. In this context, healthcare systems should develop and implement new approaches to dispense these services. Consequently, telerehabilitation seems to be a promising strategy to improve access and adherence to rehabilitation. As a doctoral student interested in lung cancer rehabilitation, I was pleased to take part to a pilot study at the *Institut universitaire de cardiologie et de pneumologie de Québec (IUCPQ)*, in collaboration with the *Centre for Interdisciplinary Research in Rehabilitation and Social Integration in Quebec City (CIRRS)* aimed to examine the feasibility of a home-based telerehabilitation program (TELE_{RP}) in lung cancer patients receiving chemotherapy.

Five patients receiving chemotherapy followed an 8-week TELE_{RP} using real-time monitoring combined with interactive exercises. The TELE_{RP} included supervised (15) and unsupervised (9) strengthening and cardiovascular exercises sessions 3x/week and a brief educational intervention was done to promote appropriate lifestyle and self-management during chemotherapy.

In addition to the positive clinical effect, the main finding of this study is that a TELE_{RP} was feasible, safe and well tolerated in these patients. All the patients completed the TELE_{RP} with a very high rate of adherence and were very satisfied with the telerehabilitation platform and service. The main strengths of our intervention are that the interactive face-to-face intervention allows to provide a safe environment for the patient to train, while the remote aspect of the telerehabilitation limits barriers to

exercise experienced by the patients. Indeed, in addition to adjust exercise training to the daily condition, the interactive intervention give the opportunity to the health care provider to discuss with the patient about its health condition and psychological distress before starting the training session. This aspect is clinically relevant because screening for distress is suggested as a first step to optimize response to cancer patients' needs, thus, rehabilitation session might be an interesting timing to do so. Finally, the good adherence to treatment observed in this study suggests that the TELE_{RP} may limit barriers to exercise experienced by patients. Fatigue, lack of time for exercise and difficulty associated to travel are barriers commonly reported by cancer patients. However, in telerehabilitation the training hours are more malleable than in a conventional hospital-based setting allowing participants to find convenient hours to exercise and to insert session in-between chemotherapy appointment or at the time the patient had more energy in the day. Also, the fact that the ratio of supervised/unsupervised training sessions was progressively reduced over the program helped the patients to develop their autonomy and to take control of their behavior change improving their intrinsic motivation to exercise. In addition, thanks to the education intervention, we put emphasis on the benefits of exercise and helped the patients to identify strategies to prioritize and integrate exercise in their daily.

I would like to acknowledge the principal investigators of this study Dr. Didier Saeys and Hélène Moffet as well as Sébastien Simard, Claude Vincent and the Clinique d'oncologie thoracique de l'IUCPQ, including Dr. Lise Tremblay for their collaboration on this project.





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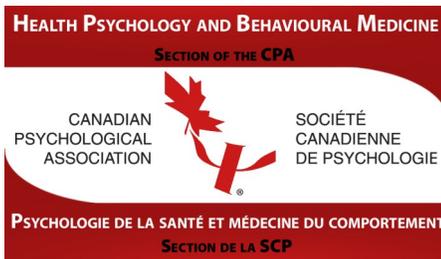
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Students - Want to get involved in the CPA Health Section?

We are presently looking to recruit post-doctorate and undergraduate student representatives. As members of the executive committee, these individuals will be responsible for providing guidance to students at their level of education. If interested, please send us your CV and a letter of intent at serge.sultan@umontreal.ca .