Estimating the Impact of Indigenous Language Fluency on Holistic Wellness, Suicidal Thoughts, and Suicide Attempts: A Mixed Method Analysis in the Counterfactual Framework of Causal Inference

by

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B.Sc. (Nursing), Vancouver Island University, 2020

Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Science

in the

Master of Science Program
Faculty of Health Sciences

SIMON FRASER UNIVERSITY
Fall 2022

Declaration of Committee

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Abstract

Language has been identified as a marker of collective identity and how culture is maintained and revitalized. Indigenous language fluency (ILF) has also been associated with lower youth suicide and improved physical health outcomes. This research uses mixed methods to explore the relationship between ILF and wellness among Indigenous people living in Canada. Key informant interviews with Indigenous language learners were conducted to identify connections between language learning, wellness and strengthening Indigenous self-identity. Causal inference with regression modelling was used to estimate the magnitudes of effects of ILF on outcomes of wellness and suicidality. Analysis shows Indigenous languages strengthen speakers and learners sense of emotional, mental, and spiritual wellness. This research demonstrates the significance of Indigenous languages to wellness of Indigenous peoples.

Keywords: mixed methods; causal inference; Indigenous languages; First Nations wellness; Canada

Acknowledgements

Marsee and thank you to all the people who have supported me in my academic journey. I would like to acknowledge my partner, Cam, who retaught me statistics with patience and kindness to facilitate my success. I am surrounded by the support and love of my Mother Carol, my other parents Karen Day and Nick Day, and my friends Nicolle, Kenzie, Chantal, and Evan - my extended family from start to finish. Thank you to knowledge keepers Daryle Mills and Ralph Thistle for being a source of cultural advising and language when I was stuck on the words to say or what path to take. And big love to the wider communities I am part of – my home community members, my friends at the friendship centre, the entire MSc Indigenous Population Health cohort (and our project coordinator Frederick Langshaw), and the Indigenous academic community I have had the privilege to work with.

I would like to thank my supervisory committee for their support and guidance during this journey – Dr. Scott Venners, Dr. Nicole Berry, Dr. Marianne Ignace, and Dr. Jeff Reading. I can appreciate the time and effort each of you has put in to advising me and lending me your time, intellect, and expertise. I feel blessed to enter academia and have so many excellent people dedicated to my work.

I would like to acknowledge the communities for which I am working. Thank you to First Nations Health Authority (especially the Research & Knowledge Exchange Team) for the support in my degree! I feel very thankful to have the privilege to work with the data I have.

Finally, I acknowledge and thank NEIHR-BC, CIHR, the Irving K. Barber Association, and funding internally from Simon Fraser University for the financial support during my degree.

Table of Contents

List of Tables

List of Figures

Chapter 1. Introduction

To begin, I will provide an orientation to both the context of my research and my role as a researcher. My degree is part of a project funded by the Canadian Institutes of Health Research between Simon Fraser University (SFU) and the First Nations Health Authority (FNHA), with the aim to introduce and mentor Indigenous researchers within the academy. The FNHA serves as a community partner for this work and is the data steward for the quantitative research data.

The research partnership between SFU and the FNHA had specifications on the data and research methodology to be used by the research. The data set is the First Nations Regional Health Survey – Phase 3 (FNRHS or RHS-3), for which the FNHA serves as a data steward. This data is collected by and for First Nations People living on reserve in BC and is guided by community feedback and engagement. The methodology of causal inference was also specified, as the senior supervisor and previous Principal Investigator, Dr. Scott Venners, has expertise in this area. The method of causal inference has been applied to observational data sets consistently and successfully. The use of the data set and the methodology was intentional, to be supportive of the learning needs of research trainees, provide relevant data (as all research trainees are Indigenous themselves), and to serve the needs of the FNHA.

I began this research training with an awareness of the guidelines set by this research partnership. The first months of my training occurred in a somewhat narrow framework of the FNRHS data and causal inference due to my limited understanding and experience in academia and research. At that time, I did not have a strong grasp of the content of the FNRHS, nor did I have specific insights into the strengths and weaknesses of this data set. Once I began the process of writing my thesis proposal, I became aware of some of the limits of this data, namely the conceptualization and measurement of fluency within the FNRHS.

Around the time of writing my thesis proposal, I became aware additionally of the role that the FNHA would have in my training as a researcher. Beyond providing the analytical software, data, and some mentorship for this work, the FNHA was a community partner with whom I could form a meaningful partnership. In their role as my community partner, I had to ensure my work was not only reviewed by contact people

there, but that my research aims were aligned with that of communities surveyed and the FNHA. Thankfully, I was aware and able to align my areas of interest with that of community, but I had to also take into account the usefulness of my research outcomes for the FNHA. I felt accountable to the people who took the FNRHS, despite having never met them. I met with the FNHA prior to beginning writing my thesis proposal to ensure my ideas were aligned with their goals and met regularly with staff once I had my data to review my work, troubleshoot, and review my thesis and summary report.

With some knowledge of the data provided by the FNHA through a data access request, I engaged in critical discussions with my committee, specifically Indigenous language revitalist Marianne Ignace, about fluency. Marianne shared with me her own works on language revitalization and the works of other Indigenous language scholars who outlined what Indigenous language fluency and vitality was. I was made aware of the gaps between Indigenous perspectives of language fluency and what was captured in the data.

With the knowledge of these differences, it became clear to me I had to engage with Indigenous language learners. Language learners would have invaluable insights into what learning a language in a contemporary context felt like and could illuminate more clearly the gaps in the FNRHS data. I was hopeful that these interviews would add depth to my quantitative data analysis and an additional lens through which to critique the results. I decided to use the analysis technique of thematic analysis as it appeared to leave the most space open for the stories of participants to emerge, and for themes to emerge in an iterative process. It was also the most familiar approach for me, coming from a non-research background in nursing.

Related to the interviews, the people I interviewed reminded me again of the importance of this research. Upholding their stories, as they were told to me, and finding a way to share my results became a central aim. At the end of my interviews, I offered my interviewees access to both my completed thesis or a summary report, with which they could read, use, and critique. While it was not the case for all the interviewees, some were excited to share the results of my thesis or use the results in their own community to show how important language is. I look forward to their feedback.

Methodologically, the initial plans I had for my research changed. Most obviously, there was a change from a single, quantitative approach to a mixed-methods approach. Combining the two methodologies was difficult, as causal inference appears as a very positivist methodology that does not always align with the fluidity and nuance of Indigenous knowledges. But Indigenous people have always used science as well. The challenges I faced were minimized by the perspectives within my committee which allowed a more open approach to the methodologies. I felt I was able to incorporate my own worldviews and the worldviews of other Indigenous scholars and scientists into my causal modelling.

The results of the two studies informed one another sequentially. Based on the themes emerging from the interviews, I was able to analyze and critique both the questions within the FNRHS and my own prior approach to the research. It became clear to me that speaking and understanding a language was of clear importance related to health and wellness. Additionally, the results of the interviews made me committed to reviewing the results with the perspectives of language learners informing my analysis.

My research takes an approach that is informed by two-eyed seeing. I drew from the results of my qualitative study, the work of Indigenous scholars, and my own perspectives as an Indigenous person. As well, I could view the strength and importance of the FNRHS data. Data that is culturally informed and stewarded is an important part of many Indigenous communities' self-determination and governance over their health data. While initially limited by the positivist perspectives I was exposed to in my classes, I was able to draw on the strength of quantitative data with time, mentorship, and reflection. It is my hope I can hold the strengths of both knowledge systems in my work and ensure it is guided by community voice.

Throughout my thesis, I made numerous choices that resulted in the final paper. I made the choice to analyze each aspect of wellness as a separate outcome to see the role language fluency had in each aspect. I could have chosen to use a combined measure of all aspects of wellness rather than to look at each aspect separately. I can see the importance of viewing wellness as a wholistic outcome rather than parts. But in my causal theory of reclamation having an influence on identity, and as a result on wellness, I was curious to know if different aspects of wellness were influenced more than others. Either option would have had benefits and limitations, I just chose to follow

what path made sense based on the information I was taking in from literature, interviews, and what was available in the RHS-3 data.

In summary, this research had some unchangeable specifics but a lot of freedom. While the data set and methodology were set, I was free to discover what limits existed and attempt to fill them. The choice to conduct a mixed methods analysis for a Masters degree was ambitious – but without the voice of Indigenous language learners, my work would not be as full. There are surely limits and bias that exist in this work which are discussed in length in Chapter 5. As well, there are strengths within this work because of the choices I made.

This is a study of reclamation of Indigenous culture and identity in the context of historical and ongoing colonial policies within Canada and how reclamation supports and promotes wellness among First Nations people in BC. Reclamation of Indigenous culture at the individual and community level can resist and displace colonial policies and ideologies and have healing benefits for First Nations people who still experience the harms of these policies. Reclamation can also promote general physical, mental, emotional, and spiritual wellness. Reclamation embodies other aspects of resisting colonialism, such as self-governance, strengthening and revitalizing Indigenous self-identity, and decolonizing beliefs. This research seeks to answer a central question: In what ways, and to what degree, does Indigenous language knowledge (and thus a reclamation of culture) improve wellness?

Revitalization of Indigenous languages is an important aspect of reclamation of Indigenous culture and identity and thus will be the specific focus of this research. Colonial policies interrupted and attempted to suppress Indigenous peoples from speaking their languages (Czyzewski, 2011; McCarty et al., 2018). This led many Indigenous people to speak very little, stop speaking, or not be able to speak their languages (Ignace, 2016). More recently, however, Indigenous peoples in Canada are actively involved in building their identities and communities as demonstrated by movements toward self-governance (Chew et al., 2015; McCarty & Lee, 2015). A part of this movement includes reclaiming Indigenous languages, also referred to as language revitalization.

