



# SCIENCE OF LIVING WELL

Strategies to improve your well-being

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Dr. Joanna Pozzulo (Director)



**MeWeRTH**  
Mental Health and Well-Being  
Research and Training Hub



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# Message from the Director

## Dr. Joanna Pozzulo

I'm thrilled to announce the inaugural issue of MeWeRTH's *Science of Living Well* magazine. MeWeRTH is comprised of researchers, students, and community partners with a shared interest in making mental health and well-being research more accessible to the general public. MeWeRTH was founded in response to the increasing prevalence of mental health issues within the Canadian populace, particularly among youth. To date, MeWeRTH has hosted numerous mental health-related events and developed several free resources for improved well-being. Events and resources can be found on our website: <https://carleton.ca/mental-health/>. MeWeRTH's *Science of Living Well* magazine represents our latest effort to share valuable information with you.

*Science of Living Well* contains evidence-based research and strategies to assist you on your well-being journey. Almost all of the individuals featured in our magazine are members of the Carleton University community, and they come from diverse backgrounds and disciplines. For presentation purposes, we chose to break wellness down into its different dimensions and dedicate sections of the magazine to each dimension. However, these dimensions are all interconnected. For you to extract the most benefits from this magazine, it is vital that you consider all aspects of your wellness and how they relate to one another.

This magazine came to life through the passion, hard work, and creativity, of MeWeRTH student member, Noah Bennell. I am deeply grateful for Noah's vision and countless hours of research and interviews that interpret science for improved well-being. Thank you, Noah! It is a privilege and honour to work with you.

Without further delay, I hope you enjoy the read!



*Dr. Joanna Pozzulo is a Chancellor's Professor in the Department of Psychology at Carleton University. She is also the Director of the Mental Health and Well-Being Research and Training Hub.*





# Physical Wellness

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When people think about living a healthy life, the first thing they consider may be their physical well-being. Physical wellness refers to the overall health of your body. To maintain your physical well-being, you have to consider all of the body's physical needs. That is, you must ensure that you are living actively and exercising regularly, consuming nutritious foods, and getting proper sleep.







Photo by Marc Lafleur

# Wellness Through Sport

## An Interview with Ava Bowns

The benefits of physical activity are widespread. Exercise has been shown to enhance physiological processes related to the immune system and metabolism, as well as improve cognition. It should therefore be no surprise that physical activity is also associated with improved feelings of well-being. The following contribution discusses physical wellness from the perspective of a Carleton student.

### ***Why Football?***

Wanting to take after her brothers, Ava began playing tackle football at the age of seven in the Regina Minor Football League in Saskatchewan. She immediately fell in love with the sport. She later travelled across the nation playing linebacker for the Regina Riot, a team in the Western Women's Canadian Football League.

### ***Sport and Wellness***

Ava emphasizes the benefits of being part of a team. She found it inspiring and comforting to be among like-minded people who were coming together to achieve a common goal. Naturally, she developed strong bonds with her fellow players and coaches. Sports instill players with a sense of trust, commitment, and comradery. Ava has found that these qualities have helped her excel in other areas of her life; with her job, for instance. Beyond maintaining her physical health, Ava finds that keeping active helps her destress. When she finds herself lacking motivation, Ava recalls how working out makes her feel: energized, confident, and ready to tackle the daily hassles of life.



*Ava Bowns is a master's student in the Police Research Lab in the Department of Psychology.*

## ***Strategies for Improved Physical Wellness***

Of course, there are many ways that one can be active. If you would like to go to the gym but are lacking the confidence or motivation to do so, Ava recommends that you find someone to go with. Showing up for other people is much more motivating than trying to find it within yourself to workout since you are holding yourself accountable to other people. The gym is also a great place to make friends.

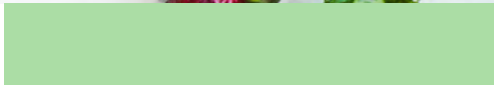
If you are interested in playing sports, try to find a recreational league that you can join. Once again, showing up for others is a strong motivator. Over time, through playing sports, you will hopefully realize and experience the benefits of being active. Playing sports can also be a lot more fun than exercising on your own.

Another thing to note is that, while going to the gym and playing sports are excellent ways of keeping active, living actively is also important. Active living is a lifestyle that incorporates physical activity into daily routines. Active living involves taking the stairs instead of the elevator, walking or biking instead of driving, leaving your house more often, and reducing the amount of time you spend sitting down. These are easy and simple steps that one can take to improve their physical wellness.



Mikkelsen et. al (2017) describe the effects of exercise on mental health from a neurological and psychological perspective in their open-access article, which you can find [here](#).





# Ask A Dietitian

## Talia Klein Talks Nutrition

### ***Talia's Role***

Growing up, Talia did not have a healthy diet. When she got a job working for a health club, she became motivated to change aspects of her diet to be more healthy. She experienced the benefits almost immediately. Now, she wants to help others achieve their dietary goals. How does she do this? Talia works with Dining Services at Carleton University to ensure that the cafeteria produces nutritious dishes. Talia holds counselling sessions for students with meal plans, helping them manage their dietary restrictions and create meal plans through the *Ask a Dietitian* program. Talia also works with other services on campus to develop educational activities regarding nutrition.

### ***Diet and Well-Being***

One of Talia's passions is helping people understand how their diet can influence their well-being. Talia recommends the following as a foundation for improved nutrition and well-being.

- Eating meals that contain a variety of nutrients is not only important for your physical health, but for your mental health as well.
- Eating regularly is also extremely important, as it allows your body to maintain adequate blood glucose levels throughout the day. Talia often sees students struggling with this because they prioritize other areas of their lives, like school. However, taking time to eat can help you be more productive in those areas.
- Keeping hydrated is also essential. Dehydration can interfere with cognitive processes, make you feel weak and tired, and cause you to crave unhealthy foods. After all, water helps blood flow, and our brains need blood!
- Avoid eating unhealthy foods when sad or stressed. It is beneficial to learn other coping methods for your emotions that do not involve food.



*Talia Klein is a Registered Dietitian working with Carleton University's Dining Services.*

Visit the [Canada Food Guide](#) website for more information.



## Changing Your Diet

Generally, people are aware of the benefits of a healthy diet but may lack the motivation or ability to change their behaviour. Here are some tips that may help if you are planning on changing your diet.

- Develop SMART goals. SMART goals are specific, measurable, achievable, relevant, and time-bound. Telling yourself that you are going to consume X number of calories per day is much more effective than telling yourself to eat more or less. SMART goals are not limited to eating but can be applied to all aspects of wellness.
- Take baby steps. You can think of diets as habits. Changing unhealthy habits overnight is incredibly difficult. Instead, make small changes over a sustained period.
- Try to not get upset if you fail to meet your goals or if you are not seeing results. The mere act of trying is better than falling back on unhealthy habits.
- Scheduling mealtimes may also be helpful. Many students have difficulty with eating regularly. Having a scheduled period to eat may not only help you remember to eat but also serve as a short break from your busy life.
- If scheduling mealtimes does not work, you may want to try pairing eating or drinking with other activities. For example, you can drink one glass of water before you leave for work or school.
- Lastly, making changes is more difficult during stressful periods, such as exam season. These strategies will be more effective when implemented during less stressful periods.

