

University of Waikato Summer Research 2024-25 Posters

Te Wānanga o Ngā Kete – Division of Arts, Law, Psychology, & Social Sciences



EVALUATING THE FEASIBILITY OF AI-ASSISTED APA ASSESSMENTS

A: \Introduction\

> Adhering to academic writing standards, such as the APA style, is essential but often challenging for students, researchers and graders.

> Advancements in Artificial Intelligence (AI) have seen growing interest in the use of AI-driven tools to assist with writing style compliance.



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B: \Aim\

> This study explores the feasibility of implementing an AI-driven solution suitable for APA-assessment in higher education.

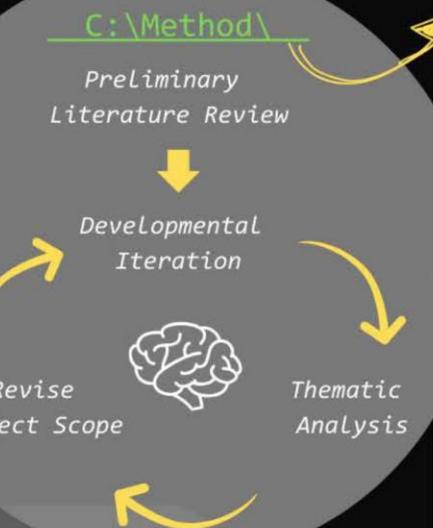


/**

Acknowledgements:

- > University of Waikato Summer Research Program
- > Supervisors: Brendan Sheridan & Krista Yuen
- > Special Mentions: Alistair Lamb & Hongyu Wang
- > Scan the QR code for more info ----->

*/



LangChain

- > Cost: Low
- > Scalability: High
- > Adaptability: High
- > Complexity: Low

Microsoft Azure

- > Cost: High
- > Scalability: High
- > Adaptability: High
- > Complexity: Low-Med

APPROACH

D: \Results\

Ollama

- > Cost: Low
- > Adaptability: High
- > Scalability: High
- > Complexity: Low-Med

Unslotted

- > Cost: Low-Med
- > Adaptability: Low
- > Scalability: Low
- > Complexity: N/A

Google Docs API

- > Cost: Low
- > Scalability: Med
- > Adaptability: Med
- > Complexity: Med-High

E: \Findings\

> The following constraints limited the successful implementation of a prototype:

Cost

- > Model Costs
- > Token Length
- > LoRA
- > API Requests
- > Context Comprehension
- > Computational Power
- > Energy Consumption

KEY CONSTRAINTS

Skill

- > Model Training
- > AI Fundamentals
- > API Basics
- > Programming
- > PC Hardware
- > Datasets

Accessibility

- > Paid subscriptions
- > Unsuitable Hardware
- > Limited API Functions

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Gender and Types of Harm Used Against Current and Former Intimate Partners

Background

- Men and women use comparable amounts of physical harm in their intimate partner relationships.^{1, 2} If these relationships end, there is an increased risk of the violence escalating.³
- However, feminist researchers show that women's violence tends to be less severe.⁴ Additionally, violence between current partners involves more weapon use and injuries compared to violence between ex-partners.³

Research Questions

- Is there a difference in the type or severity of harm men and women use as aggressors in intimate relationships?
- How does the type and severity of harm used change between episodes involving current and ex-partners?

Method



Collected 1,327 police reports of violence between current or ex-partners

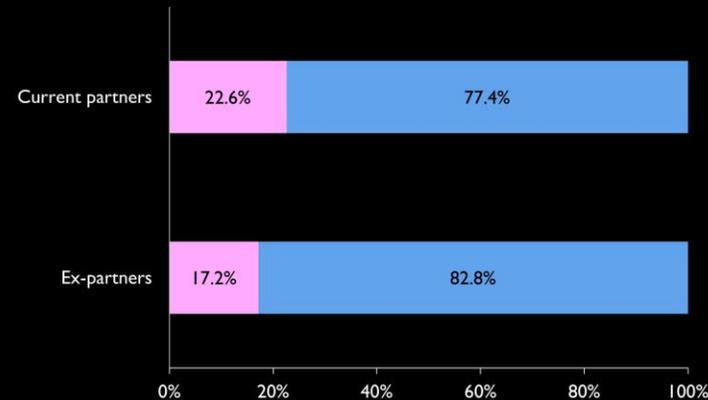


Coded the presence of different harm types in 157 reports

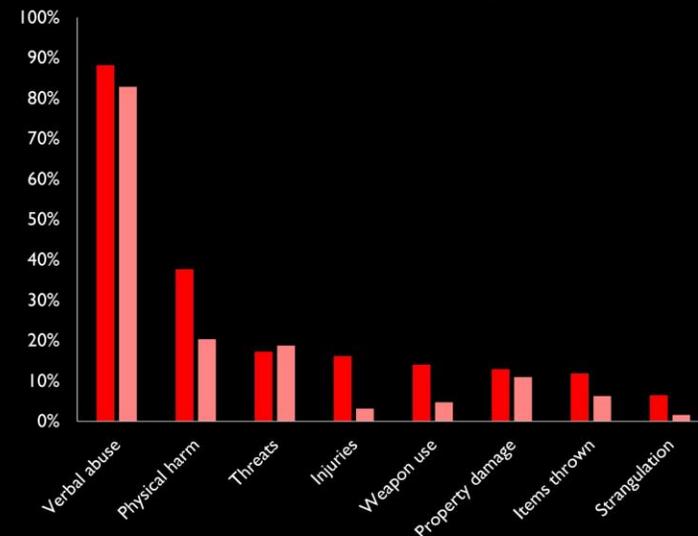


Compared harm used by men and women in aggressor roles, and by current and ex-partners

Proportion of aggressors who were men and women in current partner and ex-partner relationships (n = 157)



Proportion of episodes between current partners and ex-partners where the aggressor used each harm type (n = 157)



Results

- Most aggressors were men, but there was **no gender difference** in the use of physical harm ($p = .25$), weapons ($p = .42$), or injuries caused ($p = .51$) by aggressors.
- In episodes involving **current partners**, aggressors used **more physical harm** ($p = .03$) and inflicted more injuries ($p = .02$), while victims used more verbal abuse ($p = .001$) compared with ex-partner episodes.

Discussion

- Men and women using comparable levels of harm counters some feminist research and warrants further investigation.
- The higher rates of harm in current partner episodes may suggest that people are more reluctant to report violence by current partners until it reaches a higher degree of harm, while the threshold is lower between ex-partners.

Next steps

- Code types of harm in more police reports.
- Examine gender differences in the use of controlling and stalking behaviours.

References

- [1] Straus, M. A. (2015). Dyadic concordance and discordance in family violence: A powerful and practical approach to research and practice. *Aggression and Violent Behavior, 24*, 83–94. <https://doi.org/10.1016/j.avb.2015.04.011>
- [2] Taylor, B. G., Mumford, E. A., Liu, W., Berg, M., & Bohri, M. (2019). Young Adult Reports of the Victim–Offender Overlap in Intimate and Nonintimate Relationships: A Nationally Representative Sample. *Criminal Justice and Behavior, 46*(3), 415–436. <https://doi.org/10.1177/0093854818810322>
- [3] Sutton, D., & Dawson, M. (2021). Differentiating Characteristics of Intimate Partner Violence: Do Relationship Status, State, and Duration Matter? *Journal of Interpersonal Violence, 36*(9–10), NP5167–NP5191. <https://doi.org/10.1177/0886260518795501>
- [4] Swann, S. C., Schramm, A. T., Rivera, E. A., Warren, P., White, N. C., & Satcher, L. (2018). A feminist analysis of women's aggression in intimate relationships. In C. B. Travis, J. W. White, A. Rutherford, & W. S. Wil, *APA handbook of the psychology of women: Perspectives on women's private and public lives* (pp. 253–269).

Questions

- What is the virtue of conscientiousness?
- How can students become more conscientious?

Method

- We reviewed and integrated research in virtue ethics, psychology, and neuroscience to identify six promising strategies for acquiring conscientiousness as a virtue.

Conscientiousness as a trait

- Psychologists are interested in conscientiousness as a personality trait
- Conscientious people tend to be hardworking, self-disciplined, tidy, meticulous and punctual.
- It is linked with occupational performance, life-satisfaction, income, marital stability, and so on.

Aristotelian virtue theory

- Virtue theorists are interested in virtues (human excellences) and vices (deficiencies).
- Virtues are character traits — dispositions to act, think, and feel in appropriate ways.
- Virtues allow us to live a good or happy life. Vices stand in the way of living a meaningful life.
- We become virtuous (or vicious) through practice.
- By framing conscientiousness as a virtue, we can think about the role it plays in a good life.

Conscientiousness as a virtue

- A conscientious student is engaged in their studies, goal-oriented, well-organised, self-disciplined, and competent.
- The virtue of conscientiousness has two components:
 1. A commitment to attaining excellence in a worthwhile pursuit.
 2. The skills needed to attain this: self-discipline, organisation, thoughtfulness, impulse-control.
- Our research identified 6 strategies. The first aligns with the first point (commitment to worthwhile goals). The other 5 align with the second point (cultivating the necessary skills to achieve that goal).

6 Strategies To Become More Conscientious

1: Future Authoring

- Identify worthwhile goals that you could achieve in the next 3-5 years if you were looking after yourself properly.
- Also consider the opposite: what will happen in 3-5 years if your bad habits continue unchecked.
- Write why you want to achieve these goals.
 - Conscientious students don't just study for grades, but also study to fulfill their long-term goals.
- Then, break down your goals into micro-goals, to give you actionable steps to follow.

2: Micro-sucks

- When the aMCC is activated, we feel motivated to overcome challenges.
- Greater brain volume and connectivity in the aMCC leads to greater motivation.
- To improve this brain region, psychologists have suggested we regularly engage in small but challenging activities: "micro-sucks."
- E.g., for the last 10 seconds of the shower make it cold, *especially when you don't want to.*

3: Mindfulness and Conflict Monitoring

- The more we procrastinate, the less the anterior insula is active. But the opposite is also true: by activating the anterior insula, we stop procrastinating.
- To activate the anterior insula, one needs to become mindful: mindful of their attention, their body, and emotions.
- We suggest individuals to be attentive to their inner conflict: a practice known as conflict monitoring.
- Regular mindfulness practice has also been shown to increase anterior insula and aMCC volume and connectivity.

4: Winning the 5-second War

- There's a 5-second window of time before procrastination starts. What you do in that window of time determines if you procrastinate or not.
- Obstacles to procrastination help, but you've likely ignored them before.
- Use this 5-second window to do a micro-suck—sit still and resist procrastinating. Then, practice conflict monitoring (point 3) by noticing your urge to procrastinate and how it clashes with your meaningful goals (point 1).

5: Dopamine Overstimulation

- Dopamine is necessarily for sustained effort.
- Rats with normal dopamine levels preferred the larger reward, even when there were obstacles. Rats with depleted dopamine consistently chose the easy reward, avoiding effort.
- The more we engage in cheap dopaminergic activity, the lower our baseline dopamine levels.
- We can reset our dopamine levels by abstaining from cheap dopamine. This can take 2+ weeks of abstinence.

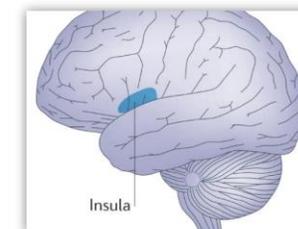
6: Dealing with Negative Emotions

- Stress can trigger procrastination as a coping mechanism.
- When studying feels overwhelming, we may choose to procrastinate to avoid frustration. It's easier to engage in quick, feel-good activities for immediate relief.
- Mindfulness, practiced both in the moment and regularly, helps reduce stress and negative emotions.
- Encouraging boredom gives the mind space to process and clear itself.



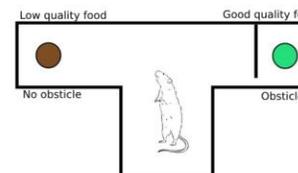
The anterior cingulate cortex (ACC) in yellow. The anterior midcingulate cortex (aMCC) being the back third of the image.

[https://commons.wikimedia.org/wiki/File:MR1_anterior_cingulate.png]



The insula. The front half being the anterior insula. Approximately 2-3 cm below the surface.

[Tang, Y.-Y., Hölzel, B. K., & Posner, M. I. (2015). The neuroscience of mindfulness meditation. *Nature Reviews. Neuroscience*, 16(4), 213–225. <https://doi.org/10.1038/nrn3916>]



Rat in a T-maze. Left side is low effort, low reward. Right side is high effort, high reward. Dopamine depleted rats will choose the low effort choice, whereas rats with normal baseline dopamine levels show greater effort.



Developing a 'live' map of spatial access to health services

Mitchell Pincham¹, Marcus Blake², Sam Quinsey² & Jesse Whitehead¹

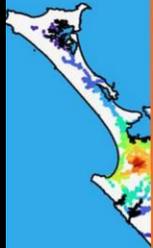
¹ Te Ngira: Institute for Population Research, University of Waikato, ² Centre of Australian Research into Accessibility, Deakin Rural Health, Deakin University, Australia

Background

Over 2024 Te Ngira and CARA co-developed a proof-of-concept model to estimate New Zealanders **access to health services at the address level**. This was then applied to examine the impact of Cyclone Gabrielle in 2022. A map was developed of the affected regions and approximate figures of addresses that lost access to Hospitals.

This Summer Research Project builds on this model. It attempts to examine **'real time' access to Hospitals** under **current road conditions**.

Approximate distance to hospitals after Cyclone Gabrielle.



Methods

Sourced List of Closed Roads

National Highway road closure data was collected from **NZTA's API**. Data covering local road closures was scraped from **local council websites**, then regular expressions were used to filter for road names.



Removed Roads From Network

A road network from **Open Street Maps** was **modified** using the data gathered. Any closed highways, or local roads were **removed from the road network**, which was then recompiled using python programming libraries.



Ran Distance Calculations

The travel distance from each address, through the updated road network, to the nearest **Hospital** was calculated using python libraries

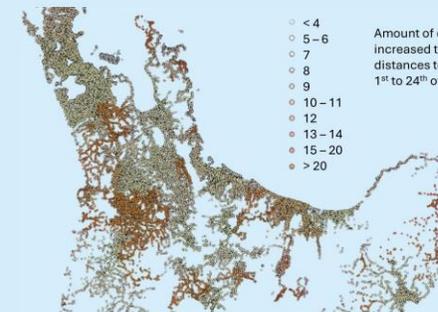


Tested throughout January

The program was **automated to run each day between 1st and 24th of January**, using current road conditions for that day. This highlighted how changing daily road conditions impacts access to health services.



Results



The above map shows variation in daily accessibility to Hospital services in the Manawaki Health Region over 24 days in January.

Conclusions

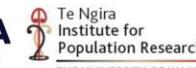
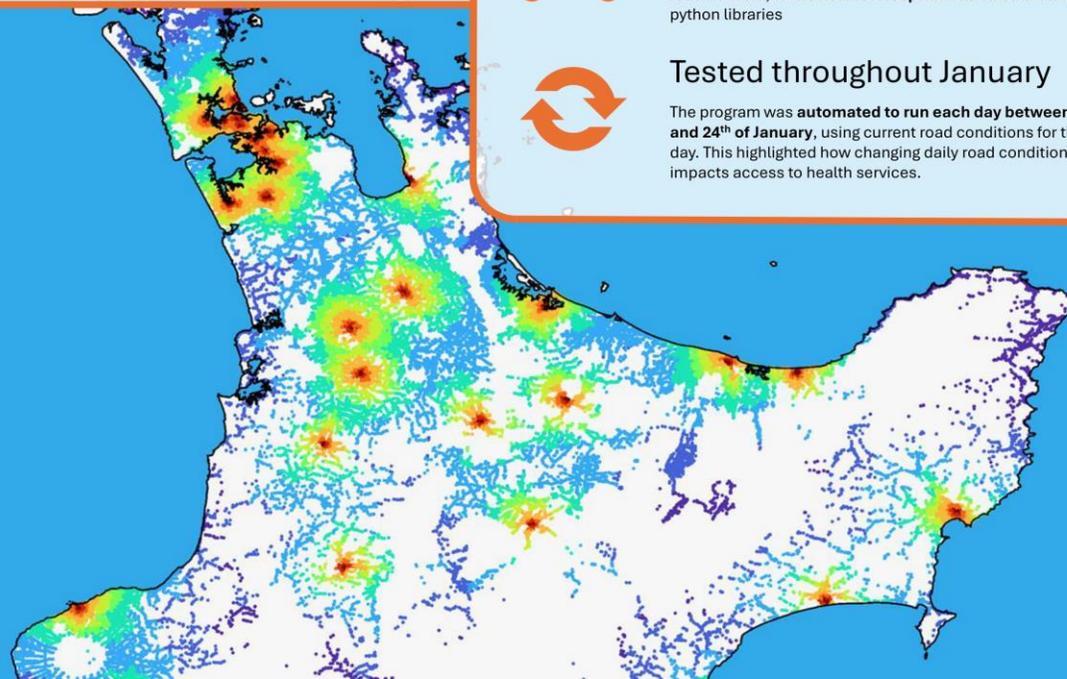
Overall, the goal of converting 'live' road data into a new road network to calculate people's changing access to services was achieved. This process has been automated, so daily health service accessibility can be quickly and easily estimated.