Examining Indigenous language revitalization can help to reveal connections between reclamation of Indigenous culture and identity and wellness of Indigenous people. Speaking one's Indigenous language can create a sense of connection to self, community, and spirit (McCarty & Lee, 2014). Colonial policies that supress speaking of Indigenous languages also supress traditional health knowledge embedded in language; therefore, speaking a language may also revitalize traditional health knowledge (Brown et al., 2012; McCarty et al. 2018). As the connection between identity and language is so closely related in Indigenous cultures it can be difficult to differentiate between the two (Brown et al., 2012; Hallett et al., 2007). Therefore, learning a language can promote one's sense of connection to their Indigenous identity too, which may also lead to feelings of wellness.

This thesis entails a mixed methods approach to investigate the reclamation of Indigenous languages as a determinant of wellness among First Nations individuals living on reserve in British Columbia. I will rely on qualitative data collected from 10 key participant interviews with Indigenous language learners and quantitative data from the First Nations Regional Health Survey - Phase 3 (FNRHS-3 or RHS-3). The qualitative data informed my approach to working with the quantitative data. Together, the results are more nuanced and reflective of language learners' perspectives into the role of language on their wellness and identity.

A ($n<10$) qualitative study using interviews with Indigenous key participants adds depth by exploring participants relationships to Indigenous identity reclamation through language, and how that relates to their experiences of wellness. While the FNRHS provides culturally appropriate measurements of health, qualitative information about the meaning of certain concepts, such as the process of reclamation or how it feels, internally, to speak an Indigenous language are outside of its purview. Additionally, Indigenous language revitalists find conceptual gaps in how the RHS measures language fluency compared to how other ways of conceptualizing language health (and the ability for a language to be revitalized). The qualitative interviews also provide insight into barriers Indigenous language learners face in their learning journeys which could produce new ideas for making Indigenous learning more accessible and promote language revitalization. The results from the qualitative study can support external validation of the quantitative study.

For quantitative analyses, I will rely on the FNRHS which has produced data that comes from a community-guided approach, rather than data collected for researchers for academic purpose which has historically been extractive or may suffer from lack of community engagement. The FNRHS is a survey administered, owned, and protected by First Nations people. Respondents to the survey report on their health and wellness from a perspective of First Nations people. The FNRHS is an important resource as it may provide a more accurate accounting of health and wellness than surveys administered by Canadian government. For example, FNRHS focuses on people who live on reserve, was designed with the First Nations principles of ownership, control, access, and possession (OCAP®) and community capacity-building in mind. Therein, it seeks to address the lack of trust that Canadian government involvement can engender.

To investigate revitalization of Indigenous languages as a determinant of wellness among First Nations living on reserve in British Columbia, I examine the strength of the relationship between a degree of language knowledge and outcomes using FNRHS data. I will analyze the relationship between Indigenous language fluency (ILF) and wellness using causal inference on two groups of outcomes. The first outcome is to model the relationship language knowledge has on self-reported measures of wellness. I chose to also model the effect of Indigenous language knowledge on suicidality because a relationship between the two has been demonstrated in youth cohorts (Chandler & Lalonde, 1998). Within the FNRHS, ILF is measured in four outcomes, speaking, understanding, reading, writing (and combinations of these measures). I will be using speaking and understanding as causal variables in this work based on the results of my qualitative study, which emphasized the importance of speaking language above all.

Before proceeding further, I must make clear the distinction between language fluency, language knowledge and language use. Within the FNRHS, language knowledge is reported in terms of language fluency, but the questions ask respondents about their self-reported ability. There is no evaluative component that requires respondents prove their fluency against a tool. The differences between fluency and knowledge will be interrogated further into this thesis. I believe that my results demonstrate the effect of language knowledge on outcomes, but to align with terminology used in the FNRHS, I will use the term ‘fluency’.

Chapter 2. Background

First Nations Health and Languages in the Context of Colonialism

Since contact, colonialism has harmed all facets of the health and wellness of Indigenous peoples in Canada. The way the history of colonialism is expressed will depend on the social location of the person telling that story. To uphold the truth of Indigenous peoples' experiences with colonization, I will draw from the works of Indigenous authors or documents authored in collaboration with Indigenous communities. The main source will be the Aboriginal Healing Foundation's (AHF) 2004 report on the impact of colonization from the voices of Indigenous people. The AHF report centered the lived experiences and stories of Indigenous people, rather than a colonial narrative.

This section will not serve as an all-encompassing, historical retelling of colonialism, as such a retelling is beyond the scope of this thesis. Rather, my goal is to provide insight into how history creates the present moment in which Indigenous health is situated (Alfred, 2009). I will relate historical events with contemporary manifestations of colonialism, demonstrating how colonial harms and history repeats itself.

The consequences of colonialism on the health of Indigenous people in Canada

The harms of colonialism in what we call 'Canada' began with first contact around the 1500's. The introduction of disease to the North American continent decimated Indigenous communities who had no prior immunity to viruses imported by European settlers. In some records, Indigenous persons resorted to suicide in the wake of endless waves of smallpox which destroyed communities. This destruction extended to the loss of cultural knowledge due to the loss of Elders, and immense psychological harm from survivors who witnessed genocide.

Once settlers had established themselves on this land, there was widespread colonial religious movements, the othering of Indigenous people compared to the in-group of settlers, beginning the dichotomy of "civil" settlers and "savage Indians" (AHF,

2004). Indigenous people lost their access to traditional culture and social systems due to colonial government policy, the reserve system, displacement, and settler cultural beliefs grounded in anti-Indigenous racism (AHF, 2004). Indigenous persons' views of their cultural identity in the world were impacted when communities could no longer hold ceremony, were removed from their land to make space for settler communities or had entire food sources like buffalo wiped out. Dispossession of Indigenous cultural norms and identities led to changes in how communities viewed gender roles, morals, and how Indigenous people viewed their own self-identity (AHF, 2004).

Additional policies created by the Canadian government aimed to assimilate Indigenous persons into the settler majority or eliminate Indigenous peoples all together. This time in Canadian history, which includes Indian Residential Schools (IRS), Indian Day Schools, and the Sixties Scoop all amounted to genocide (Aboriginal Healing Foundation, 2004; Meissner, 2018; Sotero, 2006). Indigenous peoples were hunted, starved (through the elimination of traditional food sources or barring food supplies) and imprisoned (AHF, 2004). The connection between Indigenous people and their culture was made perilous by removing communities to reserves or destruction of land to develop into European settlements (Fiedeley-Van Dijk, 2019). The arts and language were prohibited through the Potlatch ban.

Colonialism remains prevalent in Canadian society, no part of it is 'distant history' that can be forgotten. The last IRS was shut down in 1996 (Union of Ontario Indians, 2013). If harms that happened in the 1500's still influence health today, obviously harms perpetuated less than 50 years ago would too. There are numerous reports that exemplify colonialism in the present day, from the reported sterilization of Indigenous women against their will (IJRC, n.d.) to Indigenous people who have died in the hospital seeking care (Richardson, 2020; Savic, 2020). Hundreds of unmarked graves have been found across Residential School sites in Canada (House, 2022), and racist stereotypes persist. Entrenched, racist policies have created systems (e.g. healthcare, judicial, and educational) that are inherently hostile to Indigenous people. Colonialism has not stopped.

We continue to see contemporary health differences between settler and Indigenous communities, including differences in rates of diabetes (Oster et al., 2014), shorter life expectancies, 2-3 times higher infant mortality rates for Indigenous peoples,

and higher rates of mortality due to the toxic drug supply in BC and Alberta (Government of Canada, 2019). I do not list these statistics to draw the conclusion that Indigenous people are unwell, but to draw attention to how colonialism is still influencing the health of Indigenous people.

Harms done to the cultural, spiritual, and emotional wellness of Indigenous people through colonial violence are just as important as those that impact physical wellness. Colonization includes social stigmatization and racism perpetuated by settlers that lead to cultural and identity dispossession. The dispossession of identity is central to this work – if a person cannot safely be who they are as an Indigenous person, in any setting, this would greatly reduce wellness in many aspects.

Colonialism has created a cycle of harm that can result in poor health. There is a stereotype that Indigenous people are destined to be sick or disordered. This stereotype is a result of racist policies and bad research practices that took place in Indigenous communities. This stereotype can still be perpetuated inadvertently, by focusing research and using language that centers the health deficits of Indigenous people. Even within this thesis, there is a sub-focus on mental wellness and suicide, potentially perpetuating the 'sick/disordered Aboriginal stereotype' (Czyzewski, 2011). However, resilience, resurgence, and health are equally present within communities. Outside of definitions on suicide and reporting on current health statistics for Indigenous people, I will attempt to use language that reflects Indigenous wellness.

Reclamation of Indigenous identity

If one consequence of colonization has been to take away Indigenous identity, consider reclamation to be taking back Indigenous identity. Reclamation is complex in the sense that what it means to reclaim a part of an Indigenous identity will vary between individuals and communities, but in essence represents a process of reidentifying with a cultural group. Reclamation is comprised of both theory and actions, and scholars write about both. For individuals reclaiming an identity, it is more closely related to an action, because it is a "process" of reclamation, where a person might begin to learn a language, go out to learn on the land, or several other activities. In this research, reclamation is understood through a theoretical lens. The theories critique colonial policies and history that has policed Indigenous identity, which is where I situate my

research. I made this choice acknowledging that the actions individuals and communities take towards reclamation are equally valid and worthwhile, but do not align as closely with the context of my research. In this section, I will expand upon the literature that explores Indigenous identity reclamation, including reclamation through language usage.