If you are interested in changing your behaviour, Talia recommends having a look at the National Institutes of Health article on *Changing Your Habits for Better Health* [here](#).



# The Mysteries of Why We Sleep

## *Inactivity Theory*

Inactivity Theory was one of the first attempts made by researchers to explain why we sleep. Inactivity Theory is based on evolutionary theories, which state that behaviours that increase an organism's chance of survival are favoured and passed on to new generations. In the case of sleep, researchers proposed that being able to stay still protects animals from danger at a time when they are most vulnerable — either nighttime for diurnal animals or daytime for nocturnal animals. However, critics of this theory have suggested that being conscious during vulnerable periods would serve as a better form of protection. As a result, researchers have explored other theories that explain why we sleep.

## *Energy Conservation Theory*

Energy Conservation Theory also attempts to explain the purpose of sleep from an evolutionary perspective but instead focuses on competition for resources. Historically, and even contemporarily, humans competed with one another for resources to maintain their internal energy levels. Sleeping offers a neat solution to this issue. By rendering our bodies less active for a part of the day through sleep, we can conserve energy, decreasing our need to compete and allowing us to function properly during active periods of the day.



## ***Restoration Theory***

Restoration Theory is arguably the most popular explanation for why we sleep. As the name suggests, Restoration Theory states that sleep is required for physiological reparation. Over the course of the day, the body's resources deplete and tissues wear down. According to this theory, sleeping is necessary for the body to be able to replenish its resources and repair tissues, and it does so by increasing the production of immune cells and the rate of protein synthesis in muscles and bone, for instance.

## ***Brain Plasticity Theory***

Brain Plasticity Theory is the most recent of the four theories. Historically, the brain was believed to be static. That is, after it had finished developing, it would not be subject to any further change. However, this has now been disproven. Cells are produced in the brain throughout life, and the reorganization of cells also occurs throughout life. Researchers in the past also believed that the brain was inactive during sleeping periods. This has also been disproven. Sleeping provides the brain with an opportunity to reorganize its cells to create associations with higher-order brain centres that allow us to form long-term memories and disregard less important memories. Notably, sleep also allows the brain to rid itself of waste, which ensures that we can function properly during the day.

## ***Your Body When You Sleep***

### **Brain**

- Glymphatic system clears out waste
- Neural reorganization to facilitate memory consolidation

### **Heart**

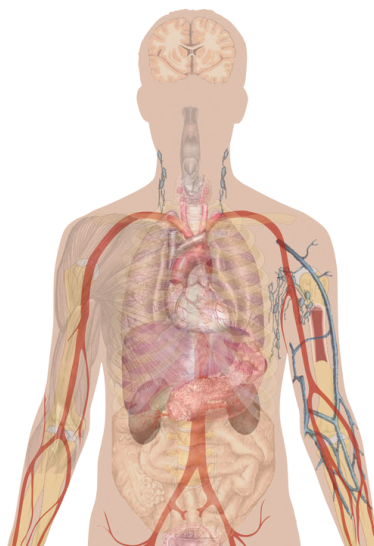
- Heart rate slows, dropping blood pressure

### **Endocrine (Hormone) System**

- Balances stress and hunger hormone levels
- Releases human growth hormone, which promotes protein synthesis and muscle and bone repair

### **Reproductive Organs**

- Balances progesterone and estrogen levels
- Enhanced sperm production and motility



### **Skin**

- Metabolic rate increases, leading to regeneration of skin cells that have been damaged
- Antioxidant production
- Collagen production reinforces protective skin barrier

### **Immune System**

- Increased production of immune cells, which protect against infection and malignancy
- Releases anti-inflammatory cells
- Enhances immunological memory

### **Liver**

- Blood supply converges on the liver causing it to increase in size and enhance its productivity



## ***Sleep and Well-Being***

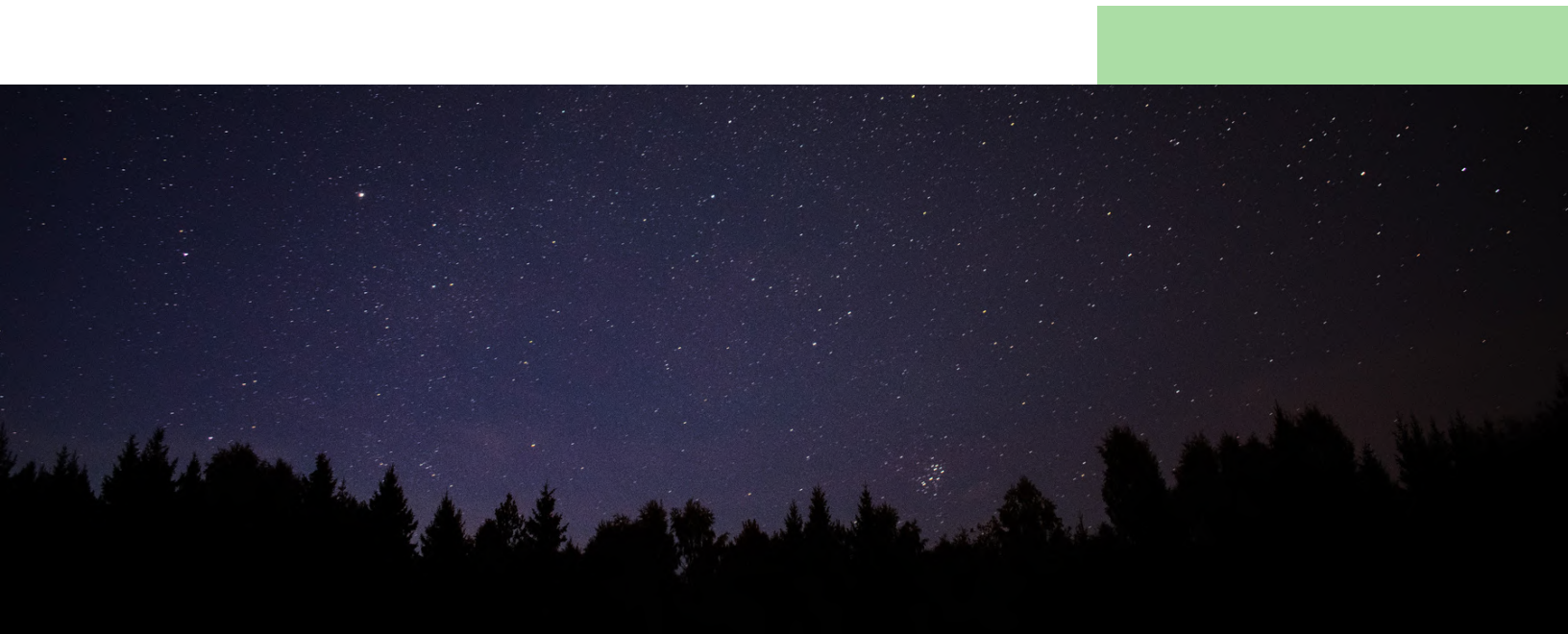
In addition to the physiological benefits of sleep discussed in the diagram on the previous page, sleep is influential for many cognitive processes related to well-being. For instance, inadequate sleep is associated with worsened problem-solving skills, decision-making, and emotion regulation. Poor sleep has also been implicated in mood disturbances, such as depression. Conversely, high-quality sleep is associated with stronger interpersonal relationships, decreased stress, and improved well-being.

