Assessing the Cognitive Impact of Smartphone Presence

Paris Will, Alessandra DiGiacomo, Alan Kingstone
The University of British Columbia

BACKGROUND
- The ubiquity of mobile technologies has revolutionized our lives, making social interaction and daily tasks more convenient.
- There are concerns and many claims about how cognitive abilities are being negatively affected, but the empirical evidence for these claims is weak.
- A very small body of research explores the impact of the mere presence of smartphones. Outcomes are mixed and inconclusive.
  - Thornton (2014) found that phone presence impairs attentional performance.
  - Lumsd (2017) failed to replicate these findings.
  - Ward (2017) also failed to replicate these findings, but found that phone presence impairs fluid intelligence.

METHOD
The current study seeks to clarify the influence of phone on cognitive performance by investigating the degree of technology use may be a confounding factor.

RESULTS

- **Experiment 1**
  - Scores on the RPSM were significantly lower (p < 0.05) when participants had their own phone in the room compared to when there was either no phone or the researcher’s phone present.

- **Experiment 2**
  - No significant differences in performance on the RPSM across the three conditions (p > 0.05)

- **Experiment 3**
  - Similar results to Experiment 2.

DISCUSSION
- To answer the question of fluid intelligence, this is an important area of future research.
- With the rise of technology, this interpretation is becoming increasingly important.

CONCLUSION
When working intelligence, high tech their phones with should put the

MURC
March 19 - 20, 2022

MULTIDISCIPLINARY UNDERGRADUATE RESEARCH CONFERENCE

2022 PROGRAM GUIDE
Last updated: March 16, 2022
LAND ACKNOWLEDGEMENT

The lands of what is now known as British Columbia have been cared for and inhabited by Indigenous Peoples since time immemorial. We specifically acknowledge that UBC’s Vancouver Point Grey campus is situated on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm Musqueam people, and UBC’s Okanagan campus is situated on the traditional, ancestral, and unceded territory of the Syilx people. It is in this recognition of being on unceded land where we will ground our conversations of race and racism further.

We also acknowledge that given the hybrid format of this year’s conferene, MURC participants will be joining this conference from many places, near and far, and we also acknowledge the traditional owners and caretakers of those lands.

Learn more: What is a land acknowledgement?
WHAT IS MURC?

The Multidisciplinary Undergraduate Research Conference (MURC) is an annual celebration of undergraduate research happening on the UBC campus. Student researchers showcase their research in an oral or poster presentation format. Work presented at the conference includes undergraduate theses, directed studies and other faculty-supervised research projects.

This year, the theme for MURC is ‘Inspire Change.’ By leaving the known and embracing the unknown, we can not only learn more about each other, but the world as a whole. As we transition into a new stage of existence, it is crucial that we not only embrace change in favour of creating a better tomorrow, but approach it in a manner that inspires new generations to see change as an agent of positivity and growth, rather than one of fear.

MURC 2022 is excited to feature 512 presenters from 15 different schools and faculties.
PRESENTATION THEMES

Research presentations fall under four (4) themes.

**Health and Wellness**
- Addressing social determinants of health and how these affect health outcomes across different populations and communities
- Engaging with wellbeing in its various dimensions, including but not limited to traditional biomedical measurements and interventions

**Innovation and Technology**
- Creating and/or applying novel technologies to develop enhanced solutions that contribute to society
- Identifying the social and ethical impacts of different innovations

**Sustainability and Conservation**
- Addressing global challenges in the areas of food security, biodiversity, demand for energy and water, and prevention of environmental degradation to fight climate change
- Aiming to achieve a better and sustainable future for the world through social and ecological interventions

**Individual, Community and Society**
- Addressing social challenges on local and/or global scales, and advocating for social and ecological justice
- Working towards building a society in which the dignity of all people is respected, and equity and inclusion are embedded into society
- Engaging with communities and/or organizations to explore and address relevant issues related to social, political, and/or economic challenges
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KEYNOTE SPEAKER

Dr. Jennifer Grenz

Jennifer is an Assistant Professor and Indigenous Scholar in the Department of Forest Resources Management jointly appointed between the Faculty of Forestry and Faculty of Land and Food Systems at UBC. Jennifer is an edge-walker that works between two worlds, Indigenous ways of knowing and Western science. She is pushing the bounds of science to work beyond a singular worldview helping others to “make the old new again” by applying a relational lens. Her scholarly work challenges us to think differently about our role in ecosystem management and managing food systems (agrarian and traditional) as we face a changing climate.