Reclaiming an Indigenous identity is an act of defiance against pervasive social stigma and the history of colonial violence placed upon Indigeneity. It is a radical act because reclamation has historically been an unsafe process for Indigenous peoples, due to sweeping colonial policies by Canadian government that outlawed culture, and the associated social stigma or racism faced when being Indigenous (Brown et al. 2012). Plainly, it is not easy to be Indigenous nor is it easy to reclaim languages and cultures that have intentionally been swept away in favour of settler worldviews.

The complexity of being Indigenous means that the process individuals undertake to reconnect to their identities is too. Reclamation can take the form of individuals learning their language (Chew et al., 2015; Lee, 2009; McCarty et al. 2018), learning about the land or traditional food (Corntassel & Bryce, 2012), or can extend to entire communities reclaiming their rights to self-governance and cultural education (McCarty et al., 2018; McCarty, 2019). Reclamation is a powerful social and political act that shifts colonial narratives to that of Indigenous ownership, autonomy, power, and self-determination. However, to change and reclaim space within Western institutions, change must occur beyond the individual.

There has been recent interest, from both Indigenous people and institutions, to go about the process of reclaiming or ‘decolonizing’ spaces. From my experience in academy, decolonization is a word used to push the guilt of settlers on to the backs of Indigenous people for us to work through. Alfred (2009) calls to reject colonial ideologies and stereotypes and the systems which perpetuate them. In his words, systems are the contemporary context of violence for Indigenous individuals and communities. I believe with the rejection of what has been ascribed to us as Indigenous people and to reclaim and live honestly, there is a possibility to reclaim some spaces within institutions as our own. I further believe that there is a greater possibility to create and reclaim Indigenized systems and policies that do not have a history of harm.

Reclamation can result in changed systems and a strong sense of identity, but it is by no means an easy or safe process. There is volatility in 'being Indigenous the right way' as documented in the autoethnographic work of Chew et al. (2015). The authors feel that part of the complexity of reclaiming an identity that might not feel like it is yours to claim could be due to a lack of strong familial ties or not knowing your language. The dispossession of self-identity caused by colonization has caused "spaces of exclusion" (Brown et al., 2012) which impact the wellness of First Nations peoples. These spaces of exclusion include institutions (school, urbanized cities, government, healthcare) where Indigeneity isn't prohibited, but safe space is not provided to express or "be" Indigenous (Chew et al., 2015). The authors explore further the expectation that when spaces do allow people to "be" Indigenous, there are internal and external expectations about how to be Indigenous 'the right way'. Whether it is fulfilling the settler's gaze in institutions or lacking language knowledge and then feeling 'fake', Indigenous identities are policed from many angles. Despite the difficulties in finding yourself as an Indigenous person, individuals and communities from many different backgrounds are claiming their identities, their languages, and reclaiming spaces of exclusion.

Ownership over one's personal identity as an Indigenous person may precede larger communal shifts towards reclamation, including movements for Indigenous self-governance or Indigenous self-determination (McCarty & Lee, 2019). According to McCarty & Lee's work on reclamation and power, when reclamation takes place, it begins from a place of critical awareness of history and colonization in the geopolitical context of where a person or community lives. From a critical perspective, 'reclamation' can become co-opted by neoliberal policies and institutions that do not benefit from re-shifting power back to Indigenous communities. In addition, reclamation is not transactional between groups, it is embodied within Indigenous people and communities; reclamation cannot be given by the same institutions attempting to co-opt it (Barker et al., 2017; Brown et al., 2012; Simpson, 2016). When I write about reclamation, I am writing about this self-determination, not the neo-liberal 'reclamation' that exists through the settler's gaze.

It is necessary to provide some insight to explain what the settler's gaze denotes. I have my own perspectives on the term, and I have framed it by the works of Audra Simpson (2007), Eve Tuck and K. Wayne Yang (2012). I have come across more in online spaces and amongst my Indigenous peers as we discuss our work in the context

of the academy. In my work, the gaze of the settler is one of critique and judgement. To be held to some higher standard on fulfilling their desire of what Indigenous people must look like, act, and be like in situations. That our histories are permissible now, in a time of 'reconciliation', but only once it has been determined by the settler to be 'true' and not so far that it encroaches on the privileges and hierarchy that settlers live with. The gaze romanticizes my place as an Indigenous person in the academy while ignoring all that has been done, historically and contemporarily, to bar me from it.

One way that Indigenous people may reclaim or reconnect to their identity is through engagement with their language. Language allows learners to truly embody the process of reclamation, by what I view as speaking an identity into existence. Embedded in language are teachings about communal beliefs, world views, community ethics, sacred law, spirituality, oral histories, and cultural understandings of the world. These teachings, when taught to new generations, can help to facilitate reclamation of an identity that is shared – a communal identity. Young people will grow to be future Elders and encouraging them to learn a language will help to teach this knowledge to the seven generations that follow them. In a practical way, when I speak my language, I connect more with Elders and my community, because we are all in the process of learning, sharing, and speaking together. There are words in my language that hold a large part of our creation story in them - and to know this shared history is part of who I am.

I am hopeful that this work will be part of what encourages others to learn their family history, reconnect to their language, and come to know who they are as an Indigenous person. There is no right or wrong way to be. From the lens of academia, this study will support the growing body of literature on reclamation in a few ways. While there is a growing body of evidence on the lived experience of identity reclamation for Indigenous people, there remains specific areas the relationship between reclamation, language revitalization, and wellness has not been sufficiently developed. Furthermore, my research contributes a novel methodological approach to model this relationship.

Trying to define "wellness" from a First Nations perspective

Understanding wellness from a First Nations perspective, which is unique from biomedical perspectives, is central to this thesis. This section will highlight one common way that many First Nations and other Indigenous communities view wellness, but there

are many unique perspectives that exist outside of what I will document here. What I have learned in my literature review has informed how I view wellness and thus how I view my quantitative modelling and analysis.

I began my career in healthcare, which utilized a biomedical model of care that emphasized physical health (typically the presence or absence of disease) and would occasionally consider mental wellness through a narrow lens of mental illness. In working with Elders in my home community and in review of the literature, Indigenous perspectives on wellness generally include physical, mental, emotional, and spiritual aspects of wellness as equal parts. Illness might influence an aspect, but illness was not the only measure of health. Together, these are the four aspects" of health, which is a perspective on wellness that is familiar across Indigenous communities and collectives. The four aspects are interconnected and maintain a sort of "balance" when a person is feeling well. In addition, wellness may also be influenced by land, cultural activities, language, or community governance/self-determination (Bartlett et al., 2017; Brown et al., 2012).

Indigenous communities are exercising their right to self-determination by describing what wellness means to them, and Indigenous-led health organizations have created frameworks to honour this self-determination. One example utilized by First Nations Health Authority (the organization I am partnered with) is the First Nations Mental Wellness Continuum Framework (FNMWCF). The FNMCWCF (2015) was created in collaboration between Health Canada and First Nations communities. The framework utilizes the four aspects, with culture at the centre of the model. Language, land, and cultural practices are also included in the FNMWCF.

I considered the FNMWCF in my research for both my quantitative analyses and my approach to interview questions. As the FNMWCF utilizes the four-aspects of wellness, and this is also present in conceptualizations of wellness from Indigenous communities, I created models for each aspect of wellness. By looking at each aspect, I can see how strongly language could change each aspect of wellness. I also considered and controlled for the other aspects of wellness mentioned in the FNMWCF as best as I could, including engaging in community events, food gathering, and traditional medicine use. My models, while imperfect, considered a range of what can make Indigenous people feel well and controlled for confounding variables in my analysis. During my

interview questions, I wanted to ask if participants felt language influenced their health or wellness, and I made sure to mention each of the four aspects, so it was explicit I wasn't just focused on physical health or illness.

Indigenous peoples achieving wellness and being healthy conflicts with colonial narratives. This is due in part to biomedical models which don't consider wellness beyond the physical. Stout (2018), a Cree scholar and nurse, describes these models of care as "ascribed wellness" (*atikowisi miyw-ayawin)*, where-in settlers hold power over defining how "well" Indigenous communities are. "Ascribed wellness" as a label has shown true in her career as a nurse, in medicine, and in research (see section 2 on colonialism). However, much aligned with how Indigenous collectives have defined wellness based on Indigenous beliefs, Stout proposes communities are moving towards achieved wellness (*kaskitamasowin miw-ayawin);* this is self-determined wellness that goes beyond the individual to include community-level measures of wellness.

Indigenous perspectives like Stout's on wellness have not permeated popular or academic conventions on what makes a community well. In fact, studies have tended to focus on relative unwellness in First Nations communities and continued unethical research approaches. In Di Pietro and Illes 2014 review of disparities in Indigenous health research specific to neurodevelopment disorders in Canada, they found that 51 of 52 studies were conducted on FASD, despite the incidence of cerebral palsy and autism spectrum disorder also being present in these communities. There was no community engagement, and the results perpetuate a stereotype of alcoholism in First Nations communities. Further examples are outlined in Hyett, Marjerrison & Gabel's 2018 article on improving Indigenous health research in Canada. This isn't to assert that research into suicide or other physical diseases and disorders are not of importance to the health – for some communities, disease prevention remains a priority. My goal is to challenge the assumption that what is true for one community is true for all and what defines "wellness" is much broader than the presence of absence of disease.

As a portion of my research addresses suicide, it is relevant for me to provide an overview of the status of suicide in First Nations communities and to analyze these findings in the context of my research. I have separated the following sub-section on suicide for the sake of reader accessibility, but suicide (and mental health broadly) fit within the larger topic of wellness.

Studies on suicide within First Nations communities: Can they tell us about wellness?