## ***Sleep Tips***

The following are tips that you can incorporate into your nightly routine to improve the quality and quantity of your sleep:

- Set a sleep schedule. Falling asleep and waking up at consistent times ensures that your body's circadian rhythms are functioning properly. The National Institutes of Health defines circadian rhythms as "the physical, mental, and behavioural changes an organism experiences over a 24-hour cycle."
- Avoid caffeine, nicotine, and alcoholic beverages late in the day. You should also avoid exercising for at least a few hours before heading to bed. Instead, you might want to engage in relaxing activities. Take a warm shower or listen to a podcast!
- Make sure your sleep environment is arranged appropriately, with a darkened room and minimal noise disturbances. Lowering your room's temperature might also help. As your body cools, melatonin is released, which prepares your body for sleep.
- To minimize distractions, consider leaving your phone or other electronic devices in a different room.
- If you find yourself unable to sleep, try reading or listening to music until you feel drowsy, instead of lying awake in bed.

The National Institutes of Health dedicate a portion of their website to public education. Check out their article on sleep, titled Brain Basics: Understanding Sleep, [here](#).





# Intellectual Wellness

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Humans have a desire for knowledge, an ability to ask questions, and the creativity and freedom to find solutions to these questions. Our aspirations in this regard and our ability to fulfill these aspirations define our intellectual well-being.



# Listen Up! Podcasts by Carleton Affiliates

Recently, podcasting has become a major form of knowledge mobilization and a source of intellectual wellness. Chauhan and Pandey (2023) describe podcasts as “windows into worlds of motivation, inspiration, and personal growth”. You can read more about the relationship between podcasts, motivation, and well-being [here](#). The following contribution investigates several informative podcasts produced by members of the Carleton community.

## ***Ravens Student Life***

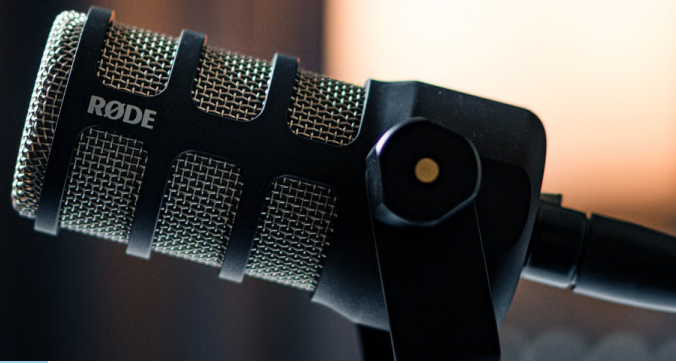
Unlike the other podcasts listed in this section, The *Ravens Student Life* podcast is student- and alumni-led. The podcast is hosted by the Student Experience Office and the International Student Services Office. The students (current and former) featured in this podcast offer advice on a wide range of topics, such as academic performance, managing mental health, and how to get involved on campus. The alumni also provide invaluable insight into what the world has to offer when you graduate from university and how to make the most out of your degree. Access the podcast [here](#).



## ***Battle Rhythm***

Mainstream news sources often only provide viewers with surface-level details of issues on international affairs. The *Battle Rhythm* podcast, co-hosted by Dr. Stephen Saideman and Dr. Stéfanie von Hlatky, offers an in-depth discussion on the complexities relating to the latest military developments, international relations, and the future landscape of global security. Whether you are a seasoned defence enthusiast or brand new to the world of international security, *Battle Rhythm* has something for you. Find all the episodes [here](#). Dr. Saideman is a Professor and Chair of the Norman Paterson School of International Affairs at Carleton University. Dr. von Hlatky is a Professor in the Department of Political Studies at Queen’s University.





## ***History Slam***

For over ten years and across more than two hundred captivating episodes, *History Slam* (2012-2022) hosted by Dr. Sean Graham provides listeners with a relaxed environment to learn about all aspects of Canadian history. Dr. Graham discusses history as more than a series of dates and facts, but rather, a living narrative that has a profound influence on the present. The podcast features conversations about the history of women in science and engineering, canine war heroes, the significance of political leaders, ethical hacking, and much more. Check out all of *History Slam's* episodes on the Active History website [here](#). Dr. Graham is an Adjunct Research Professor in the Department of History at Carleton University.

## ***Minding the Brain***

Any discussion on podcasts produced by members of the Carleton community would be incomplete without mentioning the *Minding the Brain* podcast hosted by Dr. Jim Davies and Dr. Kim Hellemans. This award-winning podcast covers a diversity of topics related to cognition and neuroscience. The hosts keep conversations lighthearted and engaging while remaining informative. Oftentimes, they invite field-specific experts to provide additional insight. They have delved into topics such as commonly used drugs, like alcohol and caffeine, cognitive disorders, such as schizophrenia and depression, and thought processes, such as dreaming and hallucinations. You can listen to *Minding the Brain* [here](#).



*Dr. Kim Hellemans (left) is an Assistant Professor in the Department of Neuroscience and the Associate Dean of Science for Student Recruitment, Wellness, and Success. Dr. Jim Davies (right) is a Professor at the Department of Cognitive Science and the Director of the Science of Imagination Laboratory.*



# Emotional Wellness

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Stressors are a normal part of life and they can take many forms. How we cope with these stressors constitutes our emotional wellness — specifically, how we communicate our emotions, how we learn from and plan for stressors, and how we manage our emotions more generally.





# Tackling Stress on Campus

## Carleton University Therapy Dogs

Dog therapy programs have grown in popularity. Research on the efficacy of such programs is promising. Ward-Griffin and colleagues (2018; access [here](#)) have reported higher levels of happiness and energy, as well as reduced stress in participants immediately after attending a therapy dog session.



*Michaela Keogh is the Manager of Mental Health Strategy and Initiatives for the Office of Student Affairs. She is a member of the Healthy Workplace Committee and is in charge of Carleton University's Therapy Dog Program.*

### ***What is the Therapy Dog Program?***

*Carleton University Therapy Dogs* is an in-house program designed to bring “pawsitive” mental health support to our Carleton University community. Although designed to support our student population, staff and faculty also benefit from this program. Our Handlers are all Carleton staff and faculty members to ensure that any student who needs support can be connected with someone who understands the services and resources offered by Carleton.

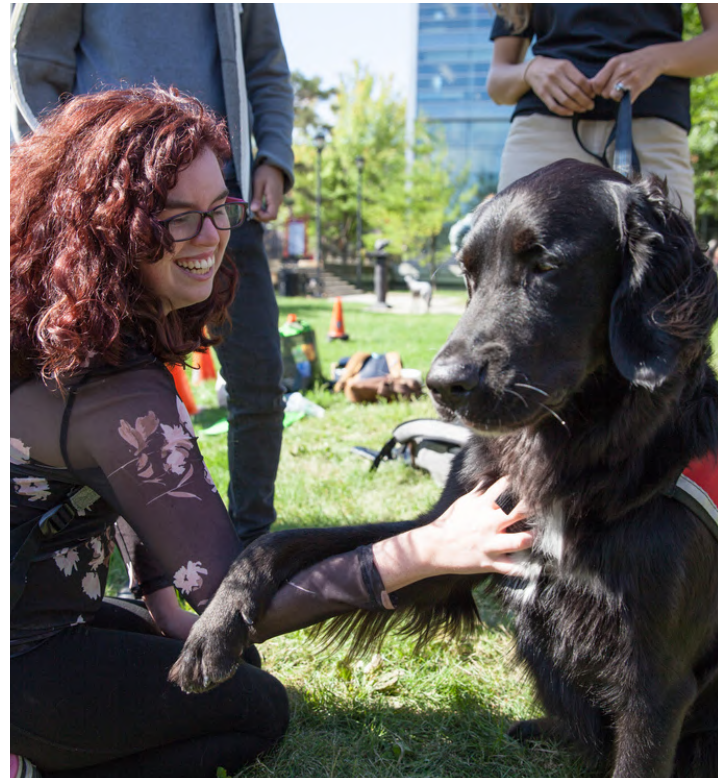
### ***What training do the dogs receive?***

All of our Therapy Dogs have to be two years of age and have completed some form of basic obedience training before they are accepted into the program. Following this, they are then put through six weeks of Therapy Dog training that teaches the dogs (and importantly their handlers) how to watch for signs of stress, how to deal with large crowds, how to not be tempted by food, and more!