Jennifer has a B.Sc in Agroecology from UBC, and from there, went on to a nearly two decade career working on ecological restoration, invasive species management, and science communication for non-profit organizations and all levels of government. She is an internationally well-known speaker on innovations in environmental advocacy and awareness. She completed her PhD in Integrated Studies in Land and Food Systems at UBC in 2020 focused on the application of an Indigenous worldview to ecology and invasion biology. A trade book version of her dissertation titled, “Medicine Wheel for the Planet”, is being published by Knopf Canada (imprint of Penguin Random House). Jennifer is an Associate Editor for “Environmental Science & Policy” working to make space in academic publishing to amplify the scholarly work of underrepresented voices. As a proud Nlaka’pamux woman of mixed ancestry, whose family comes from the Lytton First Nation, Jennifer takes time to continue the traditions of her great grandmother and grandmother as a gifted textile artist and grower of foods and medicines.
Ife Adebara  
**PhD Candidate**

Ife is a PhD candidate at UBC. Her research is focused on the intersection of linguistics and computer science, more specifically on how deep learning methods developed for high resource languages, such as Natural Language Processing, can be adapted for languages in which fewer resources are available. Through these advancements, Ife hopes to improve diversity and inclusion in technology.

Chloe Gao  
**MD/PhD Candidate**

Chloe is a current MD/PhD candidate at UBC. Through her diverse research experience working with the McMaster Health Forum, Waypoint Centre for Mental Health Care, and St. Michael’s Hospital among others, she developed an interest in mental health service redesign. During her training, she will work with Foundry where she hopes to advocate for various groups and communities and to integrate their unique perspectives into improved mental health programs and policies.

Shayda Swann  
**MD/PhD Candidate**

Shayda is passionate about scientific research and the ways that she can integrate her research pursuits into her medical practice with patients. Shayda’s research is focused on determining how hormones affect aging, and more specifically the development of age-related comorbidities in women with HIV. She hopes to investigate this potential relationship by comparing hormone abundances with rates of comorbidities, taking into account other social determinants of health. She hopes that her work will improve the quality of care for women living with HIV.
ROGERS COLLABORATION

Rogers has kindly sponsored MURC 2022. With their support, we are pleased to host a keynote workshop on its nation-leading 5G, or fifth generation, network. This session will provide an introduction to the benefits of 5G over its predecessors, how it achieves those improvements, and some of the exciting opportunities that this network brings. This session will be facilitated by Jonah Eisen and Zihan Wang.

Johan Eisen

Jonah joined Rogers in September 2021 and has spent his first 6 months coordinating research projects in the Rogers-University of Waterloo 5G partnership. Jonah obtained his BASc in Mathematics & Engineering from Queen’s University in 2019, including a 12-month internship at Defence Research & Development Canada in Ottawa. He graduated with his MASc in Electrical & Computer Engineering from the University of Waterloo in 2021, where he researched Information Theory.

Zihan Wang

Zihan Wang is a New Grad Technology at Rogers Communication, where Zihan provides technical and business analysis to support the strategic planning of the Wireless and Wireline Networks. She has graduated from Ivey Business School in Data Analytics. She performs technical and economic analysis for Spectrum auctions to drive valuations and deployment timing for new spectrum auctioned off by the Government of Canada.
ASK ME ANYTHING SESSIONS

Connect with Ijeamaka and ask your burning questions about research.

Ijeamaka Anika

PhD Candidate

Ijeamaka Anika is a Ph.D. student at Peter A. Allard School of Law, where she completed her LLM as a recipient of the Allard Scholar Graduate Fellowship. During her Ph.D. studies, Ijeamaka is examining the influence of international criminal law jurisprudence on sexual and gender-based violence in domestic jurisdictions, building on feminist legal theory, governance, social rights, and cultural anthropology. Prior to attending UBC, Ijeamaka held a teaching position at the University of Nigeria Nsukka, and obtained her LLB (Hons) from Oxford Brookes University and an LLM in Public International Law from University College London.