Suicide in First Nations communities has been compared to the metaphor of a "canary in a coalmine" indicator of unwellness within a community (Hallett et al., 2007). Suicide remains a troubling occurrence in specific communities who are impacted by suicides at high rates. But for other communities, this "canary" only signals the perpetuation of the sick/disordered Indian stereotype. Building on knowledge of the harms of colonialism, this section will provide context to the phenomenon of suicide within First Nations communities, and First Nations-led alternative approaches to suicide prevention. After framing this section with an introduction and critique of Western models of mental health care, I will provide current evidence on the phenomenon of suicide and mental illness within First Nations communities. This will be followed by a critique of the evidence, answering why and how Western suicide prevention can fail, pathologizing of Indigenous identities, and Indigenous lead solutions to the problems that exist in current mental healthcare models.

Concerns about suicide, particularly youth suicide, have been raised by First Nations communities for decades. This is evidenced by the 1995 "Choosing Life" report published by the Royal Commission on Aboriginal Peoples (RCAP). The RCAP report remains a seminal piece of literature that shows that, even a decade prior to the publication of the report, suicide attempts and suicide were long-term issues stemming largely from collective grief due to colonialism and significant barriers to accessing appropriate healthcare. In 2003, the "Acting on What We Know: Preventing Youth Suicide in First Nations" provided further details on the present issue of youth suicide and emphasized the voice of youth. From both reports came recommendations that emphasized community-directed programs to prevent suicide, revitalization of language and culture, and development of a cultural identity.

Counselling and psychiatry are mainstays of what Western medicine, through a biomedical model, would consider treatment for mental illness, so why do they not always work for Indigenous communities? Western psychiatry pathologizes and diagnoses the individual, and colonial policies are so entrenched in the lives of Indigenous people that the results of these policies, including challenges to identity and mental wellness, cannot always be explained during individual psychotherapy sessions

(Kirmayer et al., 2007). Measures of psychiatric diagnosis require a patient to engage with a service to be diagnosed. This means that the measures of diagnosis taken from clinics, at the best of times, underestimate the prevalence of mental health diagnosis, because there will be multiple barriers to getting to the point of attending an appointment. Consider the cost of accessing treatment, the stigma of mental illness, travel time to access services, or availability of practitioners. Further, the harms that occur in the healthcare system towards Indigenous people create an additional barrier to accessing care.

Offering more programming will not address the problem unless genuine care is taken to involve the needs of each community. Current programs that exist may offer no culturally informed care (or be known to have racist practitioners). Yet some “Indigenous specific” programs provided to communities may fall so deeply in to pan-Indigenous narratives that the program becomes alienating. These “cultural” models of care can also assume that the experiences of mental illness for Indigenous people are the same, that every Indigenous person is traumatized, and that suicide must be a problem in each community – but there is no “Indigenous” experience of suicide, because all individuals and communities are unique (Ansloos, 2018).

This predominant biopsychological model of suicide, that pathologizes the individual (or pathologizes Indigenous Peoples as being “risky populations”) perpetuates a colonial approach to health (Ansloos, 2018; Chandler & Lalonde, 2018). Individual suicide risk assessments ignore the historical, cultural, and sociopolitical factors that are unique to Indigenous people. Psychiatry, in general, attempts to treat the pathologized *individual*, without acknowledgement of the landscape of colonized medicine in which they operate. Further, individual pathologizing/treatment ignores the cultural strengths of community which can be utilized.

Suicide in First Nations communities is highly variable. Currently, suicide rates among First Nations peoples continue to be much higher (24.3/100,000) than rates among non-Indigenous people in Canada (8.0/100,000), with suicide as the leading cause of death for First Nations youth and adults up to age 44 (Barker, Goodman & DeBeck, 2017). However, national statistics that group all First Nations people together can be misleading. 60% of First Nations reserves report no suicide within a five-year timeline (2011-2016) (Kumar & Tjepkema, 2019). This begs the question – what leads to

this variability, because simply being Indigenous is not the indicator. Scholars, researchers, and First Nations communities have linked this variability to cultural disenfranchisement due to colonialism (Barker, Goodman & Debeck, 2017, Boyer, 2009; Kumar & Tjepkema, 2019), or a lack of a strong cultural identity (Chandler & Dunlop, 2018). High rates of cultural discontinuity have been linked to depression and alcoholism, which are risk factors for suicide (Kirmayer, Brass & Tait, 2000). Could there be certain factors that some communities possess that lead to low or absent rates of suicide already observed on some reserves? One such cluster of factors might be 'cultural continuity', which Chandler & Lalonde (1998) explain as a cluster of several factors that were present in communities with low or absent rates of youth suicides (see page 27).

One large epidemiological study completed in the United States by Beals et al. (1997) found that, compared to neighboring non-Indigenous communities, rates of psychiatric diagnosis in Indigenous communities are similar, which resists the narrative that Indigenous people are "more unwell" simply because they are Indigenous. In direct comparison between the two groups based on rates of diagnoses, diagnoses of alcohol use disorder (AUD) and PTSD were more common amongst Indigenous patients than non-Indigenous persons. I question if higher rates of diagnoses given to Indigenous patients could be influenced by the unconscious racial bias of practitioners. Could practitioners be more likely to diagnose Indigenous persons with AUD or PTSD because they have preconceived, pathologizing notions of Indigenous people as "traumatized" or "alcoholics"? It is also likely that the stress of being racialized, the impact of colonialism, and the racial bias and barriers experienced by Indigenous persons could cause high rates of trauma (and thus PTSD), AUD, and other mental illness (Kafele, 2004).

There is strength and resilience that is found within First Nations communities, but this strength has, at times, been ignored in favor of white, Western knowledge systems that focus only on health deficits found within these communities (Health Canada, 2015). This narrative can continue to pathologize Indigenous persons and their mental health. This doesn't mean that for communities who identify it as a priority, research that investigates suicide or mental health shouldn't be undertaken. Overall, there is a need for strengths-based research that honors First Nations perspectives on wellness, and a need to change the focus from death and deficits to health, wellness, and community-based models of care.

My work develops further understanding into suicide and wellness. Creating and adding to research on these topics builds the evidence base for why Indigenous specific frameworks for health need to be adopted to promote wellness in Indigenous communities. My research evaluates reclamation of identity, culture and language as related to wellness, including to promote life. If reconnecting with culture in Indigenous communities is addressed as a method of life promotion, then culturally safe and community-centered tactics for life promotion will develop as a result (Barker, Goodman & DeBeck, 2017; Brown et al., 2012; Chandler & Dunlop, 2018; Greenwood, de Leeuw & Lindsay, 2018). Culturally focused models may better address rates of suicide within First Nations communities compared to Western models of suicide prevention (detox, individual counselling, behavior change models), and my work will add to the evidence base of alternatives to consider.

Evaluating Indigenous language 'fluency'

When considering how colonialism attempted to erase all Indigenous languages, how and when Indigenous people come back to their languages becomes more meaningful than simply describing measures of language use. This section will serve as an overview of how fluency is understood from Indigenous and Western frameworks and curriculums. I will begin with some statistics on current levels of Indigenous language fluency in Canada to provide more specific context for this research. I will provide an example of a First Nations language learning curriculum, and what makes it unique from other curricula. I will explore how there are unique measures of language health used my Indigenous language scholars and revivalists. With all this complex knowledge, I will explain how I hope to balance these different perspectives and worldviews in my own research.

There are different conceptualizations and terminology used when discussing languages: Language fluency, language proficiency, language use, and more. Each definition is positioned to address and evaluate one aspect of a language, with some terms overlapping, being used interchangeably, or even in tension. In this work, language fluency is a definition taken from the quantitative data source. The RHS uses the term 'fluency' to rank self-rated ability in different aspects of language use. Language use, which is unmeasured, is how often someone uses a language. Language

knowledge is of a similar definition – how much someone knows of their language and their ability to use their language appropriately in different circumstances.

The definition of fluency as a compartmentalized measure is not the best definition when considering each community has different perceptions on what makes a speaker fluent. In Marianne Ignace's 1998 handbook on Aboriginal Language Programs, she explores how the definition of 'fluency' changes depending on the community, and who in the community is asked. A novice speaker may rate everyone who can speak more than them as fluent. But an Elder raised speaking the language may have an entirely different sense of who is fluent in the community and may have further insights into who is semi-fluent, can understand but not speak a language, and what 'fluency' means for the community.

Colonization caused many harms to Indigenous communities and has impacted rates of language knowledge to the point scholars and Indigenous leaders refer to it as 'linguicide'. Population loss, IRS, and the stigma of Indigenous language use in contemporary settings are all reasons language loss has occurred (Ignace, 2016). Despite the efforts of communities, Indigenous language fluency and competence is declining across British Columbia. In the 2014 Report on the Status of B.C. First Nations Languages, authored by the First Peoples' Cultural Council (FPCC), 4.08% of surveyed adults in BC were fluent speakers of an Indigenous language, 9.32% were semi-speakers, and 9.14% were learners. Of the 34 Indigenous languages spoken in BC, 32 have been made endangered (FPCC, 2016). A majority of fluent and semi-speakers are older than 25 (59%), and the aging population of fluent (birth) speakers is a reason for lower rates of language knowledge and transmission (Ignace, 2016). These statistics can seem deficits focused, but it is important to highlight the urgency that exists to protect and revitalize Indigenous languages.

A major reason there is such urgency to protect, document, and revitalize Indigenous languages is that are limited first-language and fluent speakers compared to other languages. Unlike many other world and heritage languages, which have a robust supply of fluent speakers and thorough documentation for learners, Indigenous languages may have limited documentation and resources, and few fluent speakers to teach new learners. Indigenous languages also did not have the same legal protections that other world languages had until 2019 with the assent of Bill C-91: An Act respecting

Indigenous languages (First Session, 42nd Parliament). Prior to Bill C-91, Indigenous languages were not protected under the Canadian Charter of Rights and Freedoms, the Indian Act, or the Canada Official Languages Act (Ignace, 2016). The need to develop speakers who can communicate confidently, as well as advanced speakers who have deep understandings of the nuance of Indigenous languages, is part of sustaining Indigenous languages.

