

Ants and Plants

Research in Fish Creek Park

Since 2013 Dr McLean has been examining the invasion of a Eurasian hemi-parasitic plant *Thesium ramosum* into Fish Creek Park (FCP). Hemi-parasitic plants like *T. ramosum* are green and photosynthesize but get a lot of their energy by sucking carbohydrates out of the roots of host plants. Dr McLean and summer student assistants discovered that the roots of this plant can parasitize upwards of 40 different species of plants, including grasses, weeds, native plants, shrubs and trees in the park. However, it was unknown how the plant was dispersing around the park. The observation of ants carrying the seeds, in addition to the apparent relationship between increased numbers of *T. ramosum* adjacent to ant mounds, suggested that ants might play a role in *T. ramosum* dispersal.

In 2018, Dr McLean, in collaboration with one of Alberta's two ant researchers, Christine Sosiak, were able to study the role ants play in the distribution of *T. ramosum* with the help of a \$9900 research grant from the Alberta Conservation Association and a \$6900 grant from TD Friends of the Environment. Dr McLean spent the summers of 2018 and 2019 conducting extensive fieldwork with her team as they searched for, observed and identified ants. As well several lab experiments were conducted with live ants, to better understand how different species interacted with *T. ramosum* seeds. The results showed that different ants collected seeds at different rates; *F. obscuriventris* collected most seeds within the first hour, while *F. argentea* tended to collect the seeds over longer periods of time.



Dr. Mary Ann McLean



Ant observations in Fish Creek Park with Felipe Velasco and TJ Timonera, summer 2018.

In addition, depending on the size, some species could carry along these seeds at least 20 meters, and even small species about the same size as the seeds carried them up to 1 metre. The distance that these ants would carry these seeds suggests that they are strongly interested in them and will put considerable resources towards acquiring them.

While ants are considered very territorial animals, Dr McLean was also surprised to observe repeatedly in the field that several ant species commonly shared resource patches and foraging trails with little evidence of conflict. In fact, it was common to find at least three ant species harvesting *T. ramosum* seeds in any one place.

This research significantly added to the ant species list for FCP, recording 27 species in 7 genera. 11 of these species were observed carrying these seeds, suggesting that that around 40% of the species in the park carry *T. ramosum* seeds! Dr McLean's research has shed light on the role of ants in propagating *T. ramosum*, helping conservationists and ecologists control its spread. Dr McLean is currently in the process of writing-up these fascinating results for publication in a peer-reviewed scientific article.

New Director of Research

Dr Corinne Syrnyk is the new Director of Research at StMU. In this role Dr Syrnyk provides coordinated leadership in the areas of strategic direction and for research initiatives at the university. She also supports faculty in the process of preparing and managing grants. Currently she is working on putting together an application to the Natural Sciences and Engineering Research Council of Canada (NSERC), so that StMU science faculty can be eligible for these prestigious, competitive, federally funded grants. Dr Syrnyk is also preparing to unveil a new Research@StMU webpage.

This will highlight recent faculty research achievements and serve as a 'one-stop-shop' for faculty, providing access to resources, information, and policy. In her role as Director of Research she aims to improve access to research resources for faculty as well as highlight some of the innovative faculty research and scholarship currently being produced at StMU. Dr Syrnyk looks forward to helping the university develop its research profile and practice.

The **Research and Teaching Newsletter** is published by St. Mary's University and distributed to faculty, staff, alumni, friends and supporters to celebrate the accomplishments of the University's faculty and share news and information throughout the St. Mary's community.

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St. Mary's University Psychology professor Dr. Ron Porter was the recipient of an SSHRC Insight Development grant to support his attitude measurement research.

Focus on Psychology

Dr. Ron Porter's research nets grant and lab

Over the past 12 months, StMU and the psychology faculty members have created a fully functioning behaviour and attitudes (experimental) research laboratory. This 'psych lab' officially opened for research in January 2020 and incorporates traditional two-way mirrors and an observation room, as well as state-of-the-art audio and visual capture cameras and software. It has been equipped with five laptop computers that have been loaded with research software that enable psychology honours students and faculty to conduct in-person or online empirical studies. Although the psych lab is new and its use somewhat curtailed by the COVID-19 pandemic, a number of studies have already been developed and run this year including one by a psychology honours student, Tiffany Biench, who conducted her thesis project research. Dr. Ron Porter has been working on a several studies (attitude measurement and wellness). Perhaps the most notable of Dr Porter's research projects has been his examination of implicit and explicit attitude measurement. This research was recently support by the Social Science and Humanities Research Council (SSHRC), who awarded Dr Porter an Insight Development grant of \$55,000 to support his attitude measurement research over the next two years.

To better understand Dr Porter's attitude research, it might be helpful to start with some background information.