### ***Why do people attend the sessions?***

Students come when they need to de-stress or de-compress, some come because they miss their dog at home, and some come because they want to feel connected to other students. We also see students dropping by who are not necessarily interested in visiting the dogs but understand they can get resources and chat with someone about their mental health if they drop by.





## ***Experiential Learning in a Well-Being Setting***

When my course listed the available opportunities for experiential learning, the Therapy Dog Program jumped out to me as a unique experience. I wanted to be able to help others on campus. I also have a deep love for dogs and animals more generally. My placement allowed me to fulfill both of these interests.

### ***What tasks do you do?***

Behind the scenes, I am working on compiling peer-reviewed articles that provide evidence on the efficacy of therapy dog programs. I also help supervise the sessions. I talk with the people who come to the sessions and provide resources if need be.

### ***What benefits have you experienced?***

Having grown up with dogs, I have a deep appreciation for the calm that their presence provides. I feel more present and mindful when I am interacting with them. The therapy dogs just make me feel joyful, and many other students share this sentiment.



*Saghar Shadabi is an undergraduate student in the Department of Psychology and a facilitator for the Enriched Support Program. As part of a 4th year psychology course, Community Mental Health and Well-being, she is completing a placement with the Therapy Dog program.*





# Environmental Wellness

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The concept of environmental wellness — how one’s connection to nature influences their overall well-being — has grown in popularity in recent years. This growth can be attributed to the emergence of climate change and global warming phenomena. Despite the controversy surrounding the existence of these phenomena, the fact remains that a large proportion of Canadians are feeling the effects of these environmental changes.



# Managing Eco-Anxiety

## Dr. Stefania Maggi's Take on Eco-Anxiety

### ***Dr. Maggi's Research***

Dr. Stefania Maggi has focused her research on the psychological dimensions of climate change; that is, how we think and feel about climate change and how those thoughts alter behaviour. Dr. Maggi is also interested in how individuals, especially young individuals, cope with this existential crisis, as well as any factors that may influence coping, such as nature connectedness.

Much of Dr. Maggi's work is oriented around knowledge mobilization – conveying information to young audiences, parents, and educators in an engaging way. The importance of such work cannot be overstated. Climate change is a pressing issue and the body of research on climate change is growing rapidly, so it is important that the public can keep up.



### ***What is Eco-Anxiety?***

Eco-anxiety refers to the distress one feels when thinking about climate change or when we see the impact that climate change can have on our lives. Although it may be difficult to see the positive side of eco-anxiety, it can motivate individuals to take action to reduce climate change. Through her work, Dr. Maggi aims to help people use their eco-anxiety constructively. Eco-anxiety becomes problematic when people do not have strategies to effectively cope with this complex emotional state. Young people and Indigenous persons are more likely to be affected by eco-anxiety.



*Dr. Stefania Maggi is an Associate Professor, cross-appointed between the Childhood and Youth Studies program and the Department of Psychology. She is the founder of Mochi4ThePlanet and an executive member of the Landon Pearson Centre for the Studies of Childhood and Children's Rights.*





## ***How Can we Manage our Eco-Anxiety?***

Being aware of your emotions is an effective strategy for managing eco-anxiety. Dr. Maggi provided an example of an individual who is too nervous to engage in talks about climate change. While disengaging may be an effective strategy to manage these nerves in the short-term, over the long-term that individual may feel guilty for neglecting such a pertinent issue. It is important to recognize your emotions, and also recognize that others are feeling the same way. In doing so, you will be more likely to take action. Also, when taking action, you should try to take steps that are realistic and sustainable. Every action matters, and over time, you can take bigger steps. A key is to focus on what you can control.

There exists a paradoxical relationship between nature connectedness and eco-anxiety. Those whose lives are more intertwined with nature, such as individuals living in remote communities, are more likely to experience eco-anxiety. However, having a strong connection and appreciation of nature also helps reduce stress. When you go out for a walk in the woods or to the beach, try to avoid distractions, such as technology. And, as cliché as it sounds, remind yourself that you are one with nature.

Dr. Maggi and her colleagues (2023) conducted a study on the prevalence of eco-anxiety among university students, as well as the relationship between emotions towards climate change and pro-environmental behaviours. Find the study [here](#).

## ***Mochi4ThePlanet***

Mochi4ThePlanet is a youth-centered movement intended to help young people thrive amidst climate change. Mochi4ThePlanet provides youth with evidence-based strategies on how to cope with and constructively view their eco-anxiety. In doing so, youth will foster a healthy connection with nature.

To accomplish this, Dr. Maggi and her colleagues at Mochi4ThePlanet have been working on creating an action-adventure video game that builds emotional resilience in the context of climate change, *Kibou | The Guiding Light*. When playing the game, players will be taken on a transformational journey across an alien planet undergoing environmental changes. Throughout the game, players are given opportunities to learn how to maintain mental health and wellbeing while navigating the challenges posed by climate change.



*Game footage from Kibou | The Guiding Light, courtesy of Mochi4ThePlanet.*

Visit [mochi4theplanet.com](https://mochi4theplanet.com) for more information and to access resources related to eco-anxiety, such as books for educators, parents, and children.



# Interpersonal Wellness

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In the early days of human history, we formed groups to enhance our chances of survival. Now, our social relationships, whether with our family, romantic partners, or acquaintances, comprise a large portion of our well-being in the form of interpersonal wellness. However, it is also important to recognize when you need to spend time by yourself.





# Practicing Solitude

## Dr. Robert Coplan Explains Solitude

### ***Dr. Coplan's Research***

In the early part of his career, Dr. Rob Coplan spent a lot of time studying social interactions among children. Originally, he was most interested in shy children, who tend to be off by themselves, watching other children but not joining in. However, Dr. Coplan also started to notice other children who often spent time alone. But instead of seeming afraid of social interaction, these children seemed quite content to play by themselves. This observation led Dr. Coplan to explore the complex nature of solitude, specifically, the different reasons why people choose to spend time alone and how those reasons are associated with different experiences of solitude.

### ***Loneliness vs. Solitude***

Quite often, solitude is perceived in a negative light, largely because people equate being alone with loneliness. Loneliness is a negative feeling that we get when we are dissatisfied with our social relationships. We may feel bad about how little time we are spending with others or the quality of our interactions. Feelings of loneliness are not tied to any particular context. It is possible to feel lonely when you are alone, but also when you are surrounded by other people. For example, if you are attending a social gathering, you may feel lonely if you do not feel connected to others at this event.