The conceptualization of language fluency/use/knowledge in this thesis is drawn from the *First Nations Language Curriculum Building Guide*, authored by Marianne Ignace[1] in 2016 at the request of the First Nations Education Steering Committee. People learning a second language in a formal setting may be taught or evaluated through many different language learning curricula, and evaluated with the help of guides, all of which can be used to evaluate a speaker's competence, skill, and application of skills. However, language learning curriculums developed by or in consultation with First Nations communities are guided by the relevance language has to culture. I have chosen a guide that focuses on Indigenous language learning and was made possible by Indigenous committees and scholars. What has become clear to me is that while fluency has multiple objective measures that can be understood through any guide, I require a guide that acknowledge the importance of culture, ceremony, and engagement with Indigenous knowing to understand how language knowledge is measured.

An Indigenous-led curriculum framework that was deeply guided by cultural knowledge, tradition, and mutual respect is the Western Canadian Protocol for Aboriginal Language and Culture (WCPALC). For second-language learners in classes guided by WCPALC, the main goal is communicative proficiency, which means the ability to engage in meaningful, spontaneous conversation without switching to English. Communicative proficiency is not unique only to WCPALC but highlights that the end-goal for language learners is to communicate normally and naturally, rather than to have

[1] Examples of non-Indigenous include the Common European Framework of Reference for Languages (CEFR), the Canadian Language Benchmarks (CLB) and the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines. While none of them were designed for Indigenous languages in North America, several Indigenous groups have adapted and indigenized them (Green 2017, 2018, Ignace 2016), and the CEFR language proficiency levels have been operationalized for numerous indigenous and Minority languages in Europe. They are not as relevant to this work but do exist as international language learning frameworks that may hold relevance for some communities or language classes.

perfect results on standardized tests or know very high-level intricacies of grammar (Ignace, 2016). And as language and culture are so deeply connected, communicative competence can extend to knowing how to speak and understand cultural protocol and ceremony – to be respectful.

The focus of my research on First Nations' language fluency contrasts with other research that has focused on language health or vitality. Mary Jane Norris' index of Indigenous language knowledge (1998) considers many factors in how likely a language is to be passed on to the next generation and provides a way to understand language vitality. Norris considers the mother tongue population (MT), the home language population (HL), knowledge ability (Kn), index of continuity (HL/MT), and index of ability (Kn/MT). Exact definitions of these measures can be found in Norris' work. Of note, although mother-tongue speakers are integral to reviving a language, second-language learners also indicate language revival, and young language learners generally improve the health of a language. Norris' work on language vitality is important, but some of the measures are difficult, but not impossible to capture in surveys such as the FNRHS. Knowledge ability may even align with fluency in some ways.

Language use, and the vitality of a language, is so much more than what can be measured at one point in time. The vitality of a language, the likelihood it will be passed on to the next generation using Norris' index, and how many people are in the process of relearning their language are all valid measures of language use. Second language learners are of particular interest to my work because these same persons may be coming into a process of reclaiming their identity and making the decision to dedicate themselves to learning their language. Despite that the FNRHS does not use all these measures, it will provide equally novel results on the influence Indigenous language has on the health of First Nations people. Additionally, my qualitative study will provide insights into the process of reclamation for language learners.

Language Use and Language Fluency:

Now that the concept of fluency related to Indigenous languages has been explored and critiqued, I will explain how I intend to treat the discrepancies between language fluency and language use. Language fluency as the proposed measure of language knowledge must be interrogated when applied to this research, particularly as

fluency can be situated in a colonized perspective. One of the challenges I faced in my research was using the RHS (the quantitative data source with which I will run my statistical analyses), which measures fluency but did not record measures of cultural competence, first-language learning, and other factors considered by Norris and Ignace. While the FNRHS has aspects that may be built upon in future iterations of the survey, it is still a valid measure to use in my research from how I have approached it.

A central struggle I experienced was the difference between language use and language fluency. The use of a language in daily life is what helps the language to remain healthy, viable, and transmissible to further generations. To use a language is to speak it on a regular basis, regardless of how advanced the learner is. This contrasts with how traditional measures of language competence define and measure fluency. A high degree of language use is possible at any degree of fluency (Taff et al., 2018). Simply because a person is highly fluent in a language does not guarantee that the language is used on a regular basis. An example of a high-fluency, low-use scenario is an Elder who, due to trauma, is fluent in their language but will not speak it. Comparatively, someone may not have a strong command of the language but uses it every day to greet family members or identify certain foods, colours, or animals.

The RHS measures fluency on a five-point scale from no fluency, ‘a few words’ of fluency, basic fluency, intermediate fluency, or fully fluent. The different types of fluency measured are speaking, understanding, reading, and writing. Upon deeper investigation into the survey, it is self-administered and so participants self-report what they believe their fluency to be. There is no chart or comparison to which participants are asked to compare themselves to, it is how they understand and rate their own language fluency.

There are many pathways forward to account for language fluency or language use, but two approaches have become most relevant to my work. The first path is to make a broad assumption that all speakers, from those who use a few words to experts, are using their language knowledge to the best of their ability. Under this assumption, their self-reported language fluency is just the complexity of their sentences. Each participant has a high degree of use. The second approach is to assume that as a person learns more of their language, they engage and use language in ways that are more complex and meaningful. They may use their language in conversation or with larger groups of people because they are more confident in their speaking ability. This

could also mean that those with a higher degree of language knowledge could feel more connected to their identity.

As discussed in Chapter 1, the FNRHS is the quantitative data source I must use in my analyses. A third path forward, had this not been the case, would have been to create a new survey which measures all of Norris' index or uses other measures of language use. I cannot list all possible avenues because I don't know them. What was relevant to my research was the importance language has for health, and how different degrees of language knowledge could influence health. In my research, language is just one way people reconnect to their identities, which is what may also play a role in wellness.

I am taking the position that at every point in a language learners' journey, they are fully using their language to the best of their ability. This choice was informed by the results of Taff et al. (2018), who have documented that the healing power of Indigenous language revitalization can be felt by language learners at any stage in the learning journey. The deeper cultural understandings of words or phrases could occur early in a language learning journey, but more complex sentences that are used in ceremony can require more intermediate language skills. Although the FNRHS uses the term language fluency and not language use, I will assume that each person in any degree of language 'fluency' will be using their language to the best of their ability, therefore having "high use of a language" (Bartlett, Marshall & Marshall, 2012). In my quantitative study, I measure outcomes in both high language fluency groups and beginner language fluency groups, which will help to control for the deeper cultural meanings' language takes on as it becomes more complex.

Settler approaches to language protection, language learning, and the impact on Indigenous language speakers

Many policies within Canada demonstrate entrenchment of colonial beliefs that suppress Indigenous languages in the present. The protections and rights afforded to French and English languages in Canada under the Official Languages Act (1969) and The Charter of Rights and Freedoms (1982) are not given to Indigenous languages. These policies protect the rights of speakers of "official" languages, which is evident in the availability of services and information in English and French, and the expectation for

English/French monolinguals that all aspects of daily life (school, work, healthcare services, education) will be available in their language (Peled, 2019). Language policy within Canada has positioned Indigenous language as ‘secondary’ or ‘primitive’ to English and French (Haque & Patrick, 2014). McCarty et al. (2018) go as far to state that the rights of Indigenous language speakers are “systematically violated” under this hierarchy of language protection. Only in 2019 did Bill C-91: Indigenous Languages Act receive Royal Assent in Canada, which entrenches language rights as Aboriginal rights under Section 35 of the Constitution. This is a very recent change, and the long-term effects on how this will ensure Indigenous languages are protected on this land are not known. And for so many years before this, while speaking Indigenous languages was not prohibited by law, the languages were not respected as the original languages of these lands.

Post-secondary education systems in Canada provide a concrete example of how settler institutions can undercut Indigenous language learning. Colleges and universities could provide an opportunity to study Indigenous languages and for Indigenous students to connect with their culture in a dedicated learning space. However, literature on language learning in post-secondary institutions demonstrates that classes are only available if you can jump through the hoops required for admission to a university. An example of these barriers to accessing formal language learning within the education system is documented by Chew et al. (2015), who center their experiences as Indigenous graduate students and Indigenous language learners in American institutions. Their universities did not always allow Indigenous community members to join language classes that were offered because attendees for class were required to be enrolled students at the institutions. Requiring enrollment is not accessible for some community members and perpetuates colonialism by taking up what should be an Indigenized learning space with settler beliefs of who has a place in post-secondary education. Furthermore, settler beliefs on how to learn languages centered grammar, spelling, and various forms of testing. This resulted in Indigenous language teachers to not always utilize Indigenous teaching methods that emphasize incorporation of Indigenous worldviews and beliefs. Evaluating students based on grammar and syntax separates Indigenous language from Indigenous culture and is a pedagogy in conflict with students reconnecting with an identity. McCarty & Lee (2014) found similar problems in their studies of Indigenous language learning. Indigenous languages reflect

rich histories, epistemologies, ontologies, and stories which cannot be appreciated through learning the technicalities of a language alone.