However, some challenges were noted. Our most important finding is around data quality. Local council's differ on how they report road conditions and road closures. Some councils report road works, while others only report road closures, which appears to have impacted our results. For example, almost all of Waipa had access changes, while the Hauraki and Piako districts had relatively few.

Therefore our method of extracting road information could be further developed in future research. Possible improvements may be more advanced natural language processing or employing large language models to classify different road conditions.

Background map

- Distance to hospitals
- < 1.5km
 - < 3km
 - < 5km
 - < 10km
 - < 15km
 - < 20km
 - < 30km
 - < 50km
 - < 75km
 - > 75km
 - No road access



The full results can be seen on ArcGIS.

Identifying Controlling Behaviours in Police Reports with the Revised Controlling Behaviours Scale (CBS-R)

Georgia Pollock, Danika Bridge, Conrad Latimer, Dr April Jolliffe Simpson

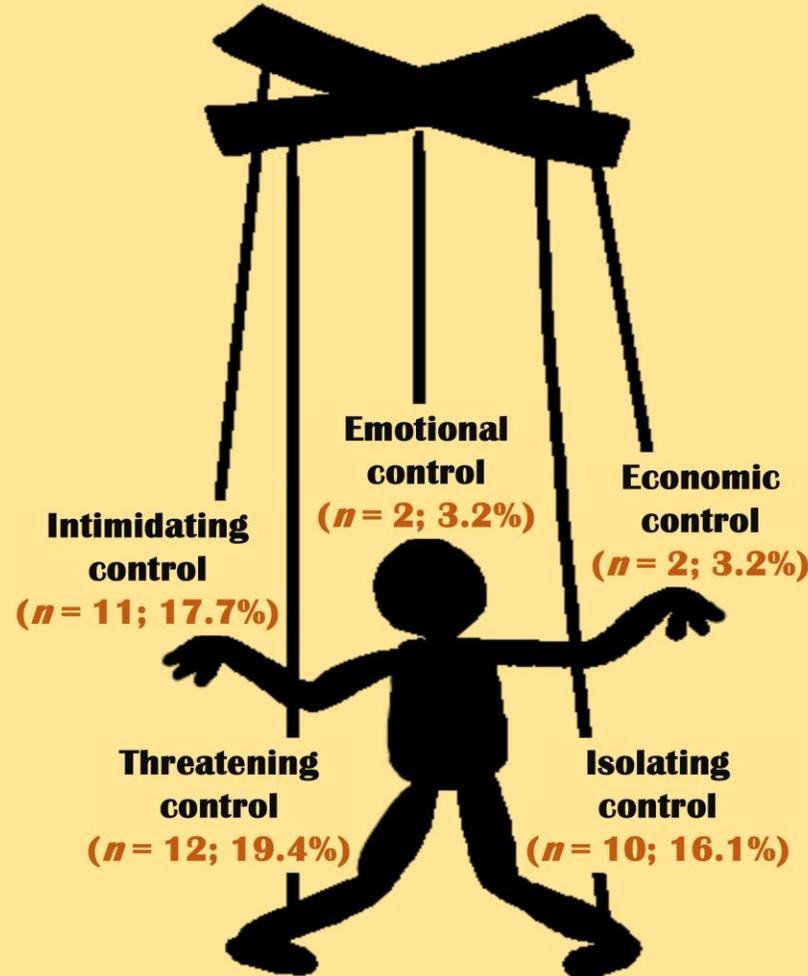
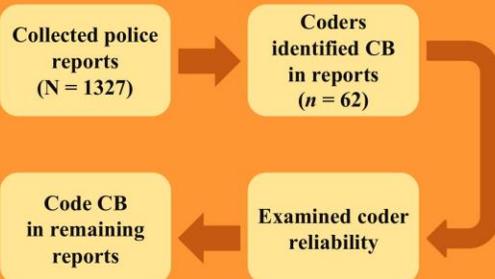
Background

- Controlling behaviours (CB) are acts used to make another person submissive or dependent (e.g., controlling money, name calling, smashing property, checking movements, or threatening separation)^[1].
- An intentional pattern of CB over time is known as coercive control (CC)^[2].
- Scales have been developed to identify CB such as the CBS-R, which captures intimidating, emotional, economic, threatening, and isolating forms of CB^[3].
- CB are common forms of intimate partner violence (IPV); however, it remains unclear how often New Zealand police record CB in their reports for IPV calls for service.

Research Question

- To what extent can we use the CBS-R to identify CB in police reports?

Method



References

- Bishop, C., & Bettinson, V. (2018). Evidencing domestic violence*, including behaviour that falls under the new offence of 'controlling or coercive behaviour.' *The International Journal of Evidence & Proof*, 22(1), 3–29. <https://doi.org/10.1177/1365712717725535>
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- Sleath, E., Walker, K., & Tramontano, C. (2018). Factor Structure and Validation of the Controlling Behaviors Scale—Revised and Revised Conflict Tactics Scale. *Journal of Family Issues*, 39(7), 1880–1903. <https://doi.org/10.1177/0192513X17729721>

Results

- We identified CB in two-fifths of reports ($n = 26, 41.9\%$).
- Police report explicitly stated there was CC in only 4 cases (6.4%).
- The most common CB were jealousy (*isolating*; $n = 9$), smashing property ($n = 8$) and being rude to the victim's friends or family (*intimidating*; $n = 5$), and threats to harm ($n = 6$) or kill the victim (*threatening*; $n = 4$).
- Coders most reliably identified the limiting work or study CB (*economic*; ICC = 1) and poorly identified the questioning movements CB (*isolating*; ICC = -0.01).

Preliminary Conclusions

- Using the CBS-R scale we successfully identified CB in police reports.
- Police rarely explicitly stated that CC was present despite recording CB in reports.
- Though it is unlikely we captured the true prevalence of CB in this study, their presence in two-fifths of reports suggests a need for CC-focused interventions to support victims.

Next Steps

- Continue coding remaining reports.
- Investigate what CB victims are more/less likely to experience and report.
- Investigate what CB police are more/less likely to detect and record.



THE UNIVERSITY OF
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Te Whare Wānanga o Waikato

International Trade Litigation

Canada's protectionist dairy market

Eden Robertson and Dr Alberto Alvarez-Jimenez
Te Piringa | Faculty of Law, University of Waikato

Aim

The aim of this research was to assess how New Zealand could obtain enhanced market access to Canadian's dairy industry under the Free Trade Agreement, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership ("CPTPP").

Background

The CPTPP is a Free Trade Agreement of which Canada and New Zealand are both party to. The Agreement aims, among other objectives, to promote economic trade between participating countries by facilitating tariff rate quotas ("TRQs") for exported goods. This research focussed specifically on dairy products. Ultimately, New Zealand and the United States (within their own respective Agreements) contended that the systems in which Canada employed to allocate TRQs to Canadian importers, were inconsistent with their obligations under the respective Agreements.

Method

To achieve our aim, we assessed relevant primary sources, Panel Reports of the disputes between New Zealand and Canada and the United States and Canada, subsequent literature and submissions of entities with private interests in the Agreements from both New Zealand and the United States.

Findings

The research has shown that since the initial claims made by both Canada and the United States, market access to the Canadian dairy industry has improved as a result of the dispute panels. However, Canada maintains significant discretion to preserve the protection of its dairy industry. As such, this dispute remains ongoing.

References

Canada - Dairy Tariff Rate Quota Allocation Measures (Canada v New Zealand) (Panel Award) J Hillman, P Mavroidis, C Swords, 5 September 2023

CaCanada - Dairy TRQ Allocation Measures (Canada v United States) (Panel Award) E Rosselli, J Bédard, M C Hansen 20 December 2021

WAI-TING FOR CHANGE: MANA WHENUA'S FRESHWATER FIXES

Thea Smith & Dr Sandi Ringham

The Project - Introduction and objective

This research explores how mana whenua are using both traditional knowledge and contemporary practices to address freshwater health challenges in Aotearoa. Focusing on Lake Waahi, the study investigates how maatauranga Maaori at the hapuu level informs and shapes innovative approaches to freshwater management, protection, and restoration.

Research Questions

1. What innovative Indigenous water solutions are currently transforming the ways in which fresh water is valued, managed and protected?
2. What are the barriers and opportunities that influence mana whenua tino rangatiratanga in managing and protecting lakescapes?
3. What are the oral traditions, puuraakau, moteatea and/or whakatauki, that informs a Māori reading of freshwater health?

ACKNOWLEDGEMENTS

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- Rangimarie Mahuta
- Kahahurimu Paekau
- Waahi Paa - Waananga

Science Team at University of Waikato:

- Dr Deniz Ozkundakci - School of Science Teaching and Research
- Grant Tempero - Senior Research Officer, Environmental Research Institute
- Chloe Kayll-Irvine- Technical Officer, Field Based Sciences -Technical
- Lola Reis Lopes Da - Doctoral Candidate, School of Science Teaching and Research
- DoC – Nigel Binks and Kaea

- UoW Scholarship Office
- Dr Sandi Ringham - Reseach Supervisor
- Reece Clarke– UoW Masters Student - support and contribution



METHODOLOGY

- Interviewing process
 - Interviewing members of Ngaati Mahuta to explore and gather both traditional and contemporary puuraakau about the lake and their relationship to it.
- Taiaorau Waananga
 - Allowed us to learn more about Waahi and Ngaati Mahuta, the histories of their lands and waters, and the planning initiatives, both current and future, that the hapuu are undertaking to restore and revitalise the taiao.
- Tipi haere
 - On the 17th of January 2025 we started off our tipi haere with a short instructional demonstration given to us from the science team at the University of Waikato and then proceeded to get out on the water at Lake Waahi and conduct a variety of different types of water quality testing.

RESULTS AND FINDINGS

Haukaaing insights: The interviews and waananga sessions gave us many useful historical and contemporary insights on the state of Lake Waahi's mauri, human interactions with the water, and changes in water quality. Members of Ngaati Mahuta who remembered when the water quality at Waahi was good enough that the water was clear and the bottom of the lake was visible, and they were able to collect kai from the lake and use it for recreational activities - a stark contrast to current day where there is low visibility and litte human interaction.

Tipi Haere Collection Data: As shown in Figures 1 and 3 the Visibility levels and Dissolved Oxygen levels collected from Lake Waahi are significantly below the Waikato Regional Council Satisfactory Standards. In Figures 2 and 4 the temperature and pH data collected from Lake Waahi are significantly higher then the Waikato Regional Council Satisfactory Standards.

Plankton samples taken at Lake Waahi were examined by Lola Reis Lopes Da and she identified some fascinating phytoplankton species, Lola was intrigued to look at the sample as Lake Waahi is quite different from the Te Arawa lakes she is working with.

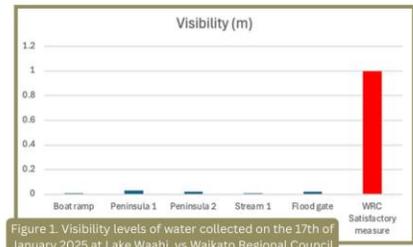


Figure 1. Visibility levels of water collected on the 17th of January 2025 at Lake Waahi vs Waikato Regional Council satisfactory standards

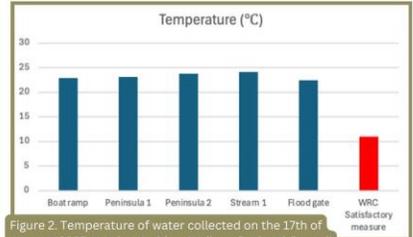


Figure 2. Temperature of water collected on the 17th of January 2025 at Lake Waahi vs Waikato Regional Council satisfactory standards

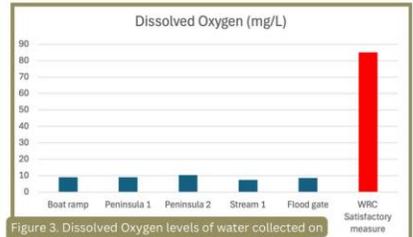


Figure 3. Dissolved Oxygen levels of water collected on the 17th of January 2025 at Lake Waahi vs Waikato Regional Council satisfactory standards

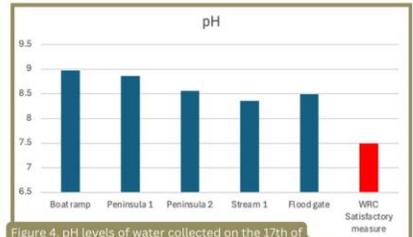


Figure 4. pH levels of water collected on the 17th of January 2025 at Lake Waahi vs Waikato Regional Council satisfactory standards



REFLECTION

Mana whenua are searching for solutions through:

- Engagement with programmes such as the Uow SRS
- Working in collaboration with the Department of Conservation
- Holding waananga and looking within their community to find solutions

References



Do Our Routines Increase Our Risk of Re-Victimisation in Different Places?

Donelle Steer & Dr Lisa Tompson

Background

- Re-victimisation is when someone experiences more than one crime within a specific period.¹
- Activities people engage in (e.g., commuting to work, attending school) influence their risk of re-victimisation.^{2, 3}
- Overseas research has found that routines are associated with increased risk of victimisation in certain locations.⁴
- However, it remains unclear whether research in New Zealand will show similar results.
- Therefore, we wanted to investigate whether people's routine activities are associated with increased risk of re-victimisation, focusing on crimes that take place in public, private, and online places.

References

1. Farrell, G. (1995). Preventing Repeat Victimization. *Crime and Justice*, 19, 469-534. <https://doi.org/10.1086/449236>
2. Cohen, L. E., & Felson, M. (1979). Social Change and Crime Rate Trends: A Routine Activity Approach. *American Sociological Review*, 44(4), 588. <https://doi.org/10.2307/2094589>
3. Averdijk, M. (2011). Reciprocal Effects of Victimization and Routine Activities. *Journal of Quantitative Criminology*, 27(2), 125-149. <https://doi.org/10.1007/s10940-010-9106-6>
4. Tseloni, A., & Pease, K. (2015). Area and individual differences in personal crime victimization incidence: The role of individual, lifestyle/routine activities and contextual predictors. *International Review of Victimology*, 21(1), 3-29. <https://doi.org/10.1177/0269758014547991>

Disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit <https://www.stats.govt.nz/integrated-data/>. Access to the data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the author, not Stats NZ or individual data suppliers.

Method

- We identified people who were re-victimised within 12 months from the New Zealand Crime and Victims Survey ($N = 7995$).
- We identified proxies of people's routines (e.g., age: younger people tend to be highly mobile and socially-orientated).²
- We statistically analysed these proxies, alongside demographic characteristics, to determine their relationship with the risk of re-victimisation for different place outcomes.

Discussion

- Different routine proxies and demographic characteristics, were associated with increased risk of re-victimisation in different types of places.
- Most results were supported by theory.
- Our results display patterns in re-victimisation, which can help inform targeted crime prevention strategies.
- Future research could expand on our results by using more detailed measures of routine activities.

Results: Factors Associated with Increased Risk of Re-Victimisation

Public

- Younger people
- Men
- Bisexual
- Partnered
- Household with 2+ adults
- Employed
- Living in an urban area
- NZ European/Pakeha

Private

- Younger people
- Women
- Household with a single adult
- Under financial stress
- Disabled
- Living in an urban area
- Māori

Online

- Older people
- Women
- Household with a couple/2+ adults
- Employed
- Without financial stress
- NZ European/Pakeha

Crime Scripts in Home Invasions: Analysing High Court Sentencing Decisions

Charlotte Ward & Dr Devon Polaschek

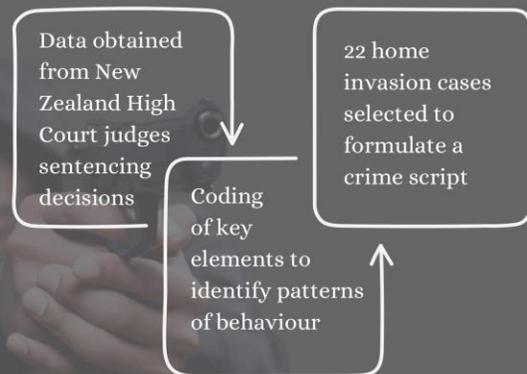
Background:

Crime scripts are frameworks that break down the steps involved in the commission of a crime, identifying the actions, decisions and resources used by offenders.¹ They also highlight points where crime prevention efforts can disrupt the crime from occurring.