Generally, solitude refers to being physically separated from others; it is more of a place, rather than a feeling. In contrast to loneliness, we oftentimes choose to be in solitude. After a long day of work, one may choose to spend the night alone to focus on things that they enjoy doing, such as watching a movie or working out.

However, there are some issues with this simplistic definition. How far away do you need to be from someone else to be considered in solitude? If you are on a walk in a park with other people nearby, is that solitude? What role does technology play? Does texting a friend count as being in solitude? These questions make it difficult to derive a concrete definition of solitude. Some academics have focused more on perceived separation from others.



*Dr. Robert Coplan is a Chancellor's Professor in the Department of Psychology and Director of the Pickering Centre for Human Development. He is a developmental psychologist and his research focuses on solitude across the lifespan and cultures.*

## ***Costs and Benefits of Solitude***

As mentioned in the prelude to this section, humans evolved to be with others for protection. In this regard, it has been argued that humans have an inborn need to be with others — the need to belong. Too much solitude or unwanted solitude may result in not fulfilling that need. From a developmental standpoint, spending too much time in solitude can also delay children’s social and emotional development. Other costs of engaging in too much solitude may be that you miss out on things, such as spending time with friends, or that you may not get the emotional boost that occurs when interacting with others.

The most obvious benefit that solitude offers is relief from social pressures and an opportunity to recharge our social batteries. Spending time in solitude can also improve our mood by taking the edge off of strong negative feelings, which is referred to as the deactivation effect. Solitude can also provide time for self-reflection and identity formation, and a chance to be creative and plan for things.

## ***Solitude and Well-Being***

The key to using solitude to improve well-being is balance. How much time one spends in solitude versus with others is very much a personal kind of balance. Dr. Coplan’s best piece of advice is to use trial and error to determine how much time you should be spending on each.

You will extract the most benefits from your time in solitude if you are doing something that you enjoy or are passionate about. Solitude will be less beneficial if you feel like you are wasting that time. For example, with technology in mind, endless scrolling, reading scary news headlines, or comparing yourself to others online can be problematic. It might be useful to keep track of what sorts of activities you do while in solitude (e.g., by keeping a journal). If you find that technology is interrupting your solitude, turning on Do Not Disturb, or simply putting your phone away can be helpful.



## ***Dr. Coplan's New Book***

Dr. Coplan has a forthcoming book entitled, *All Alone: The Promise and Paradox of Solitude*, planned for release in 2025 by Simon and Schuster. The overarching purpose of the book is to improve people's perception of solitude through education, and, in doing so, improve their well-being. The book will be comprised of two parts. The first part will discuss the history of solitude and solitude research and will use stories and relatable examples to translate that information into everyday language. The second part will be a user's guide to solitude. The guide will provide practical advice drawn from the literature on how to apply solitude to your life, or build your "solitude muscle" as Dr. Coplan puts it. Make sure to check it out when it gets published!



If you would like to learn more about solitude, Dr. Coplan spoke at MeWeRTH's Living Well Luncheon Series. The link to his presentation can be found [here](#). You can also read some of Dr. Coplan's research on solitude [here](#).



Financial wellness refers to your satisfaction with your financial situation. Generally speaking, to be financially well requires that you have a source of income, an understanding of how money works, and the necessary self-control to limit spending on “unnecessary” items.

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# Financial Wellness



# Money Matters: Strategies for Sticking to Financial Goals

## A Presentation by Dr. Johanna Peetz

MeWeRTH's Lunch and Learn Living Well Series features presentations from academics to members of the public on wellness-related topics. Dr. Johanna Peetz was kind enough to share her expertise on personal spending at one of these luncheons. You can find her full presentation [here](#).

### **Financial Self Control**

Initially, people thought of self-control as the ability to suppress unhealthy temptations. According to this definition, self-control is purely reactive. However, we now think about self-control as how we arrange our lives to make goal-directed behaviour easier by mitigating the risk of developing temptations. Dr. Peetz suggested that we think about self-control as a timeline, or rather, a series of decisions leading up to an event, such as a purchase.

Later on in the month, you realize that you need to buy clothes for your new job. You set a budget for that day.

Before going to the store, you might choose to bring only cash to avoid spending over your set daily budget.



The first point on that timeline might be you sitting down and making goals for the week or month.

Based on that budget, you decide on what stores you will go to. If you are looking for dress pants, it might be wise to go to a suit store, as opposed to a department store to avoid tempting yourself with other items.

You might also be thinking about the future. What pair of pants are the most durable, so that I will not have to buy a new pair anytime soon?





## Strategies for Improved Financial Wellness

There are many strategies that you can use to help manage your finances and personal spending. The following are strategies that have been empirically tested and found to be effective in laboratory settings:

- One of the most effective strategies for managing your finances is setting specific goals. Instead of your goal being to save, it should be saving an X amount of dollars in a specific period.
- Limiting access to spending is also very effective. Removing payment methods from your phone and websites, using cash instead of cards, and using larger bills will all help to reduce spending.
- Creating budgets or itemized lists of things you need and want to buy before shopping is also helpful.
- Oftentimes, when making purchases, we only consider how that purchase will affect us immediately. Thinking about your future self before making a purchase can be quite helpful to limit unnecessary spending. You can also imagine the regret you will feel if you go through with the purchase.
- One strategy that has not been tested empirically, but many people use, is talking to a partner before making a purchase. They will offer a second opinion and remind you to stick to your goals.
- Proactive strategies are better than reactive strategies.

Dr. Peetz found that half of all strategies proposed in the media (e.g., on websites) overlap with those found in academic literature. Ninety-four percent of strategies that people use overlap with those found in the media, with around half being found in the literature. To make her research findings more accessible, Dr. Peetz runs a blog on Psychology Today called *Financial Matters*. You can access the blog [here](#).

Dr. Peetz and her Ph.D. student Mariya Davydenko (2021; paper [here](#)) tested the efficacy of expert strategies from the literature and media against peoples' strategies that they personally use to reduce spending, and compared results to a control group. Every group except the control group was reminded periodically of their strategies over the course of a month. Those who listed their own strategies rather than relied on strategies from the academic literature or media advice spent the least relative to their goal. With this in mind, while looking up expert strategies may be useful, you should be brainstorming ideas of how to save money on your own and remind yourself frequently of these strategies.

*Dr. Johanna Peetz is a professor in the Department of Psychology. Her research focuses on three topics: time perception, relationship cognition, and personal spending.*



# Cultural Wellness

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An individual's culture refers to their way of life, which can be defined by the customs they abide by and the social institutions they have access to. Other aspects of life, such as art and sport, also play a role in defining culture. Cultural wellness considers how one feels about their cultural identity and how one interacts with individuals with different cultural identities.







*Danielle Printup (left) and Dr. Carmen Robertson (right) sitting in front of three Norval Morrisseau paintings. These paintings were part of the Norval Morrisseau: Medicine Currents exhibition, co-curated by Dani and Dr. Robertson. Dr. Robertson is a Professor and the Canada Research Chair in North American Indigenous Visual and Material Culture.*

# Norval Morrisseau

## Art and Wellness with Dani Printup

### ***Dani's Role***

Dani is the Indigenous Cultural Engagement Coordinator for Carleton University's Art Gallery. She combines her lived experience as a student and Indigenous person with her enthusiasm for contemporary Indigenous art to implement culturally specific initiatives and programs. For instance, Dani helps facilitate medicine walks, bannock-making workshops, artist talks, and trips to nearby Indigenous communities.