Thankfully, language learning programs that counter the experiences of McCarty & Lee (2014) and Chew et al. (2015) do exist. To name some examples, the Indigenous Languages Program (INLP) at Simon Fraser University offers undergraduate, graduate and certificate programs in 16 Indigenous languages in partnership with speakers from First Nations community organizations throughout British Columbia and the Yukon. Since 1989, over 450 students have graduated from the programs. Each program offers students the opportunity to learn a First Nations language, develop skills, and be able to pass on language skills to others (SFU, 2019). The University of Victoria offers a similar array of programs in the Indigenous Language Revitalization programs. Even North Island College, the smaller college I attended in my home community, offers Kwak'wala and Nuu-chah-nulth language classes. Innumerable other courses exist across Canada, based in formal education settings and in community. The difference is that these programs do not just teach a language, they engage with community and some (such as the programs at NIC) offer insights on the worldview and culture that is part of the language.

Language is important for cultural transmission of both traditional health knowledge (i.e. plant medicines) and is a way to transmit unique cultural understandings and experiences of health (Brown et al., 2012; Kirmayer, Brass & Tait, 2000). Language is also a tangible connection to culture, which can be another source of healing (Barker, Goodman & DeBeck, 2017). But presently, the predominant biomedical model of care and Westernized health system does not leave meaningful space for Indigenous languages and the healing that is possible through culture. When health systems show respect and engagement for the cultures and languages on whose land their institutions occupy, such as providing access to healthcare services in Indigenous languages, this can promote early access to appropriate treatment by reducing language barriers and promoting culturally sensitive care (Health Canada, 2015).

The role of language in First Nations wellness

The connection between Indigenous language and wellness is the center of my work and knowing what is already documented is necessary to provide scope to my

work. This section will serve to provide an overview of the data on Indigenous language knowledge and implications on health and wellness. Moving forward, it is paramount readers understand that language is a larger marker of cultural continuity, spirituality, and reclamation of an identity. By absorbing and reading forward with this perspective, the relationship between language, identity, and health can be appreciated.

Studies on the health effects of language knowledge

While my study is interested in the relationship between Indigenous language knowledge and wellness, the health benefits of bilingualism have been studied in non-Indigenous specific contexts. In general, there is evidence that being knowing more than one language has positive health effects for the mind. Being bilingual requires ongoing learning and thought when speaking, writing, and comprehending all languages a person knows. Bialystok et al. (2012) provide evidence of improved cognitive effects in adults. Compared to monolinguals, the researchers found bilinguals tend to have more executive control and sustained cognitive performance – yet may have weaker verbal skills. Different parts of the brain are primed more efficiently in those who need to think about and manage two languages. Older adult bilinguals may also benefit from a protective factor on their cognition. As bilingualism promotes cognitive development, it could be one of the environmental factors that contributes to brain function preservation and healthy brain aging in an aging population.

The few studies examining physical health effects of language knowledge suggest that language can have positive implications on physical wellness. Most relevant to my study are two articles focused on North American Indigenous adults. The first, authored by Oster et al. (2014), was based in Alberta Canada and is discussed in greater detail below. Second, Hodge and Nandy (2015) surveyed 457 American Indian adults who attended health centers in California. Their study included questions on socioeconomic status, self-rated wellness (with wellness being the balance of the four aspects), physical health and cultural involvement, including questions on language use. In general, those with poor self-rated wellness reported more physical health diagnoses (diabetes, poor mobility) and poor mental health. Those with high self-rated wellness were more likely to speak their language (29% to 17%, p=0.022), and feel close to their community (86% to 76%, p=0.022). Their results relate to my research which postulates language use, as a separate variable, is part of a larger construct of reclamation and

ownership of one's Indigenous identity. Feeling close to one's community is part of this construct as well.

The concept of 'cultural continuity'

The concept of cultural continuity, which includes Indigenous languages and knowledge, has been important to literature on Indigenous health in Canada (Kirmayer et al., 2007). Approaches to contemporary (Western) research on suicide in Canada have been significantly shaped by the work of three white, Canadian researchers who have introduced the importance of cultural continuity as a variable of interest. Christopher Lalonde, the late Michael Chandler, and Darcy Hallett are researchers with a history of researching the epidemic of Indigenous youth suicide and the cultural factors that could prevent it. They authored two seminal works, written in 1998 and 2007, which will be reviewed here. These works are notable for their development of the concept of 'cultural continuity', and how cultural continuity variables could influence youth suicide rates.

Chandler and Lalonde's 1998 paper is a seminal work that examines rates of suicide of on-reserve First Nations youth in BC and is often cited by researchers interested in Indigenous language, suicidology, or wellness. Typically, all youth, regardless of culture, experience some degree of disjointed self-identification as they mature and navigate the social roles of young adulthood. Youth who cannot form a strong self-identity are more at risk for suicide (Fiedeley-Van Dijk, 2019; Kirmayer, 1994; Kirmayer, Brass & Tait, 2000). Colonialism and racism can make the development of a self-identity confusing or unsafe for Indigenous youth who have never connected with their culture or fear racism associated with openly being Indigenous. Similar to the importance of self-identity to the individual, a lack of cultural continuity in a group could also lead to higher suicide rates.

The concept of cultural continuity in the context of a protective factor against suicide is a significant contribution of these authors. The authors plainly state that suicide rates are highly variable across First Nations reserves in BC, where they based their study. The authors did not blanket the surveyed Nations with the assumption that suicide must be an issue. To derive the rates of youth suicide necessary for their analysis, the authors used population-level data from The Office of the Chief Coroner of

British Columbia across a period of five years. This data included pertinent details of death, including whether the death was recorded as a suicide and status of the deceased as ‘native’ or ‘non-native’.

The authors continued their analysis by recording which communities have any of six variables that they used to define cultural continuity. The variables include 1) self-government, 2) land claims, 3) community control or involvement in education, 4) community control or involvement in healthcare, 5) cultural facilities, 6) police and fire services. The variables are binary in the analysis – communities either had a variable, or they did not. Between communities, one of the strongest variables that modified rates of suicide were communities with strong self-governance structures. These communities had significantly fewer suicides (102.8 fewer suicides per 100,000).

This initial work published by Chandler and Lalonde had great strengths in moving the conversation about culture and suicide forward; however, there are significant aspects of their research that my research seeks to correct. I acknowledge that time has passed since the publication of this article, but because it is still so widely reviewed and utilized as a source of information on youth suicide, it is important to clarify shortcomings of the research design. The authors acknowledge the limitations of using provincial level data from BC Coroner’s reports as their data source. More specifically, misclassification of cause of death can lead to underreporting suicides, particularly in the case of ‘accidental’ death. Furthermore, a Coroner may incorrectly assign a person as Indigenous or non-Indigenous based on appearance. First Nations’ people who lack legal First Nations status may not be appropriately classified. I would argue that systematic racism can lead to further misclassifications on cause of death, as the coroners service could also racially profile and assume an Indigenous death was both due to suicide or accidental in unclear cases. In the case of my research, participants can choose to disclose if they have experienced these thoughts (as I am researching suicide attempts or suicidal ideation, not completed suicides). Through self-reports, there is no racial profiling that can occur in the case of the author’s work.

The authors’ reliance on comparison between communities as well as using factors that essentially rank communities is problematic from my perspective. The results are not problematized, but rather the factors used in the analysis. These measures of attempted cultural revitalization included Nations taking back power from government

agencies as a right to self-determination and having control over education or police and fire services. These are not easy undertakings, and the reasons that some Nations were unable to meet these targets are complex and left unaddressed. Dealings with the government are not a simple undertaking. If communities who have had success in regenerating their culture are compared to communities who have not yet developed these factors, it leads to ranking. A question I thought of was if more urbanized reserves may have more resources, facilitating development of these cultural continuity factors.

Unless a reader takes a critical approach to reading this research, it could be easy to fall in to the 'comparison trap' of determining which communities are doing 'the best'. Instead of leaving an article questioning what could be done to uplift Nations so each may exercise autonomy over their culture, unconsciously we may think the Nations without these factors are 'failing'. This parallels the stereotype that all Indigenous people are ill at a larger scale – that Indigenous communities are incapable of looking after themselves. This thought is dangerous – this was the thought behind the Canadian government's initial take-over of Indigenous rights and lands. I

Cultural continuity and the 'language factor'.

Cultural continuity continued to be a relevant concept in literature into the start of the 2000s. In 2007, Hallett, Chandler & Lalonde undertook a second study where they measured Aboriginal language knowledge at the community-level ("band-level") in relation to youth suicide. The was the same variability in rates of youth suicide across reserves in BC, so continuing to investigate what factors could cause such low rates in some communities remained relevant. Building on their previous work, the authors added the addition of a seventh factor – the 'language factor', to the same six variables from their 1998 study. The 'language factor' measured how fluent a community was in their language.

The authors constructed the 'language factor' as a binary measure of language. If a community had above 50% language knowledge index (a term used in the Canadian census to quantify how much language is known in a community), they were marked as having the 'language factor', and communities with a rating of 50% or less meant the factor was absent. There were 16 communities with this factor, and 136 without it. This factor was evaluated in combination with the other six variables, and as an independent

variable. The authors found that the ‘language factor’ had a strong relationship to low or absent rates of youth suicide, independent of the six other variables. Additionally, in communities with at least four of the six original cultural continuity factors, there was a difference in suicide rates from 77.68/100,000 (no language factor) to 37.12/100,000 (had the language factor).

Unfortunately, in the small sub-sample of communities with greater than four of the six cultural continuity factors, none had sufficient data to evaluate the language factor. Due to this, one result that remains unclear to me is whether language provides any additional benefit in reducing suicide in communities with already robust measures of cultural continuity. Having five or six of the factors would indicate a high degree of cultural continuity, and if the communities did possess data for language usage, it would be interesting to see if rates of suicide changed significantly based on the presence or absence of language knowledge.