Home invasion, a specific form of aggravated robbery, involves an offender entering a residence using force, threats or a weapon to steal from a victim.

But while crime scripts have been widely applied to various crimes,^{2, 3, 4} the home invasion offence has yet to be mapped out in this context. Therefore, this research contributes to the field by creating a script specifically for home invasion offences.

Method:



Crime Script for Home Invasion:

Planning and Preparation:

- Target selection
- Role assignment
- Weapon procurement
- Vehicle procurement

Arrival at Target Location:

- Arrival
- Gain entry

Victim Approach:

- Engage victims
- Weapon display

Victim Interaction:

Control established:

- Victim incapacitated
- Victim injured
- Victim threatened

Control not established:

- Victim flees/fights back
- Violence used to gain control

Robbery:

- Search and steal
- Property loading
- Disengage victims

Escape and Avoid Detection:

- Escape route
- Disposal of evidence
- Evade capture

Discussion:

Our crime script revealed consistent patterns of behaviour during home invasion robberies:

- Offenders focus on gaining control of the victim from the outset through the use of weapons and threats.
- Victims focus on harm prevention, and their responses varied from compliance to attempted flight or resistance.

Implications:

- Home invasions leave victims vulnerable, with few options for escape or resistance.
- Our research can inform prevention strategies such as educating potential victims, or increasing surveillance at certain stages of the crime event.

Next Steps:

- Develop crime scripts for other types of aggravated robbery identified:
 - Commercial robbery
 - Street robbery
 - Entrapment robbery
- Identify crime prevention measures.

References:

1. Borrión, H. (2019). Crime scripting: A systematic review. *European Journal of Criminology*, 18(4), 504-525.
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A Feasibility Study on Which Comes First: Victimization or Psychological Distress?

By Paige Williams & Dr Lisa Tompson

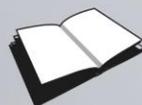
Background

- Polyvictims (PV) experience 2+ types of crime, e.g., theft and assault.¹
- Psychological distress includes anxiety, depression, and emotional turmoil.
- PV typically experience higher psychological distress than single- and non-victims. However, the direction of the relationship between PV and psychological distress is unclear.^{2,3}
- NZ's Integrated Data Infrastructure (IDI) contains anonymized data that may help us to investigate this relationship.

Aim

- Examine the feasibility of using IDI data to test the direction of the relationship between psychological distress and polyvictimisation.

Method



Review literature on PV and its association with psychological distress.



Survey variables in 106 IDI datasets for potential PV and psychological distress indicators.



Assess data suitability, reliability and completeness for future project.

Discussion

- Understanding this relationship is crucial for developing effective interventions and support systems for PVs.
- We found four promising indicators of PV (from Justice, Benefits and Social services), and three potential indicators of psychological distress.
- PV indicators are feasible; further understanding of psychological distress indicators is needed.
- Should this research not be feasible, a victim careers research project would instead be viable.

References

- 1 Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, 31(1), 7–26. <https://doi.org/10.1016/j.chiabu.2006.06.008>
- 2 Lindert, J., Von Ehrenstein, O. S., Grashow, R., Gal, G., Braehler, E., & Weiskopf, M. G. (2013). Sexual and physical abuse in childhood associated with depression and anxiety over the life course: systematic review and meta-analysis. *International Journal of Public Health*, 59(2), 359–372. <https://doi.org/10.1007/s00038-013-0519-5>
- 3 Meijwaard, S. C., Kikkert, M., De Mooij, L. D., Lommerse, N. M., Peen, J., Schoevers, R. A., Van, R., De Wildt, W., Bockting, C. L. H., & Dekker, J. J. M. (2015). Risk of Criminal Victimization in Outpatients with Common Mental Health Disorders. *PLoS ONE*, 10(7), e0128508. <https://doi.org/10.1371/journal.pone.0128508>

Te Kura Toi Tangata - Division of Education

Principles for Appreciative and Inclusive Response to Postgraduate Research and Writing.

Josie Geraghty, Dr Jessica Rubin & Dr Katrina McChesney

Literature Review

We reviewed academic literature on topics such as:

- Supervision in post-graduate study,
- Inclusive supervisory approaches,
- Educational politics,
- Relational dynamics
- Feedback practices
- Appreciative strategies vs. deficit mindsets
- Student wellbeing
- Trauma-informed approaches
- Non-Violent communication
- Culturally inclusive frameworks

Findings

Common themes within the literature:

- Postgraduate isolation and mental health issues
- Writing and feedback are emotional and transformative
- Political pressures shift focus from student development to timely completion.
- Misalignment of student and supervisor expectations.
- Deficit mindset in supervisory relationships.
- The changing face of postgraduate education.
- The increasing pressures and workload placed on supervisors.
- The balance supervisors must find in all things.

These themes necessitate change in traditional feedback practices to prioritise the wellbeing of students. However, there remains the need to challenge students and support academic growth. Once again, the idea of balance arises, but how do supervisors achieve it? We used the above literature to develop the Feedback principles shown on the right.

Non-Violent Communication, Trauma-Informed Pedagogy and Appreciative Feedback

Trauma can hinder engagement in studies and supervisory relationships (Valdez, 2023). Trauma-informed approaches enhance student wellbeing and success.

6 Elements of Trauma-Informed Pedagogy

- Safety
- Trustworthiness & transparency
- Peer support
- Collaboration & mutuality
- Empowerment, voice & choice
- Cultural, historical & gender issues



Non-violent communication (NVC) focuses on empathic connections and the sharing of ideas, feelings, and needs without moral "right or wrong, good or bad" judgments (Rosenberg, 2015).

Appreciative feedback celebrates strengths and achievements and constructively guides continuous growth. This type of feedback enhances academic performance and self-confidence and strengthens the relationship between students and supervisors. Viewing students and their work appreciatively allows us to move past preconceived notions and truly understand each other.

Introduction

Feedback is a cornerstone of postgraduate education, yet it can often be a source of stress and frustration for students and supervisors. Much of the literature on supervisory practices talk about striking a balance between caring for modern postgraduate students' needs and meeting institutional expectations. The principles presented in this research poster draw from established literature on supervisory practices, writing development, inclusive practices, trauma-informed pedagogies, and non-violent communication. The principles themselves are designed to help supervisors create balance in the feedback environment by providing holistic care and support for the students' wellbeing, as well as supporting their academic success.

Objective

Our objective is to weave together a selection of best practices from existing literature. We seek to establish principles for holistic, affirmative feedback. This feedback challenges traditional methods that overlook the emotional aspects of writing and feedback. We aim to support supervisors in finding the balance in caring for their students' well-being and supporting their academic progress.



A supervisor who wants to facilitate an enriching, holistic feedback experience by showing they see and value a student as a person and want to support them to improve their writing and reach their own goals without undermining their self-efficacy will:

Explain writing and feedback processes and discuss helpful resources before the first feedback exchange.



Provide timely, specific, structured, and actionable feedback, and always discuss comments in person.



Express constructive observations that are free of judgements; talk about the work, not the person.



Consider different perspectives on knowledge bases and ideas with an open mind before giving feedback.



Respect diverse cultural backgrounds by understanding and supporting their viewpoints, values, and traditions. Be open with historical contexts.



Identify both your own and your student's needs and collaborate on strategies to address them.



Recognise emotional reactions to feedback and the role mental health plays in postgraduate success.



Help students make decisions about their writing and develop their voice through open dialogue.



Recognise the beauty in students' work by looking for their strengths, achievements, and intentions.



Create a community of growth by facilitating appreciative peer-mentoring groups for students.



Concluding Thoughts

These principles challenge postgraduate students' isolation, emotional hardship, and misalignment of expectations, as discussed in the literature. By interweaving elements of different relational approaches, such as NVC, trauma-informed pedagogy, appreciative care, and culturally sustaining pedagogies alongside practical feedback practices, we have created a framework that may help supervisors achieve a balance between care and academic excellence. We hope supervisors use these principles to examine and elevate their practices, values, and communication styles.

Supervisors interested in being involved in an action research study using these principles are invited to contact Dr Jessica Rubin or Dr Katrina McChesney.

References:

Scan the QR code for a comprehensive list of key literature used to support our principles.



THE UNIVERSITY OF
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Inside the Minds of Postgrad Students

Support They Truly Value

RATIONALE/INTRODUCTION

This project aims to enhance support strategies within the Division of Education by gathering postgraduate students' perspectives and identifying the support they value most during the research phase of their studies.

METHOD

Informed by a brief literature review, a 20-question survey combining multiple-choice and open-ended items was created in Qualtrics. This was then distributed to Masters and Doctoral students in the Division of Education. Ethics Reference Number - (FEDU050/24)

RESULTS/DISCUSSION

Thematic analysis of the survey results generated three key themes: scholarly, social, and supervisor support (summarised in adjacent thought bubbles). These themes align with the current literature on postgraduate support needs, highlighting opportunities to enhance the support provided by the Division of Education.

NEXT STEPS

The next steps will involve using actionable insights from the survey to collaborate with postgraduate students on a draft action plan. This plan will focus on developing strategies to support students' academic success and well-being.

Scholarly Support

- ▶ Improved guidance on ethics applications
- ▶ Well-advertised and accessible academic/time management workshops
- ▶ A clear roadmap of key steps in the development of the thesis
- ▶ Increased support in developing academic writing skills

Social Support

- ▶ Stronger community-building initiatives
- ▶ Enhanced opportunities for peer collaboration and study groups
- ▶ An engaging, up-to-date moodle forum
- ▶ Increased peer-support opportunities

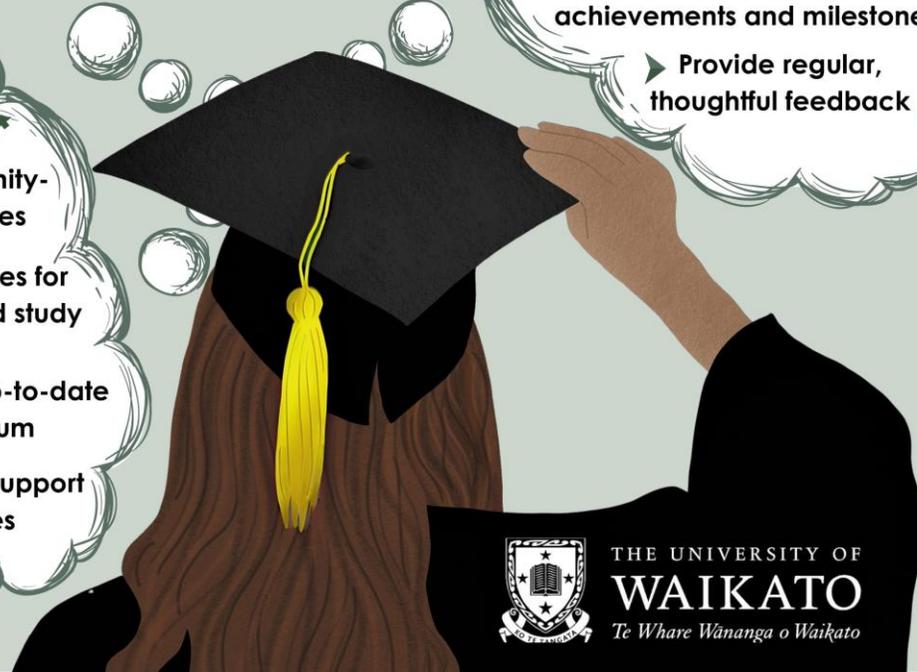
Supervisor Support

- ▶ Offer clear guidance on tasks
- ▶ Show empathy and understanding toward setbacks
- ▶ Recognize students' achievements and milestones
- ▶ Provide regular, thoughtful feedback

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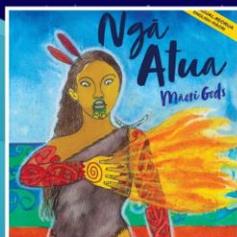
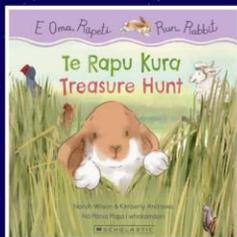
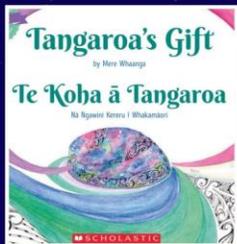
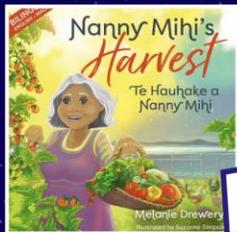
- ▶ Support themes & student quotes
- ▶ Survey Questions

+ a reference list



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Scholar: Gracie Hunt
Supervised by Dr. Dianne Forbes



MĀORI WHĀNAU RESPONSES TO MĀORI-ENGLISH BILINGUAL PICTUREBOOKS

Maria Scaletti, supervised by A/Prof. Nicola Daly, Dr. Julie Barbour & Dr. Nic Vanderschantz

TE HOROPAKI (The Context)

Limited research exists on how whānau Māori engage with bilingual picturebooks in everyday contexts, particularly regarding their impact on language practices, cultural identity, and storytelling traditions.

TE RANGAHAU (The Research)

- Initial literature review
- Initial interview with 5 Māori families about bilingual books in the home
- Provided families with 8 bilingual picturebooks to read
- Followup email after two weeks with progress questions
- Final interview after four weeks to gather feedback on experiences
- Analysed the responses to identify common themes among the families



THEMES

Interim Themes Based on Mid-way Feedback

CAPTIVATING CONTENT

Children gravitate toward books with repetition, simple sentence structures, and engaging illustrations.
"Te Rapu Kura pukapuka - this one we've enjoyed because it had repetition, and it was easy to follow. It was like having a conversation with a friend."
(Participant 1, Mid-way Feedback)

THE ROLE OF ENGLISH AND TE REO MĀORI

Whānau use English to support learning and understanding of te reo Māori.
"I have noticed that I will sometimes check the English translation if I am unsure of the meaning in te reo Māori which is very helpful as it means I don't have to look it up in the online dictionary."
(Participant 5, Mid-way Feedback)

STRENGTHENING WHĀNAU BONDS

Reading together strengthens whānau connections, creating intentional and focused bonding time.
"I have noticed that I need to spend more time reading and telling stories with my tamariki. They enjoy it so much when we sit together and so do I."
(Participant 3, Mid-way Feedback)

NURTURING CULTURAL IDENTITY

Reading in te reo Māori creates enjoyment, a sense of pride, and cultural connection for families.
"This project has allowed us as a whānau to reawaken our mokopuna's love for reading."
(Participant 4, Mid-way Feedback)



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PROGRAMMING OUR KIDS' EDUCATION

RESEARCH FOCUS

Analysing the Key Actors Behind New Zealand's 2017 Digital Technologies Curriculum.

The 2017 update to New Zealand's Digital Technologies and Hangarau Matihiko curriculum was shaped by various stakeholders—government officials, educators, tech experts, and curriculum developers. This research project critically examines the roles and influences of these "actors" in the creation and implementation of the curriculum. The study also explores how their perspectives and actions impacted the final outcomes and ongoing integration of digital technologies in schools.

POLICY ANALYSIS

Governments around the world enact policies to fix problems for their constituents. Bacchi has created an analysis model titled "What's the problem represented to be (WPR)?" This model suggests that when governments view problems, they only view them from a specific perspective. This can cause bias in the public's view of a problem. In addition, these policy changes tend to create their own different issues. The WPR model uses the following six questions to help dissect policy.

1. What's the 'problem' represented to be in a specific policy?
2. What presuppositions or assumptions underlie this representation of the 'problem'?
3. How has this representation of the 'problem' come about?
4. What is left unproblematic in this problem representation? Where are the silences? Can the 'problem' be thought about differently?
5. What effects are produced by this representation of the 'problem'?
6. How/where has this representation of the 'problem' been produced, disseminated and defended? How could it be questioned, disrupted and replaced?

POLICY TIMELINE

- JUL 2016** Digital technologies to be integrated into NZ Curriculum from 2018 – Education Minister Hekia Parata
- OCT 2016** "Big Ideas" and a roadmap set, building on global best practices.
- OCT 2017** Advisory group calls for more PLD and time to implement the curriculum.
- DEC 2017** Digital Technologies and Hangarau Matihiko curriculum made compulsory by January 2020.
- DEC 2018** Digital readiness programmes announced. Kia Takatū ā-Matihiko among them.
- JAN 2020** Digital Technologies and Hangarau Matihiko are compulsory for teaching in all schools.