For those who do not know, attitudes (i.e., our global positive, negative or ambivalent evaluations of people and objects) have long been of interest in areas of social behaviour such as intergroup relations, politics, and marketing, because they can strongly influence behaviour. Thus, in many applied settings, attitudes are measured to predict behaviour and/or are the target of persuasive appeals in an attempt to influence behaviour. However, accurately determining people's attitudes is not always straightforward. Although it is effective to directly ask someone about their attitude, sometimes these measures can be problematic. First, when attitudes are related to socially sensitive topics, people might not honestly report their attitudes if those attitudes could have a negative impact on the impressions others form of them. Second, people might sometimes have relatively automatic non-thoughtful attitudinal responses (implicit) that differ from their more thoughtful and deliberative attitudinal judgments (explicit). Because traditional self-report measures are strongly shaped by thoughtful considerations, they often fail to capture more spontaneous evaluative responses.

In response to these limitations, researchers have developed indirect implicit attitude measures. These measures do not ask respondents to directly report their attitudes, but instead ask them to perform a judgmental task related to the

target attitude object that is presumed to be spontaneously influenced by people's attitudinal responses. Because these measures reflect the effects of attitudes outside of people's active intentional control, they are less vulnerable to impression management concerns and less reflective of thoughtful considerations. Numerous implicit measures of attitudes have been developed including the Implicit Association Task (IAT), Affective Priming, (AP), and the Affect Misattribution Procedure (AMP).

Although implicit attitude measures have been a central topic in attitudes research over the past two decades, interest in indirect measures of attitudes goes back more than 80 years. Unfortunately, none of these early indirect attitude measures gained popularity among researchers and early attempts at indirect measurement have generally been regarded as ineffective. While the performance of many of these measures was clearly disappointing, a few of the measures demonstrated some promise, notably the Error-Choice (EC) Technique.

The EC involves presenting people with a series of multiple-choice factual questions related to the target object of interest. These questions are constructed such that their answers are: a) in principle knowable, b) in practice unlikely to be known by respondents, and c) reflect varying levels of positivity versus negativity toward the target object. For example, an EC assessing attitudes towards homosexuals might include an item asking respondents to indicate what percentage of Canadians reported feeling embarrassed or ashamed when a close relative who is gay made their sexual orientation public. The EC rests on two premises. First, when people are faced with a knowledge-based question for which they do not know the answer, their guesses will not be random; an important factor that they will rely upon is their attitudes. When answering a question regarding sexual orientation, people with positive attitudes will tend to select low percentage answers and people with negative attitudes will tend to select higher percentage answers. Thus, across a series of such questions, one might expect to find a systematic guess pattern that is consistent with their attitudes. The second premise of the EC is that, because each item is presented as a factual question, people will not be aware that their attitudes are being assessed. Early research suggested that the EC had promise, but its performance was never fully evaluated in subsequent research. Recent pilot data collected in earlier studies provided further encouraging evidence.

Specifically, answers to EC questions do appear to reflect a single systematic response pattern that is comparatively reliable and at least in part represents the respondent's attitude. These studies also suggest that (as intended) this response pattern to the EC questions is highly resistant to impression management concerns.

Nonetheless, important questions remain unresolved. Over the next two years of his SSHRC funding research, Dr Porter will conduct a series of experiments in the psych lab that will set out to accomplish two primary goals. First, it is unclear if the systematic guessing pattern captured by the EC is sufficiently attitudinal in nature such that it provides a valid measure of attitudes. It is possible that a substantial amount of the variation in guess patterns reflects systematic measurement error unrelated to the respondent's attitudes. To establish the validity of the EC, it is important to show that scores are responsive to events known to influence attitudes and to demonstrate that scores can predict known

consequences of attitudes. Second, even assuming that the EC measures attitudes, it is unclear if it reflects thoughtful (explicit) evaluations or more spontaneous (implicit) evaluative reactions. Popular implicit measures such as the IAT involve speeded judgmental tasks and thus tend to capture more automatic evaluative responses. To date, no validated indirect measure of attitudes exists that captures people's more thoughtful (explicit) evaluative judgments. However, because the EC provides people with items that require response processes similar to traditional self-report scales (which are strongly shaped by thoughtful considerations) and do not require rapid judgmental tasks, it is possible that the EC reflects more thoughtful attitudinal responses. If so, the EC could be a relatively unique tool: a measure of thoughtful attitudinal judgments that is highly resistant to impression management. Thus, evaluating the thoughtful versus non-thoughtful nature of EC responses is an important issue for gauging the potential utility of the EC.

If these studies are successful, they would lay the foundation for use in applied setting. For example, because it is more easily administered than current implicit measures of attitude (e.g., IAT, AMP, etc.) it would enable organizations to identify employees' attitudes towards socially sensitive topics. For example, discriminatory attitudes towards underrepresented groups. This would then enable organizations to develop training and intervention programs to assist in developing and maintaining a more positive work climate.



A St. Mary's psychology student working in the new psychology lab on campus.

Recent Faculty Activity

Baltutis, P. (2020). The bishops and laity as collegial partners in social justice: The Canadian Catholic organization for development and peace. In D. L. Orsuto & R. S. White (Eds.), *Full, conscious, and active: Lay participation in the church's dialogue with the world* (pp. 43-55). Libreria Editrice Vaticana.