FEATURED PROGRAMMING

Scavenger Hunt

Take part in MURC’s online scavenger hunt while navigating through the different events and presentations this year. Those that complete half of the objectives will be entered into a raffle for one of six $25 e-gift cards. The scavenger hunt will be hosted on Canvas and is open to current UBC students.

Research Trivia

Take a break from presentations and join us for our MURC 2021 Research Trivia session! Test your knowledge on categories ranging from research methods and prominent researchers, to social issues and big discoveries in different fields of research. The winner will receive a $25 e-gift card!
# ACKNOWLEDGEMENTS

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Varun Shah
Veronika Larsen
Virginie Jean-Baptiste
Xi Ren
Xuesen Dong
Effect of Temperature on the Population Growth Rate of Tetrahymena thermophila

Jocelyn Cheng, Sung Ju Lee (Saurav Acharya, Maddy Haines)

INTRODUCTION

Global Challenge
- Aquatic species are increasing due to climate change.

- Aquatic species’ survival, such as those in the salmon industry, is affected by temperature changes.

- Temperature changes are likely to affect the health of the ecosystem.

- The temperature of water bodies is crucial for the survival of aquatic organisms.

- Understanding the effects of temperature on aquatic species is essential for the health of the ecosystem.

METHODOLOGY

- Cells were cultured at 10°C, 20°C, and 30°C with three replicates.

- Samples were collected and analyzed.

RESULTS

- Average cell count increased with temperature.

- A one-way ANOVA test was conducted, and the F statistic was calculated.

- The p-value was 0.001175, indicating a significant difference in cell count across treatments.

- Post-hoc Tukey HSD test showed significant differences in cell count between temperatures of 10°C, 20°C, and 30°C.

DISCUSSION

- From the one-way ANOVA, we reject the null hypothesis at a 5% significance level.

- Greatest growth was observed at 20°C.

- T. thermophila is adapted to warmer temperatures.

- Further studies are needed to understand the effects of temperature on T. thermophila.

- Possible areas for future research:
  - Inconsistency in growth rates
  - Possible interactions between temperature and other factors

Figure 1. Log of average cell density over time.
Figure 2. Sample temperature over time.
Figure 3. Sample pH over time.
Figure 4. Sample OD over time.
SWNG 105

**The effect of repeated pain and sucrose exposure on IGF-1 and IGFBP-3 levels in neonatal mice**

Donna Seraj

**Adrenal Insufficiency in Pediatric Kidney Transplant Recipients**

Harry Chae

**RACK1 reduction improves motor function and lifespan in an in vivo TDP-43 ALS model**

Ananya Saraph

**Lasting impact: Examining the association between quality of the therapeutic relationship and distress following psychotherapy termination for men and the mediating role of existential isolation**

Quinn Storey

**Does doxycycline antibiotic improve symptoms compared to nasal saline and/or nasal corticosteroids in a randomized controlled trial with adult patients with type 2 inflammatory CRS.**

Candace Lam Jennifer Ge Atheee Bidawid

SWNG 107

**Analysis of Dendritic Arborization Neurons in the Yellow Fever Mosquito (Aedes aegypti)**

Maryann Rogers

**A Narrative Review: Are there any differences in microRNAs expression pattern among different brain regions in Alzheimer’s disease (AD)?**

Emily Chen

**Characterizing Heat Transfer During Water Jet Cooling**

Karan Santuka Ben Monckton

**Modeling Complex Q-ball Collisions in 2-Dimensions**

Muchen He Wei Tai

**Mobile Device Usage Before and During the COVID-19 Pandemic**

Livia Jonnatan
**SWNG 109**

Characterizing Ring D Hydrolysis in the Mycobacterium tuberculosis Cholesterol Catabolism Pathway  
Asana Imanpour

Suitability of a Post-Operative Bariatric Nutrition Teaching Tool  
Patricia Angeles  
Clare Douglas  
Alexandra Soanes  
Alexandra Heidl  
Yolanda Wang

Inter-Organelle Communication: An Insight into ER-Mitochondria Contacts (MERCs)  
Sana Ahmed

**SWNG 207**

(Re)Discovering my Blackness: An Inquiry into the Decolonization of the Mind in Vancouver’s Black Afro-Diasporic Community  
Rehema Ivan