KEY FINDINGS

PURPOSE OF REVISION

The creation of the Digital Technologies and Hangarau Matihiko curriculum was driven by New Zealand's future economic needs. A 2016 OECD report highlighted that 40% of jobs created from 2004 to 2016 were in the tech sector. In response, the government collaborated with the IT sector, tertiary educators, and special interest groups like CoreEd to develop the curriculum framework.

EDUCATION TECHNOLOGY VS. TECHNOLOGY EDUCATION

There was significant confusion around what was going to be taught with the new curriculum. Teachers and school leaders often confused education technology (resources, devices, internet access) with technology education (computational thinking, practical skills).



STAKEHOLDER INPUT

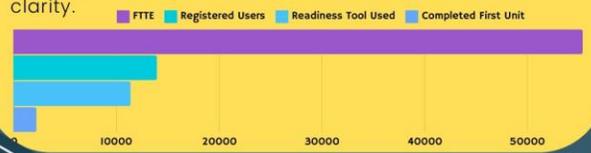
There was a lack of input from end user stakeholders when it came to the curriculum's creation. Teachers, students and family communities had little to no voice during its creation.

TEACHER BUY-IN

There was mixed response from teachers about how they were going incorporate digital technology into their classroom. Some indicated a clear plan from their school leadership team, usually with a knowledgeable teacher championing the cause. Others stated they were going to do nothing as it was not a school focus.

PROFESSIONAL LEARNING ENGAGEMENT

At the end of Kia Takatū ā-Matihiko's lifespan in 2020, only 25% of full-time teachers (FTE) had registered to use the resource. There were mixed reactions from teachers around the effectiveness of the resource. Some claim it helped clear things up while others stated that it did not solve their current issues or provide enough clarity.



35% of teachers reported that they knew they were obligated to start teaching Digital Technology in 2020

References
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INTEGRATING COMPUTATIONAL THINKING AND WRITING

Introduction

This is a study on Computational thinking (CT) and how to integrate CT into primary school classroom in New Zealand. The main focus of the study is to master the skills of CT without using computers by merging classroom subjects with CT.

Aim

- To focus on CT in the writing process in primary schools.
- To identify the similarities between CT and writing process and how the teachers can incorporate CT to develop the writing skills of the students.

CT equips individuals with the ability to analyse complex problems, think logically, and devise effective solutions using computational processes which is a fundamental competency for individuals to flourish in the 21st Century (Wing, 2006)

It is also a “thought process” (Aho, 2012) in understanding and attempting to find a solution to a complex problem using computational processes like abstraction, sequencing, decomposition, pattern recognition, and debugging.

Methodology

Qualitative research approach

- in-depth interviews with teachers
- detailed classroom observations with teachers

This approach allowed for a comprehensive understanding of the participants' experiences and the dynamics within the classroom environment.

HOW TEACHER'S UNDERSTANDING OF THE LINKS BETWEEN CT AND WRITING ASSISTS TEACHING OF BOTH WRITING AND DIGITAL TECHNOLOGIES



Writing Process

The writing process in primary schools fosters critical thinking through several stages.

Prewriting encourages students to organize and prioritize their ideas logically while drafting focuses on creating a step-by-step flow of ideas, emphasizing organization over correctness.

Revising and editing help students critically evaluate and refine their content for clarity, relevance, and technical accuracy.

Finally, publishing requires students to present their work clearly, ensuring effective communication with an audience. Each step promotes analytical skills, problem-solving, and thoughtful expression, strengthening both writing and critical thinking abilities.

[BBC Bitesize. (n.d.), Learning.com, n.d.]



Relationship between

Writing Process & Computational Thinking

Prewriting

Decomposition

Drafting

Algorithm Design

Revising

Pattern recognition

Editing

Debugging

Publishing

Abstraction



Scan For References



Prepared by - Asanka Wickramasinghe
Supervisors - Wendy Fox-Turnbull
Shaoqun Wu

Te Pua Wānanga ki te Ao – Faculty of Māori and Indigenous Studies

Ko wai au?



I am a 1.5-generation Filipino immigrant to Aotearoa. Throughout my degree, I did not have opportunities to learn about a psychology that reflected my heritage. Instead, it was Eurocentric, Western, and hegemonic.

It was not until Honours that I explored Sikolohiyang Pilipino (Filipino Psychology). I became part of this project because I knew there were a lot of works done on Asian communities in Aotearoa, but we just needed a bibliography to showcase our work.

Paolo Aquino supervised by Dr Kyle Tan and Dr Lincoln Dam.

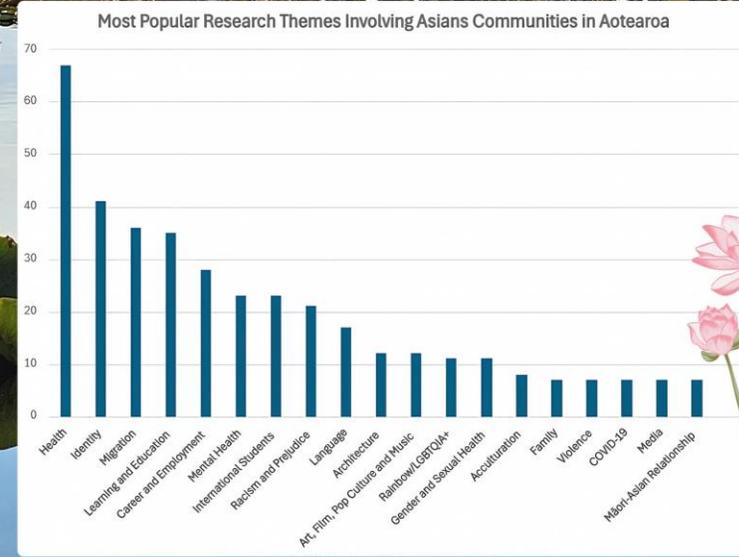
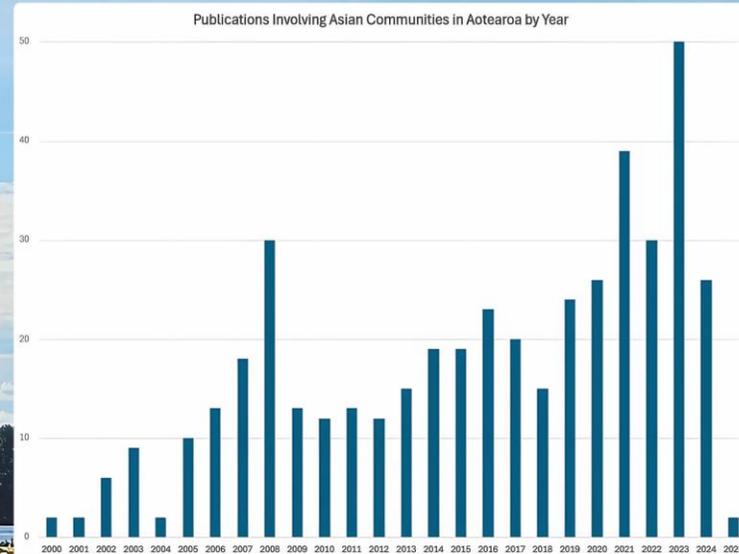
Introduction

- Asians in Aotearoa face underrepresentation in academia and limited access to equity-based funding.
- This bibliography addresses their/our invisibility by highlighting key research contributions advancing Asian communities.
- It emphasises Asian philosophies, positionality, and engagement with tangata whenua.
- The goal is to challenge systemic exclusion and provide a resource to identify gaps and advocate for equitable representation of Asians in academic and public discourse.

Methodology

- Search Tools: DigitalNZ, Google Scholar, and hand searches.
- Criteria: Studies from 2000–2024 focused on Asian communities in Aotearoa.
- Results: 1,692 DigitalNZ results (276 included); supplementary searches added 175 studies.
- Process: Forward/backward reference checks and consultation with experienced Asian researchers.

Kasaysayan at Mga Salaysay: A Bibliography of Research with Asian communities in Aotearoa (2000-2024)



Results

- Final Count: 451 studies covering diverse topics such as health, education, identity, and relationships with Te Tiriti o Waitangi.
- Trends: Health and wellbeing dominated, with most studies by Auckland-based authors.
- Positionality: Recent studies showed stronger engagement with Te Tiriti and tangata whenua.
- Surprise: The volume of studies exceeded expectations, reflecting growing contributions by Asian researchers advancing knowledge and visibility.

Discussion

- Challenges: DigitalNZ had limited access to literature not digitally recorded in university research databases.
- Future Directions: This bibliography will remain a living document, encouraging regular updates.
- Collaboration: Researchers and community groups are invited to sustain the project.
- Call to Action: Universities must reduce systemic barriers and support Asian scholarship, amplified through platforms like Community Research and the Ethnic Health Collective.



BIBLIOGRAPHY OF MĀORI AND PSYCHOLOGY RESEARCH: AN UPDATE.

By Eilidh Purewa Huggan, in collaboration with Anitanaha Harris.
Supervised by Prof. Waikaremoana Waitoki & Dr. Kyle Tan.
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moana.waitoki@waikato.ac.nz; k.tan@waikato.ac.nz.

Introduction

In 2010, the first iteration of "He Kohikohinga Rangahau: A bibliography of Māori and Psychology Research" was published as "a project designed to bring together all research relevant to the broadly conceived field of Māori and Psychology" (Hollis, et al., p.4). It was revised in 2017, and now we hope to publish the third iteration. We would like to acknowledge the University of Auckland, specifically Anitanaha Harris, who has been tirelessly working on this project long before myself and the University of Waikato was brought on board. We are beyond grateful for this collaborative opportunity.

This project hopes to showcase the extent of Māori Psychology research and inspiring students, lecturers, academics and practitioners beyond the imposed universality of Euro-colonial paradigms. This latest edition has been purposefully structured to highlight Indigenous knowledge, strength and resilience, whilst acknowledging the violent colonial history (and present) of settler colonialism in Aotearoa.

Method

Data Collection

The beginning stages of this project drew upon multiple methodologies to collect data from 2017 onwards within the scope of Māori psychology research, building upon the foundations of the first two bibliographies. We utilised key word searches; whakapapa searches; scoping the research commons of New Zealand universities; and meeting regularly to discuss, cull, refine, and debate our data sets. The initial scope left us with an overwhelming 17,000 sources, which required us to develop increasingly thorough criteria to determine the final inclusions and exclusions. The final count for the third bibliography is now 1,226 sources.

Conceptual Organisation

The hierarchical Western colonial knowledge systems we engage with require those of us working in decolonisation to critically reflect and consciously work not to reinforce these systems of oppression. Consequently, we have attempted to present a **non-hierarchical, non-linear, and interconnected** body of work, whilst **prioritising Māori scholarship, practice and experience** (Archibald et al., 2019). We have intentionally structured the bibliography to expose the colonial and racialised underpinnings of psychology, and to spotlight opportunities for the growth of mātauranga Māori in this largely western discipline.

Kaupapa Māori Method

Working through Kaupapa Māori, decolonising methodologies and anti-racist critical theory were paramount to maintaining integrity and intention with this project.

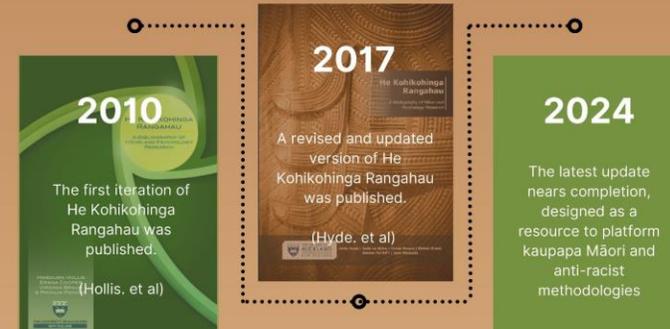
- Critical, decolonial and kaupapa Māori research was prioritised through our organisational structure, specifically guided by decolonising methodologies (Tuhivai-Smith, 2021) and decolonial curatorial practice (Muñiz-Reed, 2017).
- Categories were analysed, re-ordered and replaced if appropriate to better promote critical, decolonial thought.
- Vocabulary that may suit Western ways of writing about and cataloguing Indigenous peoples was avoided to the best of our ability.
- Where appropriate, further information was provided beneath category headings to contextualize or provide rationale for its inclusion.

Discussion

Linda Tuhivai-Smith reiterates to us that **"Research" is probably one of the dirtiest words in the indigenous world's vocabulary** (2021, p.1). This reality sat with me throughout this project as I repeatedly came to terms with the reality of how research has been implicated in the suppression of Indigenous knowledge, the Euro-colonial nature of academia, theory production and dehumanising practices against Indigenous communities. It was a constant practice of reflexivity and critically thinking about whether we may be unintentionally reproduce colonial hierarchies of Western knowledge through our methodologies, organisation and practice.

"Theory is not inherently healing, liberatory or revolutionary. It fulfills this function only when we ask that it do so and direct our theorizing towards this end" (Hooks, 1994, p.61).

He Kohikohinga Rangahau through the years



This bibliography is a collection of theory, and "theory is not inherently healing, liberatory or revolutionary" (Hooks, 1994, p.61). Instead, the responsibility to turn this bibliography into praxis lays with the reader.

Ultimately, the colonial history of Aotearoa, New Zealand, has seen the violent imposition of Western knowledge systems and subsequent systemic dismissal and erasure of mātauranga Māori (Waitangi, 2011). We know this to be a 'myth-take', a "deliberately concocted falsehoods to justify a process that is actually unjustifiable" (Jackson, 2019). May this updated bibliography be a wero to such falsehoods and inspire generations of psychologists to recognise the beauty and strength in our realities and resistance.

Conclusion

Māori continue to resist against colonialism, racism, and oppression. A resistance which must be contextualised in relation to Māori psychology. It is our hope that this update of He Kohikohinga Rangahau supports students, academics, and practitioners of Māori psychology in all aspects, from decolonising the discipline, challenging Euro-centric colonial paradigms, building our strengths and celebrating Māori success. Kia tau mai te aroha, ngā manaakitanga o ngā kairangahau kei roto nei, haere mai i raro i te korowai o ō rātou mātauranga, e tātou kia puawai.

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Te Pua Wānanga ki

Ngā Taonga Tuku Iho.

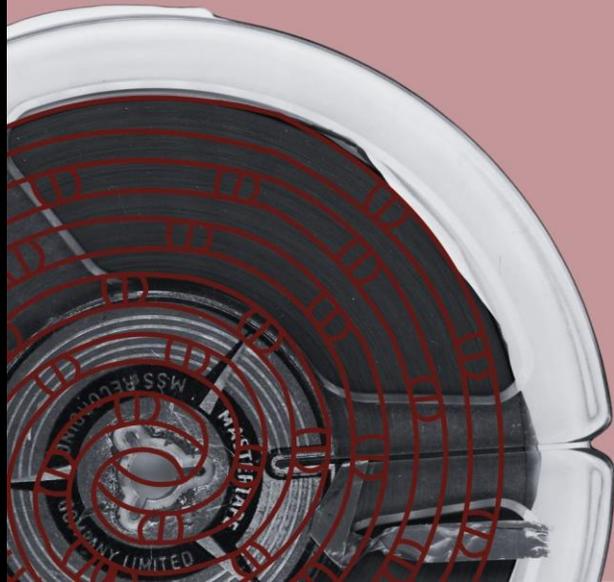
The Reel-to-Reel Audio Taonga Collection

By Molly Huggan - Supervised by Ahorangi Tangiwai Rewi

Introduction

Stored within the Faculty of Māori and Indigenous Studies is a vast archival collection. Captured within the audio taonga, which have been central in the project, are the restorative knowledges and practices from our tūpuna, relevant to today (Rangiwai, 2021).

This project began as an endeavour to identify the Faculty's research strengths and areas for improvement through a review of historical and contemporary taonga and published works from the Faculty (University of Waikato, 2024). What began as a complete inventory of the Ngā Taonga Tuku Iho collection became a prioritisation of cataloging and digitally preserving over 550 reel-to-reel tapes.



Method

Beginning with a broad inventory, the reel-to-reel collection was identified as being of particular significance to the Faculty. Each tape was logged into a new digital catalogue where relevant information from the previous catalogues were collated, cross-referenced, and reorganised with the physical collection. This new catalogue was used to check against Ngā Taonga and Alexander Turnbull Library databases to identify which taonga have been previously digitised.