Davis, T. (2020). Adventures in teaching at home: "Mr. Knuckles" becomes "Mr. Knucklehead." *Antistasis*, 10(3).

Garrison, J. (in press) Reforming community: Women's rape narratives and Gower's confession amantis. [Special issue: Women's arts of the body]. *Medieval Feminist Forum*.

Harvie, T. (2019). A politics of connected flesh. *International Journal of Public Theology*, 13(4), 494-512.

Harvie, T. (2020). Our intertwined animality: Forgoing ultimacy for intimacy in dialogue with echatology and science. *Studies in Religion/Sciences Religieuses*, 49(1), 73-85.

Harvie, T. & Eaton, M. (2020). Laudato si and animal well-being: Food ethics in a throwaway culture. *Journal of Catholic Social Thought*, 17(2), 241-260.

Harvie, T. (in press). Political lament: Extinction, grief, and embodied silence. *Studies in Religion/Sciences Religieuses*.

Lock, J. V., Johnson, C., Altowairiki, N., Burns, A., **Hill, L.**, & Ostrowski, C. P. (2019). Enhancing instructor capacity through the redesign of online practicum course environments using universal design for learning. In J. Keengwe (Ed.), *Handbook of research on blended learning Pedagogies and professional development in higher education* (pp. 1-20). IGI Global.

Danyluk, P., Burns, A., Crawford, K. & **Hill, S. L.** (2020). Preservice teachers' perspectives of failure during a practicum. *Teaching Education*. <https://doi.org/10.1080/00476210.2019.1693536>

Hill, S. L. (2020). Professional identity: Creating stories in the academy. In A. Burns & S.Eaton (Eds.), *Having it all: Women negotiating life in the academy* (pp. 67-77). Springer Publishing.

Lock, J., Johnson, C., **Hill, S. L.**, Ostrowski, C. P., & da Rosa dos Santos, L. (in press). From assistants to partners: A framework for graduate students as partners in SoTL research. *Teaching & Learning Inquiry*.

Knowles, N. (in press). Behold the deaconess and the rector of St. George's: Sexual harassment, church polity, and middle class respectability in early twentieth-century Canadian Anglicanism. In J. Loft & T. Power (Eds.), *Trauma and survival in the contemporary church: Historical, archival, and missional responses*. Cambridge Scholars Press.

O'Briain, K. (2019). Frances Burney and the art of accident. *NOVEL: A Forum on Fiction*, 52(3), 525-41.

O'Briain, K. (2020, reprint). Dryden's georgic fictionality. *Eighteenth-Century Fiction*, 30(3), 317-38.

Seitz, P. & Hill S. L. (2019). Language, culture and pedagogy: A response to a call for action. *in education*, 25(2), 59-72.

Seitz, P. & Hill, S. L. (In press). Cognition in 21st century skills: A mixed methods study. *International Journal of Curriculum and Instruction*.

Williams, J. (2019). Lost daughters of Winnipeg. *Geist*.

Williams, J. (2020). Hers. *Bacopa Literary Review*.

Williams, J. (2020). I do: Not my short story with the soldier. *42 Stories Anthology*.

Colwell, R., & **Wright-Maley, C.** (2020). Nothing to fear: Teaching to transcend transphobia in Catholic contexts. In S. W. Woolley & L. Airton (Eds.), *Teaching about gender diversity: Teacher-tested lesson plans for K-12 classrooms*. Canadian Scholars Press.

Wright-Maley, C. (Ed.). (2019). More like life itself: *Simulations as powerful and purposeful social studies*. Information Age.

Wright-Maley, C., & Van Kessel, C. (2020, November 30-December 4). *Seeking an antidote to radical right-wing populism: Do the Blackfoot have an answer for us?* [Paper presentation]. College and University Faculty Association of the National Council of the Social Studies, Virtual Conference.

St. Mary's Research Grants

Dr.'s Alana Ireland & Laurie Hill

Project Title: Preservice teacher health and wellness: A pilot study.

Granting Agency: StMU Research Grant

Amount of Award: \$2,500.00

Dr. Scott Lovell

Project Title: Avian Technician

Granting Agency: Canada Summer Jobs Grant

Amount of Award: \$4,300.00

Dr. Katarina O'Briain

Project Title: Can Augustan poetry be decolonized?: Land, labor, and prairie Georgic

Granting Agency: StMU Research Grant

Amount of Award: \$2,500.00

Dr. Mary Ann McLean

Project Title: Digitizing the herbarium

Granting Agency: Canada Summer Jobs Grant

Amount of Award: \$8,400.00

Dr. Corinne Syrnyk

Project Title: Knowing nurture: Building capacity and community in a rural, high-needs elementary school

Granting Agency: SSHRC Individual Partnership Engage Grant; StMU Research Grant

Amount of Awards: \$22,496.00, \$2,500.00

Dr. Jocelyn Williams

Project Title: The legacy interviews: An intergenerational exchange

Granting Agency: The Horizons Grant (a partnership with United Active Living & the Government of Canada)

Amount of Award: \$24,880.00