Development of Curricular Standards for Physical Activity Counselling and Prescription for People with Physical Disabilities  
Chihiro Abe

Cytochrome P450-Reductase Fusions for Upgrading Lignin  
Jerry He
## Theme: Innovation and Technology

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## Theme: Individual. Community, and Society

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## Theme: Sustainability and Conservation

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<td>Arrival Dates of Transient Killer Whale Matri-groups in the Salish Sea</td>
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| Divya Gupta |

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| Carly Hilbert |
| Bridget Woods |

Best practice recommendations for providing abortion care to diverse populations: A scoping review.

| Parveer Pandher |
| Anahita Seraji |
| Juliette Sachet |
| Nyla Kathol |
| Kristina Kurvits |

Association Between Objective and Perceived Climate Vulnerability and Reported Stress in Metro Vancouver

| Georgia Green |
| Leah Isfeld |
| Doris Sun |

Does stress lead to a buildup of fatty acids that can increase risk of aortic aneurysms?

| Justin Wong |

ADHD Symptoms, Social Media Use, and Social Media Intensity Before and After the COVID-19 Pandemic

| Gian Hermosura |

Inflammatory factor, IL-1β, and diabetes; will it save you?

| Isabelle Beggs |
| Gazelle Sokhanran |

Frontotemporal Dementia: a deeper dive into genetic status

| Brianna Hou |
| Ria Bhatt |
| Kyrsin Lavelle |

Investigating the impacts of glutamate receptor modification on Alzheimer’s Disease

| Sahibjot Daula |
| Teaya Cabael |
| Gurleen Litt |

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| Catherine Wang |
| Georgia Langdon |
| Vanessa Lee |

Inhibition of Platelet-Derived Growth Factors to Improve Acute Myeloid Leukemia Treatment.

| Frederick Wang |

Effectiveness of Backset Guidelines for Children in Booster Seats to Prevent Whiplash Associated Disorders

| Genevieve Ah-Sen |
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Investigating the Role of ASD-risk Gene Orthologs in Habituation at 10s and 60s inter-stimulus intervals using C. elegans

The Machine Learning Approach to Breast Cancer Subtype Classification

Development of a safe immunogenic cell death-inducing vaccine for efficient treatment of breast cancer

Sangwook Michael Woo
Douglas Forrest
Isabel Wilson
Rongxi Du
Blaise Appolinary
Raha Masoudi
Ali Nasserikhameneh
Prannav Jain

SWNG 107

Racialized Settlers and Their Role in Truth and Reconciliation

Wandering in The Digital Age: How Does Out-of-home Mobility Impact Mood and Cognition in Young Adults?

The Epistemology of Fetishizing Asian Women: The role of media, militaries, and moral panic in White violence

Ungifted: Gifted Students’ Identity and Career Development in Post-Secondary Education

Spatial Legitimacy in Nehru’s India: does secular space restrict subaltern sovereignty?

Peter Fang
Isaac Koenig-Workman
Blossom Cheng
Rachel Dupras
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Examining sustainable management strategies for Marine Protected Areas and No Take Zones

Feasibility of Using Mine Tailings to Sequester Carbon Dioxide in Canada’s Nickel and Diamond Mines

Abundance and composition of the potential prey community of web building spiders are impacted by ecosystem succession and microhabitat characteristics

Clarity or Confusion: A qualitative Analysis of Social Media Data to Gauge Post-Secondary Students’ Perceptions of COVID-19 Protocols On-campus

Investigating the Effects of Elevation on Plant-Insect Interactions in Lupinus latifolius

Nayanika Gunvante

Harris Rana

Sarah Chan

Jarod Finnie

Aliye Sasmaz

Asha Octoman

Maira Hosain

Evi Dorsch

Callum MacIntyre

Juniper Malloff

SWNG 207

Effects of positive reinforcement training on mouse anxiety during restraint

Comparing NED and SIMBAD classifications across the contents of nearby galaxies

INTACT (RetINal Toxicity And HydroxyChloroquine Therapy): A Pilot Study Using Ophthalmologic Image Transfer to Expand Access to Early Retinopathy Screening