Discussion

Digitising the Collection

The intended outcome of this project was to complete the digitisation of the Ngā Taonga Tuku Iho reel-to-reel collection. This could not be completed during the duration of the project due to scale and time but there are clear processes for this to be completed in the future when able. A number of tapes in our collection are publically available or accessible by request on aforementioned databases. The remaining tapes are prepared for digitisation through the New Zealand Micrographic Services before the 2025 deadline set for reel-to-reel digitisation. This deadline is pertinent due to the degradation of technology needed and the taonga themselves. The storage and access to the digitised collection will require development alongside Māori data sovereignty and governance frameworks (Kukutai & Cormack, 2020).

Inclusive and Critical Cataloging

When digitising the catalogue, decolonial and inclusive cataloguing practices need to be considered. In particular, the words that are used to describe and communicate the contents of the taonga, as well as the metadata and transcription for accessibility (Belantara & Drabinski, 2024; Carr et al., 2024).

Collection Reorganisation

The collection, Ngā Taonga Tuku Iho, at the University of Waikato contains 552 reel-to-reel audio tapes which are recorded in a collection catalogue. The catalogue and reel collection were originally organised with little correlation, and have been reorganised into a more coherent structure. This involved rearranging the tapes in chronological order, digitising the catalogue and preparing the tapes for digitisation.

Conclusion

These taonga are part of the **ever-present, dynamic and living whakapapa of the Faculty** which provide direct pathways to our tūpuna. The physical experience of being immersed in their voices, waiata and stories create present space for ancestral teachings (S. Lau Young, personal communication, January 22, 2025). Whakapapa and pūrākau, which are integral parts of relationality with the Ngā Taonga Tuku Iho collection to the Faculty and its communities, are foundational to preserving oral histories (Cavino, 2019; Tuhiwai Smith, 2021). Developing collective memories of our pasts, specifically in response and resistance to culturally significant historical subjects and contexts, can be uncovered in this collection (Cavino, 2019)

To conclude, there is a need for this project to continue beyond the summer scholarship period. This is not only to ensure the conservation of these taonga, but to enhance the potential for taura, Faculty members and the wider community to be educated by ancestors and build contemporary meanings from their teachings.

“...as we walk backwards into the future, just as our ancestors did, we may potentially reclaim, reconstruct and restore knowledge and practices reframed in futuristic ways”
(Rangiwai, 2021)

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THE UNIVERSITY OF
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Empowering Language Learning: Cultivating Health, Wellbeing, and Cultural Revitalisation Through Te Reo Māori

BY TRINITY JURGENSEN, SUPERVISED BY PROF. SOPHIE NOCK

Te Pua Wānanga ki te Ao: Faculty of Māori & Indigenous Studies

INTRODUCTION

Learning a new language offers a range of cognitive, social, and emotional benefits for second language learners, regardless of the learner's background, abilities, or the language being studied.

However, the literature suggests that heritage language learners occupy a distinct space within the field of second language learning, as they encounter unique challenges and experiences on their language learning journey due to their unique sociocultural and historical contexts and heritage connection to the language. (Te Huia, 2017).

The term *heritage language learner* in this context is applied to linguistic minorities whose languages are often endangered, where a key concern is the pressure for cultural maintenance. (Fishman, 2001).

This literature review aims to identify and explore the unique benefits of heritage language learning—specifically its impact on wellbeing, resilience, and self-determination—to highlight its transformative potential for heritage language learners.

METHOD

We conducted a literature review which surveyed a range of both local and global peer-reviewed literature investigating the wellbeing, resilience, and self-determination benefits of heritage language learning. With particular focus on the applications for Māori heritage language learners, learning te reo Māori as their second language (HL2).

SUMMARY OF KEY FINDINGS:

Language plays a critical role in supporting cultural continuity and increasing cultural efficacy.

CULTURAL CONTINUITY

Cultural continuity is the ability to preserve historical traditions of a culture and carry those traditions forward with that culture into the future, and it is closely linked to the concept of cultural identity. (Krieg, 2016).

CULTURAL EFFICACY

Māori cultural efficacy refers to the extent to which an individual perceives that they have the personal resources (i.e. personal efficacy) to effectively navigate the Māori world and engage appropriately with other Māori in Māori social and cultural contexts. (Matika et al., 2017).

"If they are to thrive, both individual young persons and whole cultural communities must somehow succeed in warranting a sense of continuity, or persistent identity, in a rapidly changing world."
(Chandler et al., 2003).

Connection

to self, mind and emotions, family and kinship, spirit and ancestors, culture and identity, land, and community. (Sivak et al., 2019; Te Huia et al., 2019).

Protection

- maintains a protective and buffering function on levels of psychological distress. (Muriwai et al., 2015).
- positively correlated with self-esteem and reduces rumination, suggesting it may provide a protective buffer against maladaptive behaviours and outcomes. (Matika et al., 2017).
- is predictive of adaptive coping strategies and wellbeing. (Fox et al., 2018).

Domains of Impact

happiness and excitement, recognition, resilience, optimism and positivity, motivation, empowerment and self-esteem, self-confidence and personal growth, pride and a sense of wholeness. (Sivak et al., 2019).

Health & Wellbeing Outcomes

- serves as a protective factor against suicide and diabetes. (Chandler & Lalonde, 1998; Hallet et al., 2007; Oster et al., 2014).

CONCLUSION

For Indigenous peoples, language functions not merely as a means of communication and expression, but as a vessel that connects us to our ancestors, grounds us in the present, and carries us forward into the future, positioning us within a continuum of knowing and being. Through language we navigate the world with a linguistic framework that embodies how to live and thrive as Indigenous peoples. Therefore, language links us to landscape, to our communities through shared expression, and to the intergenerational cultural knowledge, values, beliefs and worldviews of our ancestors.

In the face of language loss due to historical and ongoing processes such as colonisation, globalisation, and language shift, the reclamation and revitalisation of heritage languages, such as te reo Māori, has become an important tool to support Indigenous communities' through maintaining cultural continuity and strengthening cultural efficacy, thus, fostering wellbeing, resilience, and self-determination.



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Ngāi Tū Haere - Endurance of the Ancestors to achieve an objective

Nā Taaj Tawhara i raro i ngā rekereke o
Prof Te Kahautu Maxwell



BACKGROUND

Focusing solely on the pātere (chants), mōteatea (lament songs), and kōrero tuku iho (oral history) of Te Whakatōhea (tribe from the eastern Bay of Plenty), I compiled a database of how my tīpuna (ancestors) traversed the landscapes to achieve an objective.

Looking at the purpose and strategy implemented in these journeys as a link to promote health and well-being in Māori communities.

References

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METHOD

Collecting 5 Whakatōhea and Tai Rāwhiti pātere/mōteatea from the book *Ngā Mōteatea - Part Three*.

Digitising 3 manuscripts of a Whakatōhea rangatira, Danie Poihipi.

Analysing stories of endurance about Te Whakatōhea tīpuna and the obstacles the iwi (tribe) currently face today.

RESULTS

Ngākau pono - Faith

The beginning of any objective started with karakia (prayer), enabling them to carry out haerenga (journeys) in union with the spiritual powers. The great migration of Mātaatua waka faced its biggest challenge when the waka could not head to shore. The men on board tried to force its way through physically but to no avail. Muriwai chanted the karakia “kia tū ake whakatāne au i ahau”, allowing Mātaatua to settle.

Taioranga - Nutrition

Sustenance played an integral part in achieving an objective. Koro Danie’s manuscripts share teachings about the traditional knowledge, gathering, and preparation of kai (food).

Whāinga - Purpose

Stories of the endurance of the tīpuna come in many forms, such as the establishment of pā (villages), and pakanga (war) with other iwi that are portrayed through the pātere from *Ngā Mōteatea - Part Three*. The strategy to conquer Kahungunu was constructed by Tūtāmure in vengeance for the killing of his sister Tāneroa, where he trained his army on the cliffs of the Motu Ranges, using vines for ropes. 5 years of preparation later, Tūtāmure’s war party of 10,000 soldiers began their haerenga. 5,000 travelled 400km by sea on waka taua (war canoes), while the other half travelled 300km on land. The plan of attack ensured victory over the Kahungunu people at Manga-ā-Kahia. These examples show that everything my tīpuna did was guided by clear intention.



CONCLUSION

Ngāi Tū Haere talks about the endurance of our tīpuna but also the descendants of Te Whakatōhea today. Enduring breaches of the treaty, becoming landless and poor, and loss of identity.

To navigate a way to reclaim Māoritanga, adapting and incorporating aspects of our tīpuna, their mātauranga tuku iho into daily life will help contextualise oneself, to then assist in uplifting the health and well-being of whānau (families) in Māori communities overall.



THE UNIVERSITY OF
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Te Whare Wānanga o Waikato

Te Huataki Waiora – School of Health



UNLOCKING ACCESSIBILITY:

Readability of Type 1 Diabetes Technology Resources

Introduction



The Challenge: Clear communication is critical for users managing Type 1 diabetes with advanced technologies such as Continuous Glucose Monitors (CGMs) and insulin pumps.

The Goal: Assess the readability of publicly available resources using the Flesch Reading Ease Score to identify gaps and provide actionable recommendations for improvement.



Methods

1.Resource Selection:

- Identified 15 user-facing resources on CGMs and insulin pumps.

2.Text Extraction and Cleaning:

- Text was extracted from PDFs and web pages.
- Manually cleaned to exclude non-relevant information, ensuring accuracy.

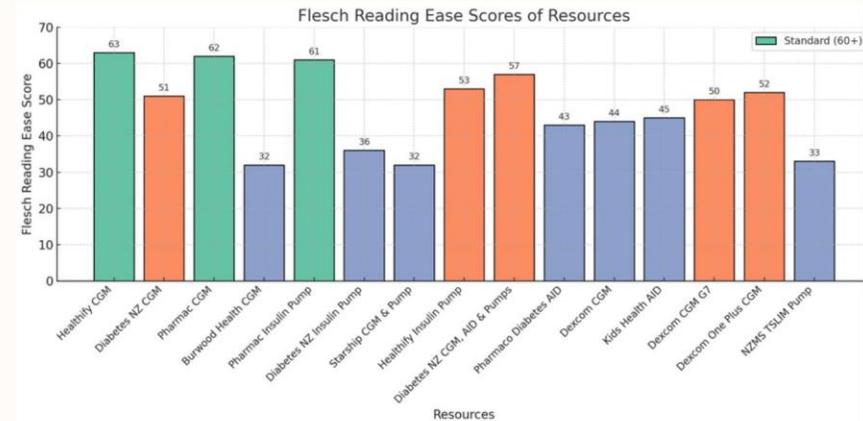
3.Readability Analysis:

- Flesch Reading Ease scores calculated for each resource.
- Higher scores indicate better readability.

Results



- Scores ranged from 32 (very difficult) to 63 (plain English).
- Average readability: **Fairly difficult** (~50).
- CGM resources scored higher overall than insulin pump guides.



Conclusion

Findings:

Most resources are moderately challenging, limiting accessibility and must cater to diverse literacy levels to ensure comprehension.

Recommendations:

- Simplify language for broader audiences.
- Use visuals to explain complex concepts.
- Test materials with users for clarity and effectiveness.



Green: Standard readability (scores 60 and above).

Orange: Fairly difficult readability (scores between 50 and 59).

Blue: Difficult readability (scores below 50).

Poster by: Cristina Baby

Supervisor: Hamish Crocker, Te Hautaki Waiora School of Health

EMPOWERING STUDENT-PARENTS

RESEARCH BY: KELLY G. BERENTSON

Engagement in higher education benefits not only individuals, but their families and the collective. Student-parents encounter unique challenges at university, balancing academic demands and family commitments. When universities provide targeted support, student-parents have increased academic success and improved wellbeing.¹ Addressing the needs of student-parents is a matter of social justice.²

AIM

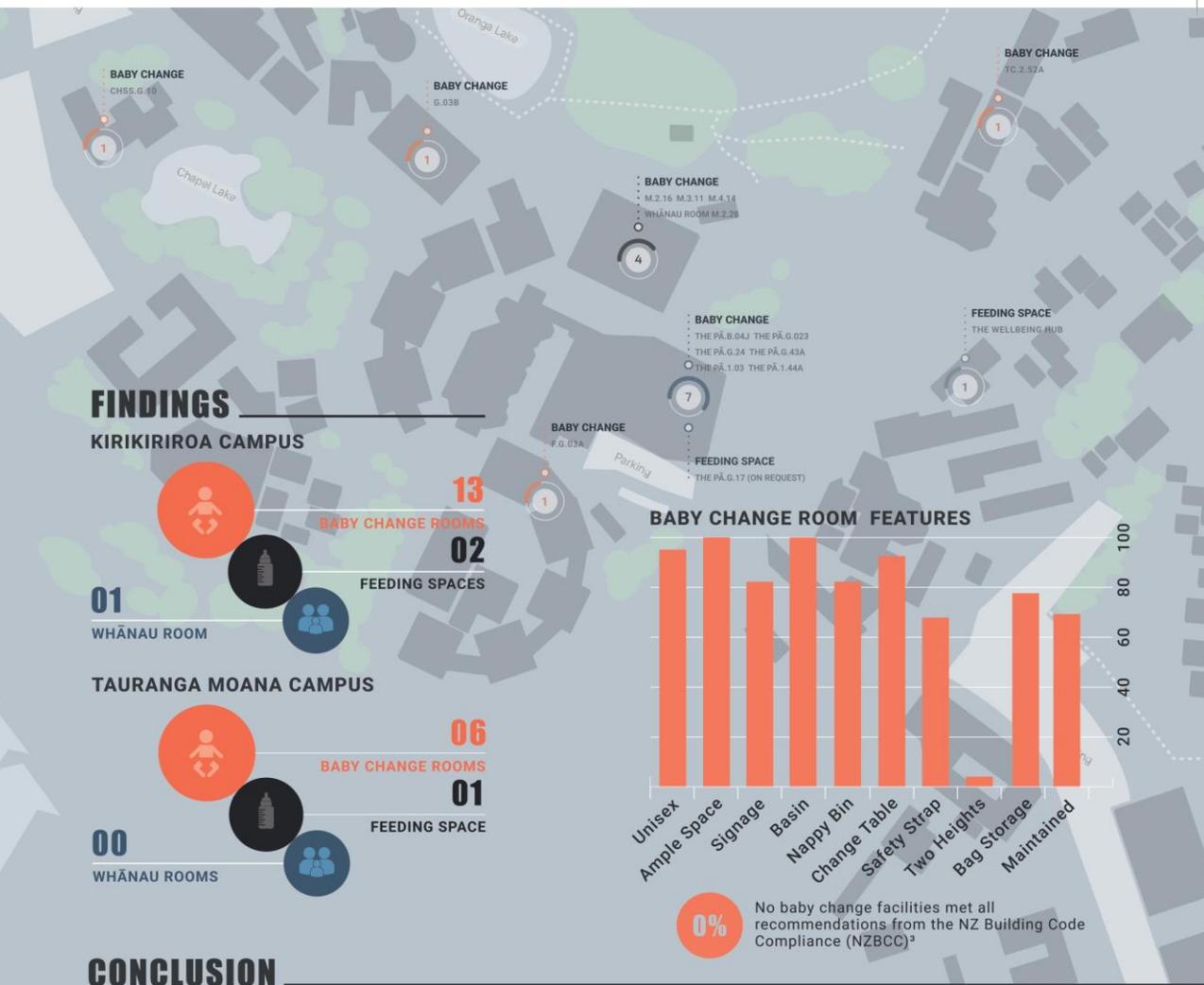
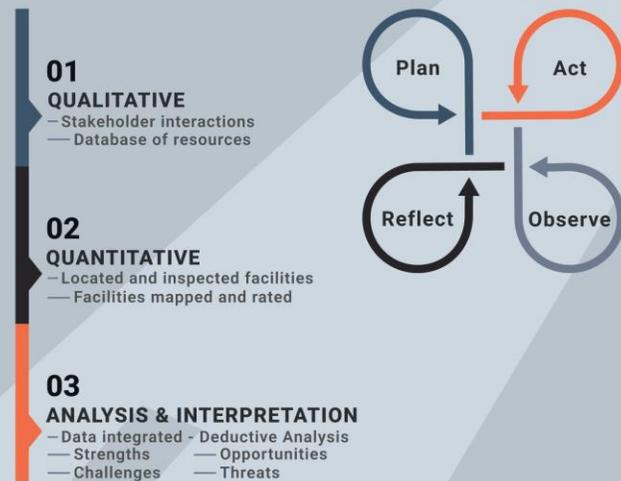
To identify and collate existing facilities and resources that support parents at the University of Waikato, being students and staff.