Through these initiatives, Dani helps people engage with Indigenous art, and in doing so, develop a deeper appreciation of Indigenous culture. One of Dani's philosophies is that "the best way to learn about a culture is through the things that they make".



*Danielle Printup is the Indigenous Cultural Engagement Coordinator for the CUAG. She is also applying for her master's in Art and Architectural History within the School for Studies in Arts and Culture.*





## Art and Well-Being

Art creates a balanced space where people feel free to offer their interpretations of pieces without fear of being wrong. The subjective nature of art grants it the ability to foster connections between people. Morrisseau's work in particular invites people to share and bond over stories. In doing so, knowledge is transferred between generations and cultures. In addition to fostering connections between people, art also allows people to feel more connected to their culture, especially when they have moved or been displaced from their home community.

Art also provides people with a safe space for healing. Indigenous people in particular have been the target of many injustices, such as the Residential Schooling System and the Sixties Scoop. Many Indigenous people can directly relate their lives to Morrisseau's pieces, which helps them to be able to express their emotions. Contemporary artists, such as Christian Chapman, have sometimes used humour in their art as a method of healing.



*Agawa rock art depicting Micipijiu at Lake Superior Provincial Park, Ontario, 2011. Photo by D. Gordon E. Robertson.*



*Christian Chapman, "Wisdom" (2011), acrylic and oil on gesso paper. Indigenous Art Collection, Crown-Indigenous Relations and Northern Affairs Canada. Photo by Lawrence Cook.*



# Spiritual Wellness

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How the dimensions of wellness are defined throughout this magazine is not universally accepted. Spiritual wellness is no exception, and this is not surprising. Our guiding principles (i.e., morals and values) constitute our spiritual wellness. While spiritual wellness does not focus solely on religion, our religious beliefs (or non-beliefs) make up a large component of our spirituality. It is interesting to see how definitions of spiritual wellness differ across religions and how they are similar.



# A Triple Perspective

## A Discussion with our Carleton University Chaplains

Spirituality is associated with less stress, depression, and anxiety. To read more about the effects of spiritual wellness on university students' mental health, have a look at the following article by Leung and Pong (2021) [here](#).

### ***What does spiritual wellness mean to you?***

Spiritual wellness in Islam refers to the state of the heart, that it is a healthy heart. A healthy heart is filled with faith, piety, and tranquillity. It is void of envy, hate, and anger. Mind you, a person with a healthy heart still feels envy, hate, and anger, but they can quickly channel these negative emotions into a positive response. The negative emotions do not seep into one's heart, causing an accumulation of negativity that clouds one's judgment and spirituality. By faith, I mean belief in God as the Creator, the Sustainer, and the Most Merciful. By piety, I mean a yearning to do good that pleases God, and steering clear of all evil that displeases God. By tranquillity I mean a sense of calm that comes from trusting God's plan; if good comes our way, we are grateful but never arrogant or entitled. If harm comes our way, we seek God's help, using the many blessings we have to push that harm away, never discontent or frustrated with what does not go according to our plans.

### ***How can people build their spiritual wellness?***

By increasing their faith, piety, and tranquillity. For each of these, there is the introspective and the active. (1) For faith, by observing the intricacies of God's design in life, we recognize God's mercy and majesty in our hearts. And actively by having a routine to disconnect from the hustle and bustle of life, focus on contemplation, read God's Holy Book, the Quran, and surround ourselves with people of faith; in short, prayer. (2) For piety, by studying what is pleasing to God and what is not, thereby increasing our knowledge. And actively by applying what we studied, rushing to do that which pleases God, and staying away from that which displeases God, making it habitual and regular in our lives. (3) For tranquillity, by studying the perfect characteristic of God, knowing who God is, recognizing the bigger picture, that this life is not the be-all and end-all. And actively by adopting God's perfect characteristics in our own lives at all times; from Justice to Forgiveness, and from Patience to Mercy.



Imam Ahmed Khalil  
(Muslim, Sunni)







### ***What does spiritual wellness mean to you?***

Speaking out of my Christian viewpoint and tradition, spiritual wellness is not just about being connected with God (although it is), but about being connected with others, the Earth, and ourselves. At the beginning of the Bible's big story we are shown that God created us to be in fourfold relationships: connected with God, developing meaningful relationships with others, living in peace with the natural world, and developing our understanding of ourselves and who we are. I think spiritual wellness is a journey, not something we ever become "perfect" at or can say we have "arrived" at. Spiritual wellness is a relational journey where we grow, deepen, and explore these four different relationships and their interconnectedness.

### ***How can people build their spiritual wellness?***

From my point of view, students can improve their spiritual wellness by stepping back and thinking over their relational connectedness. It is so easy for all of us, not just students, to get so caught up in the workload, accomplishments, and frenetic activity that we forget we are human beings, not human doings. It is difficult when the demands and responsibilities are high, but intentionally carving out space in our schedules where we focus our energy on connecting with God (e.g., through prayer, meditation, worship, or reading sacred texts) will be incredibly helpful to not define ourselves by our grades or productivity. And it is not just about a relational connection with God, but with other human beings, the natural world (where God loves to be revealed) and even our awareness of self. Again, all these things get crowded out. Just finding small ways to be relational instead of productive is so important.



*Reverend Ryan Farrell  
(Christian, Reformed)*



*High Priestess Heather Logan (Wiccan, Alexandrian Tradition)*

### **What does spiritual wellness mean to you?**

I believe that spiritual wellness means being in right relationship with the gods and spirits in whatever way your worldview conceptualizes them. In a secular context, this could mean being in right relationship with "the universe" or with your physical or social environment.

### **How can people build their spiritual wellness?**

First, being in right relationship with the gods requires ongoing cultivation. Like any relationship, it is built from a series of experiences of connection. Many spiritual traditions preserve and pass along practices, such as meditation or ritual, that facilitate the experiences through which you can develop and enhance your relationship with the gods. Second, you need to "Know Thyself". Coming to understand and express yourself as a unique being, rather than trying to conform to others' expectations of how you should be, is a long-term process but is essential to spiritual well-being. You cannot be in right relationship with the gods if you are not in the right relationship with yourself.



If you are wanting to meet with a Carleton chaplain for spiritual guidance, visit their website [here](#).



# Occupational Wellness

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Do you enjoy your job? What does your relationship with your colleagues look like? How about your boss? Do you feel as though you are being challenged at work? Do you feel motivated? All of these questions fall under the umbrella of occupational wellness, which, at the heart of its definition, concerns itself with your attitudes toward your job.

# Staying Happy On the Job

## Employee Wellness with Dr. Linda Duxbury

### ***Dr. Duxbury's Research***

Dr. Duxbury's research focuses on employee well-being. She uses qualitative and quantitative methods to explore topics such as work-life balance, work-related stress and anxiety, burnout, prescription drug use, and recently, the impact that the pandemic has had on employee well-being.