This work continued to move the conversation forward in how researchers understand youth suicide. By adding in language, a more direct connection to culture, the authors helped to actualize the connection between language and culture as an important factor in preventing youth suicide. However, the ‘language factor’ also proves to have some shortcomings. Measuring language knowledge with a binary variable leaves some questions unanswered. In constructing community level language knowledge as a binary variable, the potentially continuous nature of this association was missed. Another limitation is that associations observed at the population level might be different from those at the individual level. At the individual level, are there equal protections and health promoting qualities associated with knowing a language as are observed in communities? Further, I wonder if having been exposed to a language in childhood and retaining a very rudimentary command of the language could promote wellness.

Cultural continuity and physical health

The legacy of Chandler, Lalonde, and Hallett’s work continues into contemporary research. An example of this is the work of Oster et al. (2014) which connected the concept of cultural continuity to physical health. These authors did not use the 7

variables of cultural continuity utilized by Chandler, Hallett, & Lalonde, but used the theory to inform their understandings of their results.

Indigenous communities are taking ownership of their health and healthcare, and Indigenous health services prioritize cultural or traditional methods of promoting wellness. Oster et al.'s (2014) study takes place in Alberta and examines Cree and Blackfoot perspectives on the connection between culture, language, and health. Diabetes is a chronic disease of concern in the community of this study. The study begins with themes that emerged from interviews of Indigenous adults (n=10) from Treaty 6, 7, and 8, including the importance of culture, specifically language. Language allowed participants to "be who [they] are", to embody their identity, and to reclaim part of their self-identity. Language served as a 'map' of life and health, with which a person could make choices to improve their health and keep the four aspects of health in balance. Participants also identified colonization and government policies (i.e., the Indian Act) as detrimental to health, mirroring the conceptual underpinnings I situate my research in.

The quantitative analysis used simple and multiple regression using administrative data. Crude rates of diabetes and rates of language usage (used as a proxy for cultural continuity) were used to model the relationship. In simple and multiple regressions, only Indigenous language knowledge was a significant negative predictor of diabetes ($p=0.007$). This means that in the quantitative analysis, only Indigenous language knowledge had a significant association with lower rates of diabetes.

For Chandler, Hallett, Lalonde, and Oster et al., language knowledge serves as a proxy for a larger concept of 'cultural continuity' and in my own research Indigenous language use becomes most salient through a lens of reclamation. Language knowledge is an easily identified proxy variable for cultural continuity, identity, and reclamation of an identity. However, caution must be taken when using language knowledge to measure culture in this way, as the measures taken to quantify language knowledge may not capture Indigenous perspectives on language. Measures of language fluency do not always reflect cultural knowledges or beliefs surrounding fluency, an example being that some communities have a long history of oral translation, but a Western researcher may consider ability to write as a primary measure of fluency.

In my review of the literature, it is clear how important language is as a foundation for culture, health, and cultural identity, which leads to cultural continuity. How Indigenous culture is expressed has changed in some ways, to adapt to contemporary lifestyles and experiences. For a culture to continue, it needs to be passed on and taught to others or be made accessible for future generations to learn, and this includes adapting language or culture to be part of contemporary life.

While language use is a strong indicator of reclamation and health, I argue that other variables can also be relevant to reclamation in Indigenous communities. Fishing, dancing, songs, connection to the land, connection to family, learning about your own Indigenous history, being with Elders – these are all ways that an Indigenous person can reclaim their identity and thereby improve their health (McIvor et al., 2009). In my study I do not treat language as a single factor that communities or individuals either possess or do not possess. Rather, I work from the premise that reclamation is based in social dynamics, power relations, and is something embodied within people. My work helps to move the conversation forward on what measuring reclamation can look like.

Chapter 3. Overview of Research Methods and Design

Research Question and Objectives

My research was guided by a central question: What is the connection between Indigenous language and wellness among Indigenous language learners and speakers in Canada.

My research had two objectives:

1) Explore lived experiences of Indigenous language learning to deepen understandings of constructs used in my quantitative study.

2) Analyze the causal relationship between measures of Indigenous language fluency and wellness outcomes available in the Regional Health Survey - Phase 3 (RHS-3).

Study Design

To meet the first objective, key informant interviews with Indigenous adults (aged 18 and over) were designed to capture the experience of learning an Indigenous language and reclamation of an identity. Key informant demographics were chosen to match those in the quantitative dataset used in Study 2. Data was collected, transcribed, and coded using a-priori and emergent coding to identify themes from the interviews.

To meet the second objective, the data source, sampling strategy, and analysis method were part of an over-arching research project and grant that my Masters' research is part of. The research project, a partnership between the FNHA and SFU, had certain guidelines and opportunities attached to it. This included using the FNRHS data and utilizing causal inference as an analytical method. My decision to use language fluency and wellness outcomes as the independent variables and outcome variables was based on priorities listed by communities in the publicly available FNRHS reports and discussions with staff at the FNHA.

The regional health surveys (RHS) are just one survey developed by the First Nations Information Governance Centre (FNIGC). The detailed history of these surveys is found on the FNIGC website, updated as of 2021. In 1994, the Canadian federal government excluded First Nations people living on reserve from three major population health surveys. First Nations advocates and researchers came together to form a committee focused on Indigenous health to prevent this decision from creating a large gap in the data for communities on reserve. In 1996, the Assembly of First Nations (AFN) formed a National Steering Committee (NSC) with a goal of creating a new national health survey for First Nations people, and in 1997, the First Nations and Inuit Regional Health Survey was published. In 2000, the NSC transitioned to what is now called the FNIGC and continued with the publication of further First Nations Regional Health surveys, with Phase 1 published in 2006, Phase 2 published in 2011/2012, and Phase 3 published in 2018. RHS surveys are created in partnership with communities, have been validated by Harvard University and Johns Hopkins University, and have informed the development of community health programs such as Aboriginal Head Start programs on reserve and The National Aboriginal Youth Suicide prevention program. Non-Indigenous allies and partner organizations have informed the development of some questions within the surveys, but the RHS remains First Nations directed, oriented, and data ownership is held by First Nations.

In closing, the following chapters describe the qualitative and quantitative methodologies and results that are used in this thesis. They act as complimentary parts to tell one full story. First, the qualitative work has been described as it informed the quantitative methods. This is important so the quantitative results are understood as one part of a larger story about language knowledge and identity reclamation that is not captured in the quantitative results. Although the studies are separate in this thesis for organization, the qualitative work has continuously informed my quantitative analysis, and my quantitative analysis allowed me to tailor questions for my key informant interviews.

Chapter 4. Study 1: Key Informant Interview with Indigenous Language Learners

In my initial review of the FNRHS with my supervisory committee, we detected an important difference in how fluency was measured in the RHS compared to how Indigenous language revitalists have conceptualized language knowledge. Measures such as hearing the language as a child or having the opportunity to practice a language were not recorded in the FNRHS data, which instead concentrated on self-reported ability to speak, understand, read, and write a language on a five-point scale from no knowledge to full fluency. To more deeply understand the meaning language takes on for Indigenous people learning their language outside of conceptualizations of skill or fluency, I made the decision to undertake 10 key-informant interviews[2].

Qualitative interviews are suited to provide a more robust understanding of reclamation in the context of this research. Interviews have been used to explore relearning a language in the context of identity reclamation for Indigenous people. I conducted ten interviews from March to April 2022. The timing of these interviews happened before access to the FNRHS data was granted, so the analysis occurred prior to any quantitative analysis.

Ultimately, these interviews serve to ground this study more deeply in the personal, cultural, and social meaning that learning a language can take on for Indigenous individuals in the contemporary Canadian context. Language can allow a person to feel deeply connected to their culture or ancestors. My interviews fleshed out the importance of language in the context of reclamation and reconnection to Indigenous culture, neither of which was measured in the RHS (and would prove difficult to measure). A common theme evident in each interview was the importance of speaking and understanding one's language. Each participant identified that speaking in their Indigenous language was culturally meaningful, examples of which were the ability to

[2] The use of the term "informant" has been critiqued as a colonial term. I have included it once so readers from all scientific backgrounds are aware of my methodology and sampling strategy. However, I will be replacing "informant" with "participant" in the rest of this chapter to follow a path of trying to decolonize my own work.

identify themselves by their Indigenous name, family name, clan, or territory in their language.

The interplay between qualitative and quantitative data sources and results are used to continually inform my analyses and critique my work. The quantitative data source allowed me to base some of my research questions around what was and was not recorded. By speaking with participants, I was able to gain insights and reflect on the ways I could improve or change variables or constructs I was using in my quantitative design. Speaking with people learning their language gave a sense of life to the data I was using and allowed me to understand the relevance that both qualitative and quantitative results have for my own work, but also Indigenous communities I am serving.

Interview Recruitment

I wanted to recruit adult Indigenous peoples who were engaged with learning their languages. Recruitment took place through physical posters and on some electronic forums. Posters were placed in two locations I was familiar with and where I had contacts who were physically present and could hang them: Simon Fraser University Burnaby campus and North Island College Courtenay campus. Posters at campus had the confidentiality form posted with them for potential participants to read. The poster and the consent form were also shared through the First Nations, Métis, and Inuit Student Association (FNMISA) at SFU on their private Discord channel. I shared the same poster through my academic Twitter and LinkedIn. However, in online recruitment, I offered the consent form via e-mail. The recruitment poster explicitly outlined inclusion criteria (aged 18+, Indigenous, learning an Indigenous language).

Potential participants were instructed to reach out to me via my institutional e-mail. I intentionally choose a participant-directed method of recruitment to not put pressure on people to engage. When I received an inquiry, I responded with an initial e-mail that identified myself as a Métis researcher and provided the consent form and information sheet I requested that potential participants review the consent form, reach out to me with any questions, and, if they wished to proceed in the study, to inform me of their availabilities. I also provided availability based on my schedule when participants

requested. Every potential participant that contacted me qualified for the study, but 3 people did not move forward with interviews due to scheduling issues.