METHODOLOGY

Participatory Action Research (PAR) recognises the need for the redistribution of power when addressing social issues.²

As a student-parent I am positioned as a participant and student-researcher in this project.

Situated at the early stages of PAR, a community assessment was conducted using mixed methods design.



FINDINGS

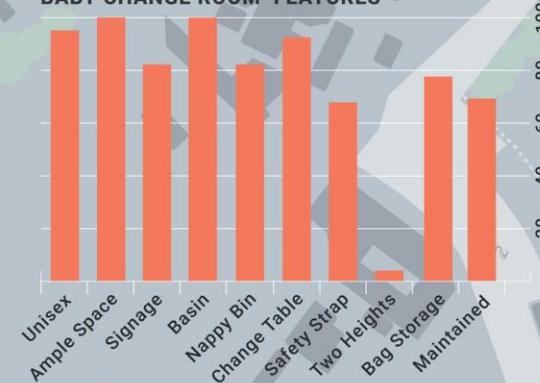
KIRIKIRIROA CAMPUS



TAURANGA MOANA CAMPUS



BABY CHANGE ROOM FEATURES



0% No baby change facilities met all recommendations from the NZ Building Code Compliance (NZBCC)³

CONCLUSION

The Kirikiriroa and Tauranga Moana campuses can facilitate parents; however, the campuses do not welcome families. There is an array of resources available, but they are not necessarily reaching student-parents.

12 opportunities were identified to assist the university in becoming more family-friendly. Practical recommendations were broken down into short, medium and long term and included: add parental facilities to campus maps; streamline the quality of parental services to meet NZBCC; and develop a parenting webpage.

Improvements align with the university's commitment to diversity, equity, access and inclusion.⁴ Through implementation, transformative change can be facilitated that enables student-parents at the University of Waikato to flourish.² To refine actions, further research with this community is encouraged. **"KO TE TANGATA - FOR THE PEOPLE"**

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Supervised by:
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 Dr Samantha Heath, Dr Adele Williamson

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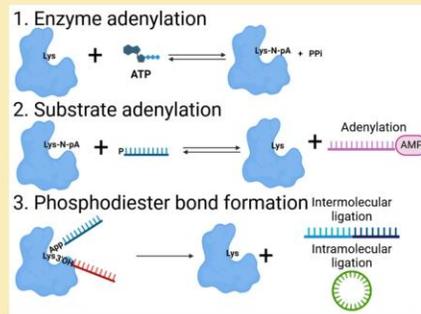


Some like it hot: Exploring thermophilic RNA ligases for biotechnology applications

Willow Collier¹, Joanna Hicks²

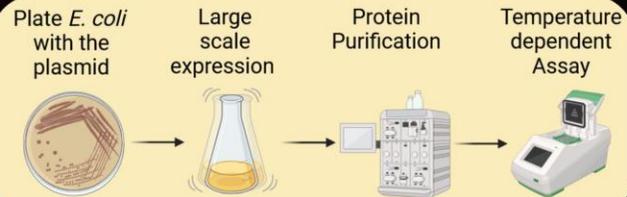
Introduction

RNA Ligases are a type of enzyme that joins two pieces of RNA.
This project explores a heat-loving (thermophilic) RNA ligase from *Thermococcus gorgonarius*, which grows at 88°C, for biotechnology applications. RNA can fold into 3D structures with features like loops and stems

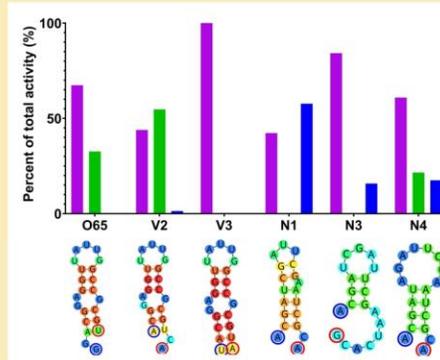


Aim: Determine if the enzyme (TgoRnl)'s activity is biased on sequence or structure

Methods

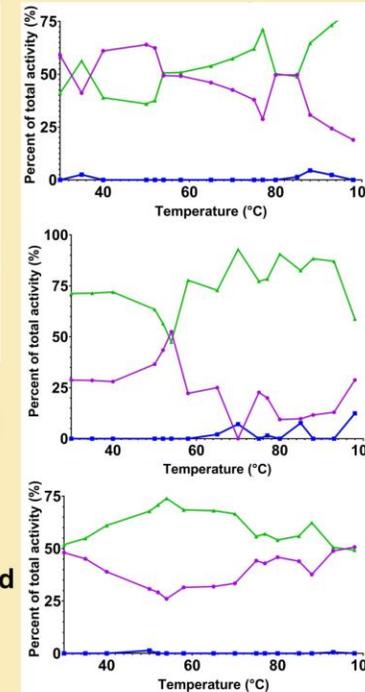


Results



The effect of slight changes in the structure or sequence of the RNA on the type of activity seen.

This graph shows that the RNAs structure affected the activity seen. RNA with no overhang (V3) prevented ligation activity. RNA with a 3' overhang (V2, N1, N4) promoted linear ligation.



■ Adenylation ■ Linear Ligation ■ Circular Ligation

The effect of temperature on the activity of TgoRnl, RNA shown to the right. From top to bottom the temperature at which the structure of the RNA unfolds is 55°C, 65°C and 75°C.

Oligo 55 shows a switch between adenylation and linear ligation at its unfolding temperature, therefore the structure has an effect on TgoRnl's ability to perform ligation. This is mirrored by O65, which shows a spike in circular ligation at the unfolding temperature

Conclusions

TgoRnl shows more ligation activity on RNAs with any overhang, and more linear ligation when there is a 3' overhang. It also shows a switch in activity at the unfolding temperature of the RNA

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Created in <https://canva.com>
Created in <https://BioRender.com>
¹School of Science, ²School of Health





NOROVIRUS: THE EPIDEMIC PROBLEM WITH AN AGRICULTURAL SOLUTION



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LINI PARETE-ROBERTS, PATRICK WIGHTMAN AND WILLIAM KELTON

TE HUATAKI WAIORA SCHOOL OF HEALTH, TE WHARE WAANANGA O WAIKATO, AOTEAROA.

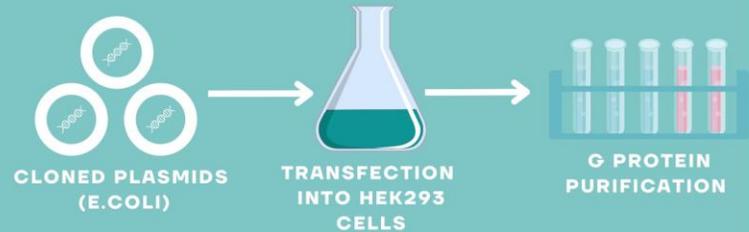
INTRODUCTION

NOROVIRUSES ARE THE LEADING CAUSE OF ACUTE GASTROENTERITIS (AGE) WORLDWIDE. WHILE TYPICALLY SELF-LIMITING, THIS VIRUS RAISES SIGNIFICANT PUBLIC HEALTH CONCERNS WITHOUT A STREAMLINED COURSE OF PREVENTATIVE TREATMENT (1). WHILE VACCINES SERVE AS A PROMISING APPROACH, PROGRESS IN THIS SPACE HAS STALLED BECAUSE OF VIRAL LOGISTICS AND THE HARM POTENTIAL OF IMMUNISING AT-RISK PATIENTS. THUS, A NOVEL TECHNIQUE HAS BEEN DEVELOPED TO UTILISE SMART-ANTIGENS AS A PROPHYLACTIC, EFFECTIVELY CIRCUMVENTING THE NEED FOR A STANDARD VACCINE COURSE BY HARNESSING PASSIVE IMMUNITY OBTAINED THROUGH INOCULATING RUMINANT ANIMALS (2;3). THE RESULTANT POLYCLONAL ANTIBODY TITRES CAN THEN BE EXTRACTED FOR MEDICAL USE AGAINST ACTIVE NOROVIRUS INFECTIONS.



RESULTS

OVER THE COURSE OF THIS PROJECT, SEVEN CONSTRUCTS WILL BE EVALUATED FOR THEIR ROBUSTNESS AS 'ANTIGENS' TO BE USED AS INOCULATING AGENTS FOR THE PRODUCTION OF HYPERIMMUNE MILK.



FINAL STEP: ANTIGEN ISOLATION VIA A DIGESTION REACTION

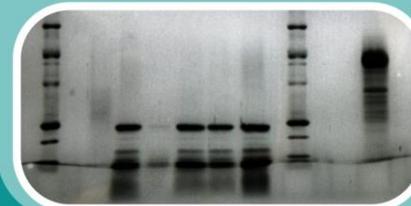
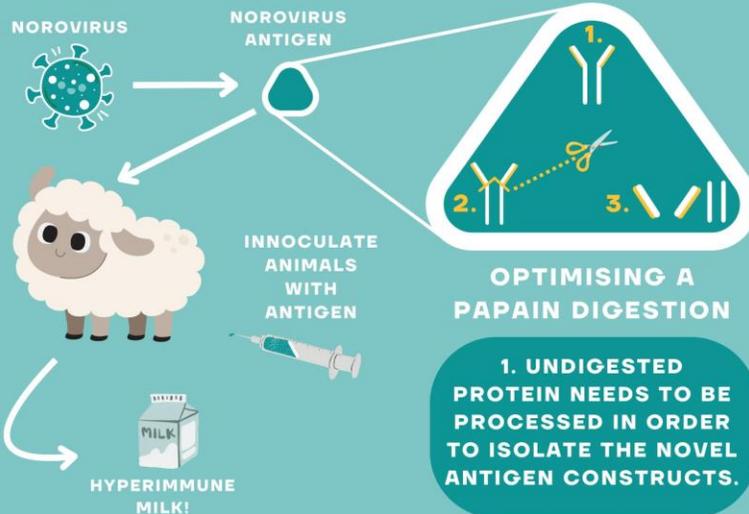


FIGURE 1.1 (LEFT) THIS GEL DEPICTS VARIOUS TIME-POINTS OF PAPAINE TREATED PROTEIN (MIDDLE LANES). THESE ARE COMPARED AGAINST UNDIGESTED PROTEIN (FAR RIGHT).

METHODS



2. PAPAINE IN THIS INSTANCE SERVES AS MOLECULAR SCISSORS - CLEAVING THE MOLECULE AT SPECIFIC SITES.

3. THIS REACTION PRODUCES FRAGMENTS OF THE ORIGINAL PROTEIN THAT CAN BE VISUALISED BY GEL ELECTROPHORESIS.

1. UNDIGESTED PROTEIN NEEDS TO BE PROCESSED IN ORDER TO ISOLATE THE NOVEL ANTIGEN CONSTRUCTS.

CONCLUSION

BY OPTIMISING THE PROTOCOL OF A PAPAINE DIGESTION, ISOLATION OF NOROVIRUS ANTIGENS DENOTES A CRITICAL STEP IN ANALYSIS OF NOVEL CANDIDATES. THE GOALS OF THIS RESEARCH IS TO DETERMINE VARIANTS OF NOROVIRUS ANTIGENS THAT ARE BOTH VIABLE AND ABLE TO MITIGATE THE SPREAD OF NOROVIRUS CASES THROUGH AGRICULTURAL MEANS.

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Tokoroa's Health Needs: Priorities for Future Medical School Curriculum



Introduction

It is well-known that there are health inequalities between Māori and Pacific and Pākehā/Palangi. Furthermore, there are great concerns about equity for rural communities. For this project, we interviewed 10 Māori and Pacific residents of Tokoroa about their healthcare experiences. The research findings will inform the University of Waikato Graduate Medical School curriculum.

Methods

Ten Tokoroa residents (6 Pacific, 4 Māori; 6 females, 4 males) completed a researcher-administrated questionnaire consisting of four structured and 10 open questions. Thematic analysis identified the key themes in the image above.

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Results

- 40% are satisfied with the treatment they receive from their healthcare providers, including services outside of Tokoroa.
 - 20% are unsatisfied.
 - 40% have mixed feelings with the treatment they receive.
- The participants agreed that:
- Rural and urban communities have different healthcare needs.
 - Rural communities have less access to healthcare services.
 - Māori and Pacific have greater/higher healthcare needs and are treated differently to Pākehā/Palangi.
 - Rural communities need more doctors.
 - All doctors need to be more culturally aware and responsive.

Discussion

In this short study, we have identified two key areas to address in our curriculum. First, residents have concerns about a lack of cultural responsiveness and respect from doctors, nurses and receptionists. Consequently, the skills and characteristics they desire to see in medical school graduates include cultural competency, general respect, and the ability to build relationships. They also want healthcare professionals to understand that in rural communities Māori and Pacific have greater needs than Pākehā/Palangi.

Conclusion

The findings of this study, support previous research conducted by University of Waikato students (Galewski, 2022; Maikuku, 2022; Peneha, 2024). First and foremost, rural communities require more healthcare services and healthcare professionals need to be more culturally responsive and respectful. These findings have clear implications for the Graduate Medical School curriculum and placement program.



Zarya Poulava, supervised by Dr. Gloria Clarke
Te Huataki Waiora Division of Health

HREC(Health)2024#40

Kurawaka ki uta, TikiTokī ki tai: Understanding Māori women's intimate health and social media.

Background

Māori views of sexual and reproductive health (hereafter intimate health), pre colonisation is embedded among the routine of day-to-day life. Detailed within the creation of humans, birth and death, the metaphoric use of genitals as friends and foes within moteatea and waiata, intimate health was tied into the laws of whakapapa, tapu, noa, war and peace. Colonisation *“has reframed discourses about Māori womens bodies within highly political narratives of pollution that contradict central Māori philosophical and spiritual paradigms”* (Murphy, 2013, pg.13). Then prevailing Victorian attitudes of vulgarity and racism were entrenched within Māori experiences of healthcare. Many of which are carried over into the experiences of Māori in biomedical-westernized health care today (Came, 2012). We seek to understand what role, if any social media has on intimate health care and support for wahine Māori?

Planned output

Within a kaupapa Māori paradigm, academic reports and results may not be the most appropriate method of research results dissemination, we have to think outside of the box to ensure that any information shared with us is given back with the same aroha and manaaki. This may look like reinterpreting the results as art, music, short form videos, podcasts or other spoken delivery methods whilst still keeping the traditional academic reports and journal writings.

Outputs will also have direct impact on health care provision in Aotearoa and may be presented at relevant webinars, and health conferences (e.g. Goodfellow, PHANZ etc.) directly to health care practitioners who provide health information and support to wahine Māori in the intimate health space.



Scan for full reference list and bibliography

Renee Paku (Ngāti Kahungunu, Ngāti Maniapoto)
Supervisors: AP Victoria Egli (University of Waikato)
& Dr. Callie Vandewiele (University of Auckland)

Problem

While there is no specific data of Māori smartphone ownership, in 2022, 92% of New Zealand adults owned a smartphone. 25-30% of Māori live rurally often without internet connection. This is compounded with geographic barriers to accessing healthcare (Graham & Masters-Awatere, 2020). Māori experience many barriers to accessing safe, culturally appropriate intimate healthcare and we want to know how much of a role, if any, social media plays in the information accessed and how does mis/disinformation play a part? How much does digital exclusion play a role?

Plan going forward

A kaupapa Māori approach will be taken to the next phase of the research. With the assistance of senior Māori academics and my supervisors I will compile a summary of the main themes from the wahine Māori open-ended survey responses. This summary will then be used in wānanga with wahine Māori as points for further discussion, interpretation and meaning making. These wānanga will take place on Zoom with recruitment through social media communities and at in person hui over kai, weaving, or other in person events. The wānanga will be audio-recorded and transcribed verbatim, additional outputs such as photos and videos of kai or weaving may also be collected. While the original survey has ethical approval from, additional ethical approval will be obtained prior to undertaking any recruitment for this phase.

Analysis plan

Transcripts from the wānanga will be analysed using reflective thematic analysis within a Kaupapa Māori paradigm.

Positionality

I come to this study as a proud uri and māmā from Ngāti Kahungunu and Maniapoto, brought up on my marae, and raised in our whānau blue sky thinkings always questioning why. This lead me to Te Wānanga o Raukawa where I'm completing a Poutūārongo Ahunga Tikanga (Bachelor Māori Laws and Philosophy) whilst also working within the community activism space. It is through the amalgamation of these places of learning that I found myself coming to health research. For my tamahine, for my whānau. For my hapū. For my iwi.