Maya Bodnar

Lucas Kuhn

Jeremiah Tan
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Optimizing the Reliability of Wind Turbines Power Generation
Tim Chang
Arian Arian
Kent Wu
Development of an Omnidirectional Surrogate Neck
Genna Bonnor
Normal Map Estimation for Pixel Art Images
Roark Zhang

Theme: Individual. Community, and Society
Understanding Canadian Perspectives Regarding the Deemed Consent Model for Deceased Organ Donation
Arjun Hothi Hothi
Jay Banwait Banwait
Mika Pascual Pascual

Theme: Health and Wellness
Perspectives of Hospital Pharmacists on Quality Improvement Initiatives in Patient Care
Ting-An Cheng

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Habitat disturbance, bet-hedging, and the success of invasive species

Breadfruit leaf and Male inflorescences extracts inhibit Cutibacterium acnes

Microbial degradation of microplastics in wastewater treatment plants

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Prenatal triptan use for migraine and risk of adverse child neurodevelopment: A systematic review

Maggie Yang
Sunny Park

The study of the frozen heart and glucose distribution in Wood frogs.

Jessie Li
Sierra Jensen
Anushka Rao

Evaluating the application of a complexity framework to the development of educational patient cases at different levels of complexity.

Kanika Khosla

Early Detection of Preeclampsia using MicroRNAs and Transthyretin Levels in the Plasma

Paarsa Salman

Sex differences in the effects of chronic unpredictable stress on negative cognitive bias and neural activity in the amygdala and nucleus accumbens

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Video-Based Respiratory Rate Estimation for Infants in Low Resource Settings

Stephanie Quon

Genome-wide association mapping of red raspberry fruit colour

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Impact Analysis of a Rainwater Harvesting System for Northern BC Communities

Sharlene Santiago
Anushika Jain
Megan Dale

AI Darcy: Finding generalizable equations for hydrology via AI Feynman

Elena Wang
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The Effects of Substrate Texture and Salinity on Aedes aegypti Egg-Laying Site Preferences

Lauren Semkow
Annie Zeng
ROOM 3 (ZOOM LINK)

EDUCATIONAL ATTAINMENT AS A PATHWAY TO POOR MENTAL HEALTH OF PARENTS IN FRAGILE FAMILIES: EXPLORING THE MEDIATING EFFECT OF FOOD INSECURITY

Decolonization and Indigenization of UBC’s Faculty of Pharmaceutical Sciences: Literature Review and Environmental Scan

The Chance of Complying Based on Perceived Wealth

Illusory Superiority in BC Undergraduates

Direct Player Observation to Quantify Head Impacts in Women’s Soccer

ROOM 4 (ZOOM LINK)

Watch your knees! Effects of Coaching and Video Feedback on Children’s Quality of Motion

Objective and automated assessment of social isolation-induced behaviour deficits using machine learning

Characterizing the Secretion of Inflammatory Mediators by Microglia in Response to Multiple Stimuli

Short-term Organ Culture of Rat Seminiferous Tubules

Reciprocal and directional trends between relationship and sexual satisfaction in first-time mothers: A longitudinal analysis
Heavy metal concentration from different ecosystems at UBC farm

The Mysteries behind British Columbian Chinook Salmon

Identifying transcriptomic changes in glial cells in Alzheimer’s disease

CHINs up for CHINook Salmon and Orcas

Developing Hybrid Lithium-Ion battery Models: Exploring ML and traditional modelling

Long Term Impact of Salicylic Acid on Youthful Skin

Tissue clearing as a method to investigate brain injury

Domesticated Cognition

Effects of testosterone on behavioural flexibility in male rats

Perioperative multimodal analgesia including intravenous lidocaine infusion for pain management following idiopathic scoliosis correction surgery in children: challenges of implementing a clinical double blind randomized controlled trial.
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Rana Ghadymimahani
Eden Viveiros
Annie Yu

Designing Health Care Educational Materials for South Asians in Canada
Jasleen Brar
Reeva Bhandal

Physical activity coaching for adults with spinal cord injuries during the transition from inpatient care to living in the community
Kenedy Olsen

Literature Review of Wearable Sensors for Balance and Mobility Impairments
Randy Gao

Requirements specification for a makerspace for rural communities in British Columbia
Pengpeng Chen
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Archaeology of Fragmentation: A Middle Shang Case
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