### ***A Brief History of Work-life Balance***

The birth rate during the baby boom period was significantly higher than what we are seeing today, hence the name. This meant that there was a large cohort of individuals competing with each other for jobs and promotions. As a result, they were forced to work long and hard hours if they wanted to advance at work and/or keep their job. Work-life balance was something that Baby Boomers talked about but seldom achieved. They would achieve balance when they retired. Generation X, the cohort that followed the boomers, also had to compete for jobs. To do so, they delayed having children. Beginning with the boomers and continuing to this day, the ideal worker norm — job above all else — predominated.

When Generation Y, or the millennials, came along, many did not buy into the ideal worker norm. They saw their parents working themselves too hard and refused to do the same. Generally speaking, Generation Z, the current generation, values work-life balance highly, and the pandemic has played a role in this. “Nothing like a near-death experience to make you realize work is not everything,” said Dr. Duxbury.

*Dr. Linda Duxbury is a Chancellor's Professor in the Sprott School of Business. She's one of the world's leading researchers on employee well-being. Dr. Duxbury also provides employers with training on how to improve mental health in their workplaces.*





## ***Burnout***

Burnout refers to a state of exhaustion that is brought about by prolonged stress. Work-related burnout depends on several factors, such as the sector you are working in, your role in that sector, and company dynamics.

For example, people working in healthcare experience high rates of burnout due to the high-intensity, stressful environment they work in. Within healthcare, those who have less control, such as nurses and allied health professionals, generally experience more burnout compared to those in positions of power, such as physicians.

Role overload, having too many tasks to do in an allocated period, is also becoming more apparent across all professions. Over time, people lose the ability to cope with persistent job-related stress. When people lose their ability to cope depends on a variety of individual characteristics, such as their personality. Hardiness and optimism are associated with lower levels of burnout.

The Harvard Business Review's website has some excellent pieces on burnout. Access them [here](#).





## ***Managing Work-life Balance & Burnout***

Given that burnout typically results from poor work-life balance, strategies for managing work-life balance and burnout are similar. The first thing to note is that working less actually allows you to be more productive, to a degree. If you are feeling stressed, try to disengage from your work for a short period. Go on a walk. Spending time in nature has several mental, as well as physiological benefits. Maintaining proper physical health is also incredibly important, so make sure you exercise regularly and get proper sleep. Going on a run or napping are great ways to take a break from work.

We are in an age of technology. Employers feel that they can contact employees at any time, even outside of work hours, and many employees are connected to work all hours of the week. Dr. Duxbury suggests that you should set times when you shut off your devices and that you communicate this to your employer. She emphasizes that people need to take responsibility for setting boundaries, noting that balance is not something that we are given by our employers but something that we have to personally create. Some people may be worried that if they set boundaries on when they will and will not work, they may not get a certain promotion. That is understandable. But, you have to remind yourself, that if you take that promotion, your work-life balance will likely suffer more. This is where you have to consider your values. Take time to self-reflect and think about what you want for yourself and those around you.

Do not forget to seek help. If you feel comfortable, talk to your employer. Note that workplace stigma surrounding mental health still exists, although work is being done to combat this. Many workplaces have counsellors that you can talk to if you need help and are unsure of how to approach your employer.

For a quick read about work-related stress, check out the American Psychological Association's website [here](#).



# Emerging Research

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It is important to recognize that the world is changing rapidly, and research on mental health and well-being is no exception. At the time of writing, Google Scholar has recorded over 500,000 articles containing the phrase “mental health” since 2020, and over 600,000 containing “well-being”. Given this, we thought it was important to expand on the nine aforementioned dimensions of wellness to include novel research that does not fit neatly into any single category.





# Science Café: Navigating Cannabis and Mental Health

Recently, a panel moderated by Dr. Jim Davies explored cannabis use and mental health. Panel experts included Dr. Zachary Patterson, Dr. Kim Hellemans, and Dr. Andrea Howard. Information in this section was taken from this event. Find the full discussion [here](#).

## ***What is cannabis?***

There are three types of cannabis plants, two of which, *Cannabis sativa* and *Cannabis indica*, contain the primary active ingredient, THC. Other relevant active ingredients include CBN, CBD, CBG, and terpenes. Depending on the relative concentrations of these constituents, as well as other contextual factors (e.g., mental state), cannabis can have stimulatory, sedative, hallucinogenic, and/or analgesic effects.

## ***How does cannabis act on the brain?***

The active ingredients found in cannabis (e.g., THC) act on our body's cannabinoid system. Our body possesses two proteins that are capable of latching onto these chemicals. These proteins are referred to as the CB1 and CB2 receptors, and they are found throughout our nervous system. For the sake of simplicity, let us focus solely on the CB1 receptor.

When cannabis enters our body, typically through inhalation or ingestion, THC binds to the CB1 receptor and alters activity in several prominent brain regions. THC impairs short-term memory by blocking cellular interactions in the hippocampus. THC increases activity in the brain's reward system, which produces mild euphoria. THC can reduce activity in the amygdala, which produces anxiolytic (anxiety-reducing) effects. It should be noted that our body is also capable of producing its own cannabinoids, called endocannabinoids, and these chemicals work similarly to those found in cannabis, just to a lesser extent.



## ***Cannabis Use***

Research suggests that the negative effects associated with cannabis use are mostly found in those who use regularly (i.e., daily) and those who begin using earlier in life, as well as those who use products with high THC concentrations. Some common negative effects include social conflicts with family and friends who may oppose cannabis use, worsened academic performance, impaired cognitive processing (remember, do not use and drive), and the development of Cannabis Use Disorder (i.e., addiction), which occurs in roughly ten percent of users. Cannabis use during critical periods of development, such as adolescence, can be particularly harmful. Despite anecdotal evidence suggesting that cannabis may be useful for mitigating ADHD symptoms, research in this area is inconclusive.

Occasional users may experience perceived benefits of cannabis use. For instance, cannabis is anxiolytic when other contextual factors, such as feelings of anxiety, are controlled for. Note that using cannabis to help with your anxiety can be problematic and lead to Cannabis Use Disorder. Cannabis may also be helpful for some types of chronic pain. Furthermore, people may choose to use cannabis because they believe it will enhance their social interactions and help them to feel more included.

If you are using, or considering using cannabis, talk to a pharmacist or physician. You can also refer to Canada's Lower-risk Cannabis Use Guidelines for more information. Access it [here](#).

## ***CU Cannabis Crew***

If you would like to learn more about cannabis, we recommend checking out the Carleton University Cannabis Crew research group. The group is comprised of students and professors, with Dr. Hellemans and Dr. Patterson at the helm. The group aims to provide young people with evidence-based information about cannabis use grounded in a harm-reduction approach. You can find them on Instagram @cucannabiscrew.



From left to right: Dr. Jim Davies, Professor in the Department of Cognitive Science; Dr. Zachary Patterson, Instructor in the Department of Neuroscience; Dr. Kim Hellemans, Assistant Professor in the Department of Neuroscience; and Dr. Andrea Howard, Associate Professor in the Department of Psychology.



# Towards Tailored Treatments

## Biomarkers and Epigenetics with Dr. Robyn McQuaid

### ***Dr. McQuaid's Research***

Historically, health research has prioritized physical ailments, limiting our understanding of mental illnesses and their underlying mechanisms. Dr. McQuaid's research explores the biological processes underlying the link between stress and mental illnesses, and how this association can be modified by social determinants of health.