Aim

This study seeks to examine what impact social media has had on intimate health in a Covid19 world, specifically for wahine Māori in Aotearoa.

Methods

This study analyses the wahine Māori responses from a larger anonymous online survey. Full details can be found at Egli, et al, 2024. In order to boost recruitment of wahine Māori responses I posted flyers in local supermarkets, hung in shop windows, posted in various related and community social media groups relevant for Māori wahine in my community. Kanohi-ki-te-kanohi presentations of the research were undertaken at local doctors and sexual health clinics, including a Māori healthcare provider, at marae and at mothers groups.

Findings

During consultations with marae members and community groups it became clear that while survey questions were culturally safe, they weren't written from a kaupapa Māori framework and they weren't tailored to the nuances of a colonised culture and weren't encompassing of the myriad of barriers and challenges that wahine Māori face when addressing intimate health. Therefore, after consultation with the project leads, I knew that a new method of approach to answering the research aim would be needed.

Te Wānanga Pūtaiao – Division of STEM: Science, Engineering, Computing and Mathematical Science

Te Aka Mātuatua – School of Science

Background

Nothofagus (beech) forests vs. conifer-broadleaf forests:

- Slower decomposition rates in beech forests^[1]
- Higher soil carbon in beech forests^[1]
- Reduced nitrification losses in beech forests^[1]

Beech forest expansion:

- Continued expansion since the last glacial maxima^[2]
- Gradually replacing other forest communities^[2]
- Significant impact on ecosystem functioning and nutrient cycling^[1]

Research Focus:

- Investigate *Nothofagus* expansion and current soil nutrient dynamics - Mangaohane Plateau, Ruahine Range, NZ.

Objectives:

- Compare population dynamics of beech and conifer-broadleaf trees via paired plots
- Assess rate of *Nothofagus* expansion
- Compare soil carbon and nutrient cycling between the two forest types

Implications

- Enhance understanding of soil carbon dynamics of the area and how this may interact with predicted climate change

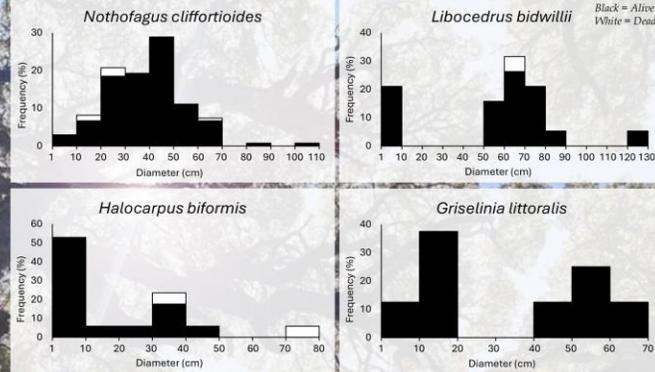
Methods

- Located approximately 39°38'9.74"S 176°10'29.23"E
- 4x paired plots - Total of 8 sampling sites
- 35x24m plots
- DBH of all trees >1cm recorded to species level
- Single soil sample for each plot, collected across 4 random locations within the plots for a representative sample



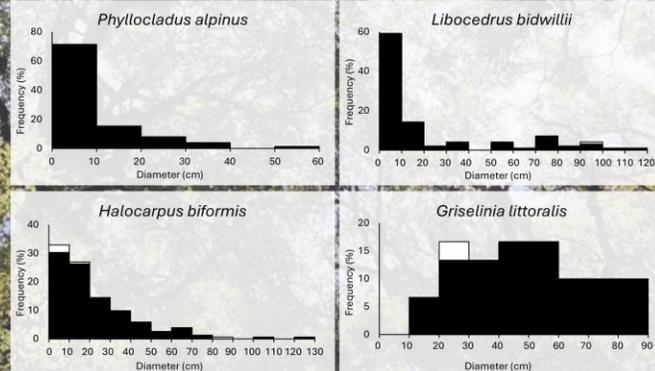
- Tree size data sorted into diameter classes and frequency distributions
- Soil sample tests conducted at Hill Laboratories
- T-tests conducted on soil sample results

Results



Beech Stands

- Only two of the four beech stands contained *Nothofagus* saplings with a DBH of 1-10cm
- Of the 135 *Nothofagus* trees identified, only four saplings (2.96%) were observed within the 1-10cm DBH class



Conifer-Broadleaf Stands

- All conifer-broadleaf stands generally had a healthy conifer recruitment status with plentiful young saplings
- *Griselinia littoralis* (broadleaf) lacked saplings between 1-10cm DBH, and one stand had no observations between 1-30cm DBH

	Mean Total Nitrogen (%)	Mean C/N Ratio	Mean Total Phosphorus (mg/kg)
Beech Stands	0.485 ± 0.037	20.575 ± 0.298	316.25 ± 23.14
Conifer-Broadleaf Stands	0.57 ± 0.023	18.725 ± 0.649	359 ± 28.83
T-test P value	0.096	0.041	0.291

Soil Sample Results

Insignificant differences for total nitrogen and phosphorus

- No difference in soil nutrient content between the paired plots and forest types

Significant differences in the C/N ratio

- Consistent with previous studies^[1]
- Organic matter decomposition and mineralization are lower in beech stands compared to conifer-broadleaf stands

Conclusion

Observations:

- Low abundance of *Nothofagus* saplings
- Suggests limited expansion of *Nothofagus* stands
- Conifer-broadleaf stands show healthy conifer recruitment but limited *Griselinia littoralis* (broadleaf) recruitment

Impact of Deer Herbivory:

- Deer herbivory observed during the study
- Recent invasion of sika deer which can thrive on less-digestible forage than red deer
- Potentially impacting survival of both *Nothofagus* and *Griselinia littoralis* seedlings and saplings
- Deer culling may be necessary to reduce herbivory pressure and promote regeneration

Suggestions

- Further research is needed
 - To understand factors limiting *Nothofagus* regeneration.
 - To develop strategies for its conservation

Final Comments

- Further expansion of the beech stands is unlikely unless sika deer populations are greatly reduced

Acknowledgments

Poster: Ryan Blair Supervisor: Chris Lusk Field Technician: Ben Roche
Funding: Royal Society of New Zealand and The University of Waikato Summer Scholarship Program

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Biodiversity and Leaf Decomposition

How biodiversity impacts carbon processing in stream ecosystems

Jasmine Brown, supervised by Dr Frank Burdon, with a special thanks to Alexandria White

Introduction

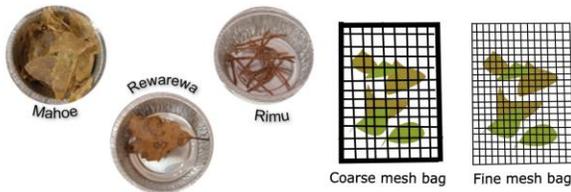
Diversity impacts: Streams and rivers process carbon from terrestrial inputs. Evidence suggests that in stream ecosystems, terrestrial producer biodiversity influences leaf decomposition.¹

Decreasing biodiversity: New Zealand has lost c. 70% of its native forest cover since human arrival.² Stream ecosystems are impacted by their catchment vegetation, so this lowered terrestrial diversity could impact aquatic decomposition (a cross-boundary effect).^{1,3}

Leaf litter diversity: My study explores how changing leaf litter diversity in streams impacts the ecosystem process of decomposition.

Methods

Leaf litter treatments: Three monocultures representing low diversity (rimu, rewarewa, and mahoe) and a polyculture representing high diversity (rimu, rewarewa, and mahoe combined) were deployed at each site in coarse and fine mesh bags.



Why different bags? Coarse mesh was used to measure invertebrate-mediated decomposition and fine mesh was used to measure microbial decomposition.

Deployment: Differences in leaf litter diversity were simulated at six sites along two Waikato streams. Leaf bags were left in the stream for 18 days before retrieval (Fig. 1).



Figure 1. Leaf bags deployed in the stream.

Processing: Retrieved leaves were oven-dried at 60°C for 48 hours and weighed. Oven-dried leaves were ashed at 550°C and re-weighed. Resulting weights were considered relative to initial weights (3 g per bag) to calculate the decomposition coefficient, k .

Results

There were no significant differences between monoculture and polyculture treatments in their leaf litter decomposition rates (Fig. 2, $p > 0.05$).

Mahoe had a higher average mass loss in the coarse mesh bags compared to in the fine mesh bags ($p < 0.05$). Mass loss was not significantly different between mesh types for rimu or rewarewa ($p > 0.05$).

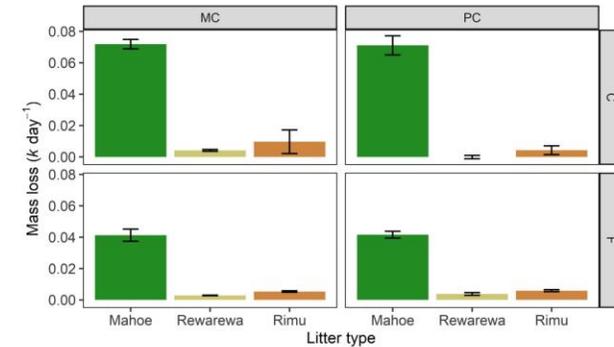


Figure 2. Leaf litter mass loss with error bars, by litter type, mesh type (C = coarse, F = fine), and diversity treatment (MC = monoculture, PC = polyculture).

Conclusions & Further Research

Not all the leaf bags deployed for this study were processed due to time constraints. All data needs to be analysed before we can conclude that leaf litter biodiversity is not impacting decomposition at our study sites. We can tentatively conclude that mahoe decomposition is partially caused by invertebrates, as mahoe mass loss was significantly lower in the fine mesh bags.

Beyond analysing the remainder of the collected data, further research could involve analysis of the macroinvertebrate decomposers present in the leaf bags. Even if leaf litter diversity is not affecting the litter decomposition rate, it could be impacting macroinvertebrate species richness and community composition.

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The Effect of Temperature on Carbon Sequestration Potentials of Agricultural Soils Amended with Silicate Rock

Kelly Chow, Supervised by Dr Thomas Corbett

Introduction

- Sustainable and scalable carbon dioxide removal strategies are essential for reducing global emissions and mitigating climate change.
- Enhanced rock weathering (ERW) accelerates the natural weathering of silicate minerals – a process that captures atmospheric CO₂, converting it into dissolved bicarbonate and carbonate ions (Fig 1).

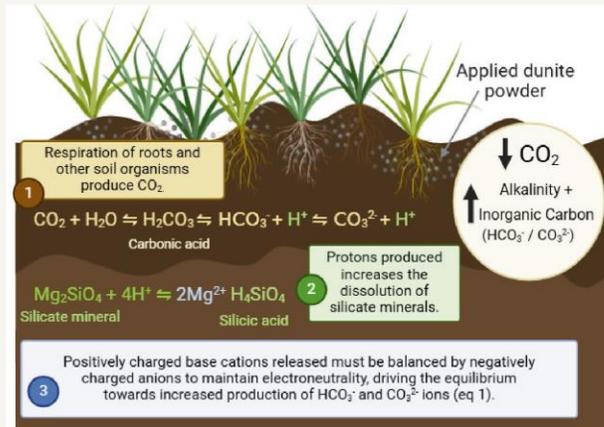


Figure 1. Summary of the enhanced silicate mineral weathering processes that lead to inorganic carbon sequestration.

- Soils are ideal for ERW due to their high CO₂ concentrations, organic acids, and ligands from plant and microbial activity that enhance weathering¹; while also offering co-benefits such as improved nutrient availability, reduced acidification, and increased plant productivity.²
- Microbial and biological activity is governed by processes that are temperature sensitive.³
- This research investigates how temperature influences the inorganic carbon sequestration potential of agricultural soils amended with dunite rock powder.

Method

Carbon sequestration was tested across a range of temperatures (Fig 2) using paired trials to isolate the effects of dunite weathering.

The first pair compared a **soil control** (2g soil + 30 mL distilled water) to a **soil and dunite amendment** (0.38 g dunite powder added; equivalent to 200 t ha⁻¹ application rate).

The second pair tested the effect of a substrate-rich environment by adding 1 mL glucose solution (75 mM) to both the control and dunite amended setups.

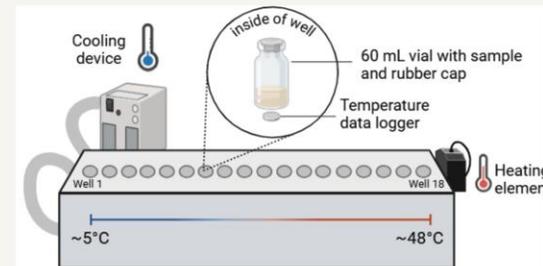


Figure 2. Schematic of the temperature block, designed with a cooling device at one end and a heating element at the other to establish a temperature gradient. The block included 18 wells for sampling vials, with temperature data loggers (iButtons) placed in wells 1, 4, 7, 9, 11, 13, 15, and 18.

Headspace CO₂ samples (3 replicates) were collected from each vial and measured using an Infrared Gas Analyser (LI-COR LI-7000) at 6, 30, and 54 hours of incubation.

After the 3-day incubation, the soil water was analysed for **total alkalinity (TA)** using a SI Analytics titrator (TitroLine 7000), and for **total inorganic carbon (TIC)** and total organic carbon (TOC) using an Aurora 1030 analyser.

Results

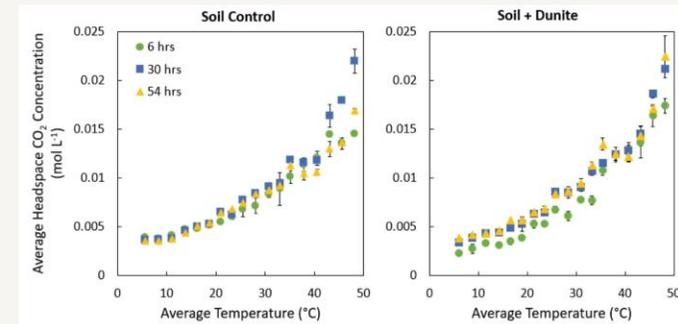


Figure 3 Average headspace CO₂ concentrations in samples (left: soil control; right: soil + dunite amendment) measured at 6, 30 and 54 hours after incubations began, across increasing temperatures.

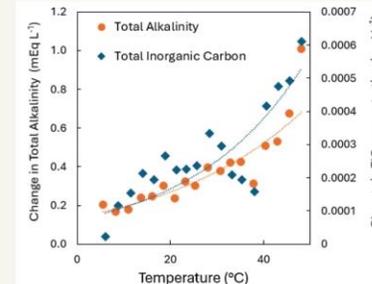


Figure 4 Changes in total alkalinity and total inorganic carbon concentrations due to weathering measured from the dissolved fractions of soil samples amended with dunite, across increasing temperatures.

Key Findings

No significant differences in headspace CO₂ production were observed between the soil control and dunite-amended trials.

However, total alkalinity and TIC increased exponentially with temperature, indicating that inorganic carbon sequestration from dunite weathering accelerates with rising temperatures.



Scan for
more
results and
references

Future Research

- Quantify dissolved cations released with ICP-MS.
- Analyse total inorganic and organic carbon in soil solids.
- Repeat experiments with different soil types across New Zealand.

A Data-Driven Look at Population Flooding Vulnerability in Aotearoa

By Morgan Harris Supervised By Dr Luke Harrington & Dr Jesse Whitehead
Te Aka Mātuatua School of Science, University of Waikato, New Zealand

Introduction

Planning effectively for the impacts of climate change requires an understanding of both physical hazards and the socioeconomic capacity of communities to cope with them.

This research combines socioeconomic deprivation and precipitation intensification data to identify the regions in Aotearoa most at risk of flooding in a warming world.

A warmer atmosphere can hold more water vapor, leading to larger amounts of rain being released during extreme events. Climate change-driven precipitation intensification has a larger effect on short-duration rainfall events, with smaller effects on long-duration events (Table 1).

Island	3 hours	6 hours	12 hours	24 hours	36 hours	48 hours	72 hours	84 hours	96 hours	120 hours	168 hours
North	18%	15.1%	11.5%	8.9%	8.2%	7.6%	7.2%	6.7%	6.6%	6.3%	5.9%
South	16.3%	13.2%	9.9%	7.4%	6.4%	5.7%	4.9%	4.7%	4.5%	4.1%	3.7%

Table 1 – Precipitation intensification rates (% per °C of warming) for rainfall durations of 3 to 168 hours with a return period of 100 years. Calculated from climate model analysis [1].

Methods

- Hydrological models [2] were used to estimate the cumulative time required for water to travel the length of each river catchment nationwide (known as time of concentration or ToC).
- Catchment-specific ToC data was used to infer climate change driven precipitation intensification rates of greatest relevance for different regions around the country.
- These precipitation intensification rates were combined with information about socioeconomic deprivation (NZ Deprivation Index sourced from 2023 census data [3]) to identify at risk regions around the country.

Conclusion

Making decisions in warming climate requires an understanding of who lives in harms way, what their capacity is to manage the changes they face, and what flood related risks are most relevant to them. By leveraging known differences in how climate change effects short and long duration rainfall we have identified which communities are most at risk in our flood prone future.

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Results

- Aotearoa's population is concentrated in high precipitation intensification areas**, which make up just 14.8% of the land surface but include 53.8% of the population. In contrast, low-intensification areas cover 35.3% of the land but only 8.0% of the population.

- Aotearoa's most vulnerable populations are concentrated in areas with the highest precipitation intensification**. People in high-precipitation regions are more likely to live in areas with high precipitation intensification, while those in less-deprived regions are more likely to reside in low-intensification areas (Figure 2).

- There is significant variability in precipitation intensification and deprivation across the country** (Figure 1), with notable differences between regional councils.

- The proportion of people at **high risk** can differ between regions by a factor of more than ten.

- Considerable variability also exists within the boundaries of individual regional councils, particularly in regions with diverse river catchment sizes.

Figure 1 – Map of NZ Deprivation Index 2023 and precipitation intensification under climate change, color-coded by the bivariate scheme in Figure 2.

NZ Deprivation Index 2023	Precipitation Intensification Band		
	Low (< 6%)	Mod (6%-12%)	High (> 12%)
High (9-10)	0.4%	9.2%	11.2%
	1.0%	8.8%	10.2%
	1.5%	7.6%	10.6%
	2.0%	6.4%	11.4%
Low (1-2)	3.0%	6.2%	10.4%

Figure 2 – Heat map showing the percentage of Aotearoa's population living within precipitation intensification and deprivation classes.



World of Bugs: How Climate and Drought Shape Soil Ecosystems

Nina Juby, Dr. Andrew Barnes & Niamh Tapper
Te Aka Mātuatua, School of Science,
University of Waikato, New Zealand



Background

The detrimental impacts of climate change on terrestrial and aquatic life are well understood and researched. However, few have considered the influence of related disturbances such as drought and flooding to biodiversity and ecosystem services and overall resilience of these ecosystems. Natural soil temperature gradients produced as a result of geothermal hotspots create an opportunity to investigate the capacity for soil ecosystems to resist and recover from drought disturbance using naturally assembled food webs.



Figure 1. Drought treatment plot with rainout shelter



Figure 2. Drought treatment plot with rainout shelter and half of the team

Aims

- Construct food webs in a soil ecosystem before and after drought treatments at different temperatures to determine resistance.
- Link changes in soil food webs to the stability of ecosystem functions in response to climate change driven disturbance.

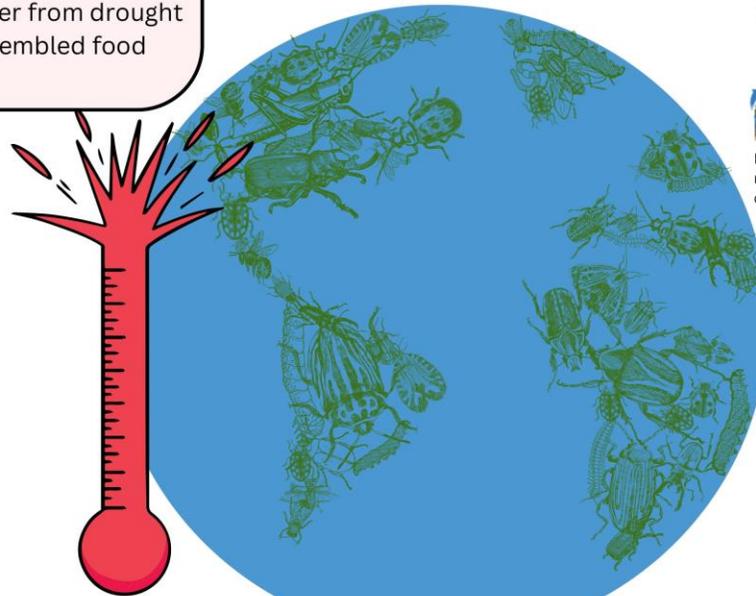


Figure 3. Nematode extraction setup

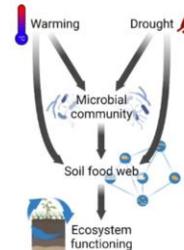


Figure 4. Expected response to warming and drought

Methods

The study site included four hotspots southeast of Rotorua where soil temperatures ranging from 18-33°C were sampled. The paired plot design involved two adjacent plots at the same temperature, each with a 1m transect in which samples would be taken. The plots in each pair were randomly allocated either “drought” or “ambient” treatment. Rainout shelters were constructed on the drought plots. Samples taken over a twelve month period then processed, aid understanding of different aspects of the biodiversity and physiochemistry of the soil in each plot. Mesofauna were extracted from 10cm soil cores using a Macfadyen high gradient extractor. Nematodes were extracted in a Baermann-funnel extractor using 25g soil taken from pooled sample. Bait lamina strips were used to assess feeding activity of detritivores

Expected Results

- Decreased abundance of mesofauna and nematodes at high temperatures with top-down and bottom-up control due to impacts on predators and reduced microbial biomass yield.
- Decreased abundance of mesofauna and nematodes in the drought treatment plots due to low water availability.
- Reduced resilience of droughted sites at high temperatures due to greater destabilisation of consumer-resource interactions.

These results would illustrate the breadth of impacts of warming due to climate change in terms of ecosystem resilience.

Acknowledgements: Ngati Tahu - Ngati Whaoa

Chronic Rhinosinusitis and the Microbiome

Evaluating the Effects of Antibiotics Post Surgery

Student: Megan Koschany

Supervisor: Dr Charles K. Lee



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato



MEDICAL AND
HEALTH SCIENCES

Introduction

Chronic rhinosinusitis (CRS) is highly prominent within Western societies.⁵ Characterised by persistent inflammation of the nasal and sinus passageways for greater than 12 weeks. Often leading to a range of symptoms such as facial heaviness, headaches and a reduced sense of smell.⁵

Antibiotics are often prescribed post-surgery, however, there appears to be very little benefit to the patient (compared to placebos).^{3,4} With antibiotic use possibly making way for opportunistic infectious bacteria, and a lot of post-surgery symptoms being common antibiotic side effects, often leaving patients worse off.^{2,3}



Figure 1: CT scan of various patients, black represents air that is present within the sinuses and nasal pathways⁵. Left: normal non-CRS patient. Middle: CRS patient (thickening and inflammation of the mucosal wall is present). Right: severe case of CRS (accompanied with polyps) where all nasal and sinus passageways are filled with mucous and secretions.⁵

Aim/ Rationale

To determine the effect of post-surgical antibiotics (doxycycline) via comparing their use with a placebo, post endoscopic sinus surgery (ESS) to treat chronic rhinosinusitis. Establishing if antibiotics are necessary post-surgery.

Antibiotic resistance is becoming an increasing problem, so it will be beneficial to patients future health if we can cut down on unnecessary usage.³

Methods



Sample collection + questionnaires
Pre-surgery, at the time of surgery and post-surgery (Off site)



DNA extraction



PCR DNA amplification



Gel electrophoresis
Ensure successful amplification has occurred.



Fusion primers and DNA sequencing
(Off site)



Analysis and comparison

Experience

Despite the sample delays resulting in delays in the final results this has been an invaluable experience. From being able to meet and partner with Surgeons, meeting patients and witnessing surgeries, to finding out more about the trial and error process of research. Every minute has been incredible.

We are only interested in the microbial DNA not the human/ mitochondrial DNA, therefore, mitochondrial DNA blockers were used during PCR amplification to block the amplification of the human DNA. There was a massive trial and error process involved early on with finding the right amount of the blockers to use. However, it taught me a lot about what actual research truly is about.

Expected outcomes

Previous research has indicated there is no significant differences associated between the placebo and antibiotic treated groups in terms of the patient outcomes.¹ With patient outcomes being assessed with a range of additional questionnaires. However, placebo groups do appear to have greater microbial diversity.¹

The study I am working on, utilises a larger cohort of patients and we are expecting to back up these results or prove that antibiotics might lead to worse off outcomes for the individual and, therefore, are unnecessary to give to patients.

Next steps

The next steps would involve sending extracted DNA for sequencing and analysing the microbial communities that are present.

Acknowledgements

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Royal Australasian
College of Surgeons

FEARLESS FATHERS, CAREFUL MOTHERS: LIFE HISTORY STRATEGIES DRIVE RISK- TAKING IN FISHING SPIDERS

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INTRODUCTION

Dolomedes dondalei is a large native fishing spider from Waikato's shady streams. Although not much is known about the species, it is thought that it relies on cryptic behaviour to avoid predators. Understanding the factors influencing antipredator behaviour can aid conservation efforts by offering insights into *D. dondalei*'s adaptability to habitat changes and invasive predators.

OBJECTIVE

This study aimed to contribute to a dataset on *D. dondalei* behaviour by examining antipredator responses through three main questions:

1. Do males and females differ in emergence times under varying conditions?
2. Do juveniles differ from adults in their emergence times across different trials?
3. Does a **predation threat** increase emergence time, and does **adding food** reduce it?

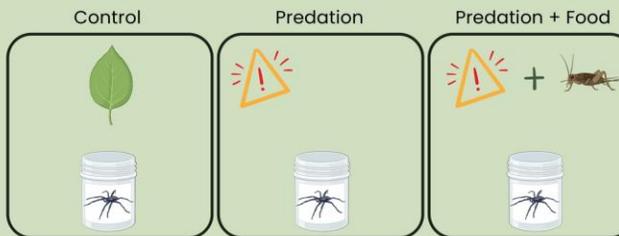
These questions explore how age, sex, and environmental factors influence risk-taking behavior, providing insights into the ecological and evolutionary drivers of antipredator strategies.



METHODS

1. **Control:** Spiders acclimated to a small refuge inside a 5L trial container for 30 minutes. A kawakawa leaf was added to act as a novel object. The refuge lid was removed and time of emergence recorded. Spiders were then returned to the refuge, and the lid was replaced.
2. **Predation Risk Trial:** A predator attack was simulated by rapidly tapping the refuge for 10 seconds. Refuge lid removed and time of emergence recorded. Spiders were then returned to refuge and lid replaced.
3. **Predation Risk + Food Trial:** One cricket was added to the container before the simulated predator attack was repeated. Refuge lid was removed and time of emergence was recorded again.

Spiders that did not emerge after 90 minutes were assigned an emergence time of 90 minutes.



RESULTS

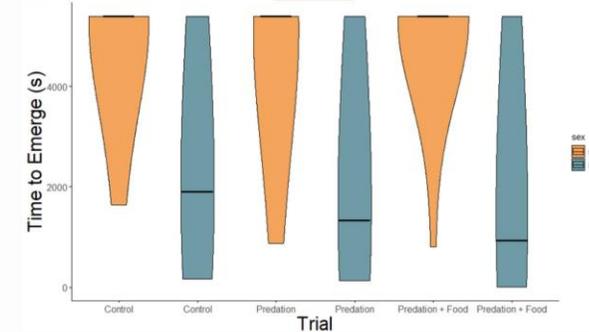


Figure 1. Female spiders took longer to emerge on average than males across all trial types ($p < 0.05$). Trial type did not affect emergence time. Black lines represent medians.

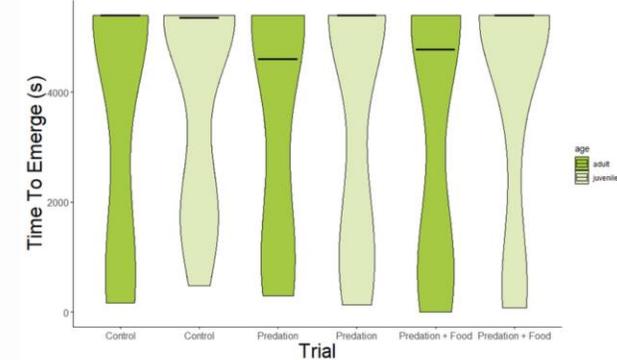


Figure 2. No significant difference was found between age classes or between trial types ($p > 0.05$). Black lines represent medians.

DISCUSSION

Males emerged from hiding faster than females (Figure 1) No difference was found between ages (Figure 2), suggesting both may use similar risk assessment strategies. Neither predation threat nor the presence of food influenced emergence time. Further research may explore factors such as body condition, personality, and environment on behaviour. Our study provides evidence that *D. dondalei* antipredator behaviour is driven by differing life history strategies between sexes. Males are inclined to risk-taking to find mates. Our findings emphasise the need for further to gain a full understanding of this species.

Cut and Paste with an Unnatural Base: Assembling Xeno Nucleic Acids for Synthetic Biology

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Te Whare Wānanga o Waikato

Introduction

What are xeno nucleic acids (XNAs)?

- Man-made, modified DNA ¹
- Unnatural base pairs (UBPs) are a form of XNA with different bases joining the strands ²



Natural base pair G-C (left) and unnatural base pair B-S (right) with differences circled

What are we doing with it?

- BsaI is an enzyme which binds and cuts specific DNA sequences
- T4 is an enzyme which joins DNA together
- Golden Gate assembly uses these enzymes to cut and rejoin DNA

Overall aim

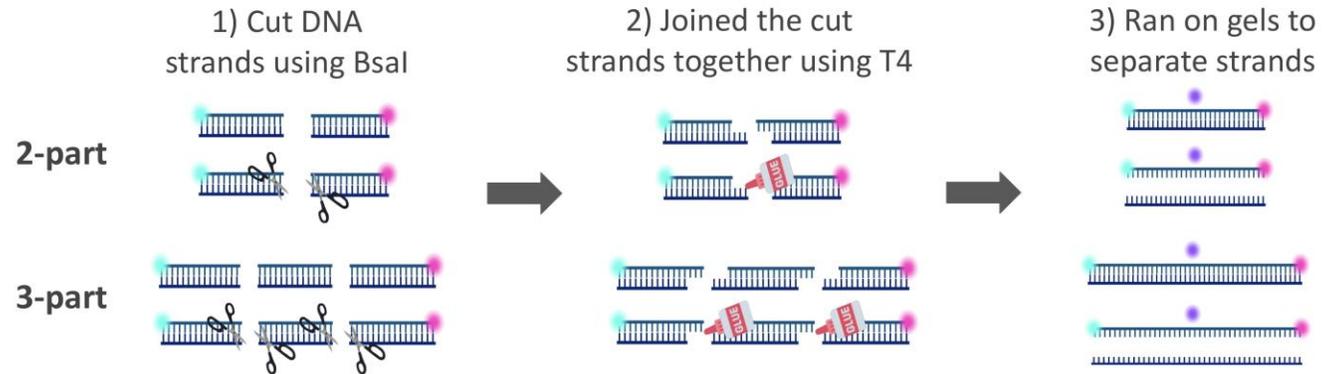
To assemble DNA/XNA substrates containing UBPs, using BsaI and T4. XNA strands could be used to target specific diseased proteins and cells.

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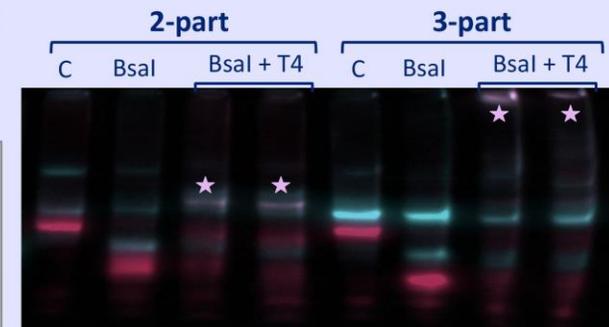
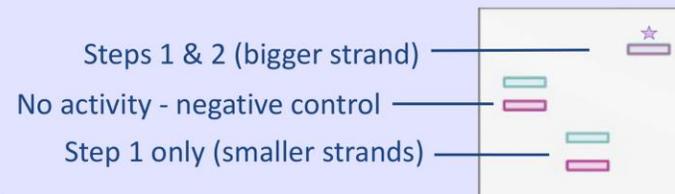
Methods

2-part and 3-part Golden Gate assembly



Results

Separate pink and blue strands are cut by BsaI and joined by T4 to make purple strands. Bigger (joined) strands appear higher than smaller (cut) strands.



Next Steps

- Trying different enzymes – ligases (joining) and nucleases (cutting different sequences)
- Adding more pieces for assembly
- Trying different combinations of UBPs