### ***Biomarkers and Epigenetics***

Biomarkers are biological factors that researchers can link to diseases. We are familiar with biomarkers in the context of physical illnesses; high blood pressure is correlated with heart disease, for instance. However, it is difficult to pin down reliable biomarkers for mental illnesses.

Every aspect of your being, from your physique to your personality, is determined in large part by the expression of genes in your DNA. Epigenetics is the study of how environmental factors (e.g., early life stress and social support) can influence the expression of DNA, and therefore change the way you are.

### ***Personalized Treatments***

Many individuals with mental illness do not respond to treatments. This may be a result of generalized treatments being administered for disorders with many symptom profiles, or subtypes of disorders, characterized by unique biological mechanisms. Identifying subtype-specific biomarkers, including epigenetic modifications, will bring us one step closer to tailoring treatments to an individual's symptom profile.

In one of her lines of research, Dr. McQuaid is making strides in this respect. Understanding that stress is a major factor in the development of mental illness and that stress provokes inflammatory processes, Dr. McQuaid has sought to identify inflammatory factors associated with specific subtypes of depression. Along with her graduate students, she is among the first to identify a link between heightened levels of an inflammatory protein (C-reactive protein) and a type of depression symptomatology characterized by increased sleep and appetite. You can check out the published article by Franklyn et al. (2022) that discusses this finding [here](#). Dr. McQuaid is now in the preliminary stages of examining how epigenetic markers relate to depressive subtypes.



## Social Determinants of Health

What role do social determinants of health play in all of this? Social determinants of health refer to the conditions in which people are born, grow, and live. Social determinants include one's culture, gender, and socioeconomic status. About half of one's health outcomes are accounted for by social determinants of health.

Various social determinants can negatively impact mental health. Dr. McQuaid has focused much of her work on studying the implications of early life stress (ELS) on mental health. Dr. McQuaid has found that ELS enhances inflammatory biomarkers and may be associated with epigenetic modifications on genes involved in depressive processes. Access one of Dr. McQuaid's articles on ELS [here](#).

Social determinants can also positively impact mental health. In some of her research, Dr. McQuaid has investigated the protective role of social support among female undergraduate students in a laboratory setting. Participants were divided into two groups, those that could bring a friend with them and those that could not. Participants took part in a stress test. Those who had social support had a weaker stress response (i.e., lower stress hormone levels) than those who did not. Check out the article by McQuaid et al. (2016) [here](#).

In essence, Dr. McQuaid's research suggests that your alignment with the dimensions of wellness, as discussed throughout this magazine, influences your mental health through biological mechanisms. Deficits in any dimension may result in stress, which can be observed through biomarkers and epigenetic modifications. Improving your wellness can help to reduce stress and reverse these biological changes.



*Dr. Robyn McQuaid (middle) is an Assistant Professor in the Department of Neuroscience. Her research focuses on the link between stress and mental illness. Also pictured are two of Dr. McQuaid's Ph.D. students, Dana Jarkas (left) and Ayeila Daneshmend (right).*

For a comprehensive discussion of personalized treatments for mental illnesses and the influence of biomarkers, epigenetics, and social determinants, check out McQuaid (2021) [here](#).

# Well-Being in the Age of Technology

## *Excessive Technology Use*

There are several ways that technology and the Internet might hinder one's well-being. For a comprehensive discussion, read Wacks and Weinstein (2021) [here](#).

Physically, excessive technology use is associated with eye strain, poor posture, headaches, and disruptions to sleep patterns. Emotionally, excess technology use is related to feelings of depression, anxiety, or distress. Excessive technology use may strain one's social relationships. In some cases, social media use may make us envious of others' lives and feel bad about our own. Read more about social media influencers and mental health [here](#).

The use of technology can also distract us from other areas of our lives, such as our academics. However, complications arise since much of our learning requires technology. School boards, such as those in Quebec, have discussed limiting cell phone use in the classroom. Some research suggests that device usage, especially in class, can be quite detrimental to one's academic performance (Felisoni and Godoi, 2018; see [here](#)). Magnusson and colleagues (2023) discuss some of the complexities of cell phone bans in schools [here](#).

The aforementioned negative consequences of technology use are exacerbated in those who are considered to be addicted to the Internet. Note that there is no formal diagnosis of Internet Addiction in the Diagnostic and Statistical Manual of Mental Health Disorders. Although, arguments have been made for its inclusion; see Scott et al.'s (2021) article [here](#) for more information on this. If you think you are using technology excessively, try extra hard to be conscious of how often your mobile device is on your person, as well as how you feel when you abstain from technology use. Awareness is the first step to changing behaviour!







## ***Can Technology Improve Our Well-Being?***

### ***Internet Applications***

Mobile mindfulness applications have grown in popularity as of late. Several mindfulness apps are on the market, few of which have garnered as much attention as Headspace. Headspace is a mindfulness meditation and sleep-aid app. According to a systematic review by Daffer et al. (2022; access [here](#)), Headspace may or may not achieve its intended effects on nonclinical populations. In other words, results on the efficacy of Headspace were inconclusive. Headspace was found, however, to reliably improve depressive symptoms. At least forty percent of the studies showed improvements in mindfulness, stress, well-being, and anxiety as a result of the intervention. While Headspace may not work for everyone, it appears to work for some people. The app offers a free trial from which you can determine whether it will help you or not.

### ***Virtual Reality***

Virtual reality is a computer-generated three-dimensional interactive environment. Many virtual reality mental health interventions set users in a natural or otherwise serene environment. In doing so, virtual reality hopes to elicit the positive effects that physically spending time in nature produces. According to the science, it appears that these interventions are successful at promoting well-being. Check out the following systematic review by Xu and colleagues (2023) [here](#).

### ***Artificial Intelligence***

Developments in the field of artificial intelligence are incredibly exciting. MeWeRTH would like to highlight the work of an accomplished researcher operating at the Institute of Mental Health Research at The Royal, Ottawa. Dr. Zachary Kaminsky et al. (2020) developed a validated machine-learning system to predict future risks of suicidal ideation using Twitter data. Check out the full study [here](#). Dr. Kenta Asakura, an Adjunct Research Professor in Carleton University's School of Social Work has been using artificial intelligence (and virtual reality) for teaching purposes in the field of social work. Dr. Asakura's Carleton page can be found [here](#). Artificial intelligence has also been used in other ways to promote well-being, such as in the medical field to predict diagnoses and online, through chatbots, therapeutic video games, and artificial companions. Read about the benefits of AI, as well as the possible ethical complications in a study by Hanna and Hanna (2022) [here](#).

### ***Wellness Services Navigator***

We would like to conclude this section by highlighting an invaluable resource that Carleton offers, the Wellness Services Navigator website. If you are a Carleton student who is experiencing challenges in any facet of life, this service can direct you to a curated list of resources. Access the website [here](#).

# A Big Thank You

## **Contributors**

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## **Socials**

Email us at [mewerth@carleton.ca](mailto:mewerth@carleton.ca) if you would like to be added to our mailing list for information on upcoming events. Visit our website at <https://carleton.ca/mental-health/> if you would like more information about MeWeRTH. Follow MeWeRTH on X (previously Twitter) @CU\_MeWeRTH.



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# SCIENCE OF LIVING WELL



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