Unexpectedly, some participants referred peers to me after their own interview. I knew referrals had been made because, during the course of the interview, a participant would mention they had heard about my study from another participant, whereas other participants often mentioned where they came across my poster or e-mail (i.e., at a certain campus or online). In mid-April, I had to remove online listings from my LinkedIn and Twitter as I received significant spam responses, including some with sexually inappropriate messaging towards myself. The posters did list my name, which is feminine, and there are publicly available interviews and photos of myself online that would further identify me as a woman. I debriefed with my senior supervisor after this happened and we decided to proceed with live poster recruitment and the word-of-mouth recruitment that was happening amongst participants to protect my safety.

Sampling

Key participant interviews are a strategy that targets participants that are experts. Each participant was an expert in learning their own language regardless of their degree of language knowledge. I planned to interview 10 Indigenous people with Indigenous language knowledge. I did not limit my sampling to British Columbia and received responses from across Canada, with a majority coming from BC. The number of participants was derived from my budget to pay for honoraria and transcription fees. Nevertheless, 10 participants were sufficient to meet my research objective. Because key participant interviews have a focus on expertise rather than generalisability, the referrals that occurred between participants did not negatively affect my sampling strategy. At the end of the 10 interviews, participants were still generating novel insight. As indicated in the results, themes emerged which allowed me to better understand and critique my quantitative constructs.

Data Collection

I arranged a convenient time to interview each participant, and all interviews were completed virtually using Zoom. Participants all self-identified as Indigenous, were 18 years of age or older, and currently learning, relearning, or practicing their language.

Each participant had a different degree of engagement with language learning, from daily practice or immersion to irregular practice.

Prior to beginning the interview, I introduced myself to participants on Zoom (including my name, where I am from, the basic goal of my research) and asked if participants had any questions or concerns about the consent document. I also used the introduction to build rapport by asking participants about their day or finding out we had a shared connection (i.e., our ancestors were from similar places). I would take time to answer questions if they arose and had not been answered via e-mail prior to the interview. To aid with transcription, I sought oral consent to record every interview. I also allowed participants to choose if they would like their video on or off. No participant declined to be audio recorded. Each participant confirmed their consent at the beginning of the interview, fulfilling the oral consent process approved by Harmonized Ethics Review of the FNHA and SFU.

I shaped my engagement with participants to ensure they felt supported and valued during and after the interview. Each of the 10 interviews were semi-structured guided by 9 different questions about Indigenous languages and how participants relate language to their identities and feelings. Nevertheless, I acknowledged that my interviewees' worldviews and experiences may not have always fit in to the nine questions I had created. Accordingly, I felt it was important to allow whatever stories that arose to be heard and honoured (Archibald, 2008). I therefore created a space in the interviews for participants to respond through story or to provide other open-ended narratives on insights or meanings that came up for them. Naturally, some participants had less to say about some questions, while others felt compelled to share many details or stories about their language. At the end of the interview, I asked if participants felt there was anything I had missed that they thought was important I know moving forward. Then, I thanked them for their time and ended the recording. Afterward, I checked in with participants to ensure they had felt comfortable with the interview, reminded them of the consent process, and made sure participants were able to access their honoraria for participation.

After each interview, I journaled my experiences in a notebook to debrief. I noted what went well, what felt unfamiliar, and what influence my own presence could have brought to the interview. My reflections improved my interview skills. Over time, the

interviews ran more smoothly, and I learned how to ask my questions in a more seamless fashion, so the interviews felt more like a comfortable conversation than a one-sided inquiry. Journaling was also important for safeguarding my own mental health, as it helped me work through by decompressing on some of the difficult topics that arose from the interviews, like family trauma and grief.

Data Analysis

My first step in analysing my interviews was to create an a-priori codebook prior to beginning interviews. This code book drew on concepts from literature on language revitalization and cultural reclamation. More specifically, based on writings from Chandler & Hallett (1998) and Hallett et al. (2007), I created codes for language relating to wellness, cultural connection, and reclamation/resilience. For example, these could apply to an interviewee mentioning language creating a sense of connection to someone or a stronger sense of identity. Based on writings from Castellano (2014), I created a code for spiritual health or wellness. These codes could apply to an interviewee mentioning ancestors, the Creator, or spirituality. I also included themes for identity/reclaiming identity (Chew et al., 2015; McCarty & Lee, 2014; Lee, 2009), historical trauma, a disconnection from culture, or a disconnection from community (AHF, 2004).

Once interviews were completed, I deleted the video portion and saved the audio file to the SFU Vault, my university's cloud server. The files were only accessible to me and saved without identifying information in the title. I named the interview files numerically in the order they occurred. All 10 audio files were transferred to TranscriptionStar, the transcription service I used, via an encrypted file upload portal. The transcripts were returned to me via the same online application and re-uploaded to SFU Vault for safe storage. Other than transcription, I alone completed all recruitment, interviews, and data analysis, meaning I had a close relationship with the data. I gave each of the interviewees a random name for the purposes of reporting the results.

I then uploaded the transcripts to NVIVO 12 qualitative analysis software for coding. I both applied my existing a-priori codes and looked for other codes that emerged from the interviews. For example, after reading the transcripts, the a-priori code for wellness was expanded to include separate codes for physical, mental, emotional,

and spiritual wellness. Many participants spoke about barriers to accessing language, which was not a topic that emerged in my literature review. I therefore added a code for barriers and a sub-code to classify different types of barriers. The importance of hearing/speaking a language was prevalent in the interviews, and many participants spoke about feeling positive when they could listen to an Elder or speak with someone else. Emergent codes that arose came from Interviewees associating many positive meanings language takes on in their lives, ranging from resistance to colonialism, to sacred law, to ‘home’.

With my transcripts coded, I conducted thematic analysis. Braun and Clarke (2014) describe thematic analysis as a method that finds patterns or ‘themes’ in qualitative data. I initially found 10 themes with my read-through of the codes and interviews. Through further analysis that related how sub-themes fit within more general themes, I reduced this to five refined major themes. There is no set rule for the number of themes recommended for thematic analysis. I found one guide, produced by Auckland University that recommended between 2-6 themes for a thesis or dissertation.

Results

Language learners face many barriers to learning

All participants experienced some form of barrier to learning their Indigenous language, including historical and contemporary barriers. What surprised me was the diversity of barriers participants experienced.

For language learners who spoke languages without many fluent speakers or teachers, the ability to learn their language was greatly impacted. Connected to the absence of fluent speakers was the phenomenon of ‘silent speakers’, who are people that know a language but cannot speak it due to a history of trauma (such as IRS, where speaking Indigenous languages was banned and lead to punishment). April told me “I've sat down with a couple of fluent speakers who anytime they speak, their ear will start hurting, just because of the mental memory of it getting tugged or something happening to them that was just awful.” Even when fluent speakers are involved in their community’s language learning activities, the trauma they still have can manifest itself and create a barrier.

A sub-theme that emerged for some learners was financial barriers to language learning. For some language learners, gaining access to language classes that were free was difficult. Either their specific dialect did not have free resources to learn from, or classes required payment. The technology required for online classes posed another barrier. For Mitch, the choice to enrol and pay for an immersion program was very important, because he felt very morally and personally motivated to surround himself in his language to revitalize it. Some of his immersion classmates were unable to continue due to the financial strain of attending classes. He explained, “we did have a larger class at the beginning, but unfortunately some people just like financially couldn't take the class and stick with it”. He later spoke about the additional costs of travel to in-person classes from rural communities and upgrading technology and noted that due to inflation of costs, even he was having a more financially stressful time. Even when immersion programs become available for high-intensity language learning opportunities, there are numerous barriers that mean they are not necessarily accessible for all people within a community.

Both language learners and Elders noted a lack of funding available for Elders/knowledge keepers to teach language classes. Brad experienced that the knowledge he was learning in classrooms was not given the same respect or funding as other language classes: *“It's like all we hear is like 20 bucks for teaching or here's a small honorarium for doing an entire class. And, the Japanese teacher, the French teacher, or any other language teacher is getting paid big bucks, right? And I think that's another way to decolonize things is, our languages are just as important as theirs.”*

As much as institutions wanted to use Indigenous knowledges, they did not want to pay a rate that was commensurate to the labour and knowledge being shared. Language learners noticed how much Elders want to continue to teach classes, but even Elders “have bills to pay” (Knowledge Keeper June) and couldn’t always continue to provide free classes. Elder Mike related this to traditional value systems, “And we're so generous, we do everything for free.” But Elder Mike was aware the generous nature of many traditional knowledge keepers and Elders often gets exploited.

Language is part of all aspects of wellness

All participants felt language influenced part of their wellness to some degree, but not all believed language influenced all aspects of their wellness. Some related this to practicing a skill and developing good habits, to feeling more connected to family/friends and improving their emotional health, or to creating a connection to the land, ancestors, and Creator. The connection to spiritual health was evident and will be discussed as a sub-theme below. Leah, who felt it did not influence their health and wellness, did explain how they had seen language learning improve the wellness of others.

One Indigenous man, Brad, presented a unique insight on how language is related to his wellness. Brad described the stress he faced to keep up with typical masculine gender roles (e.g. protecting, unfeeling), and how he wanted to resist these roles but still felt the pressure to meet them. Brad found solace in language through song. He described his experience of wellness as follows:

> "[Language] also helps with your physical wellbeing because you're expressing all of that negative emotions that are just swirling in your heart, right? And then you start being less tense afterwards. After say, like a sweat or say, after like a brushing or say, after any, like spiritual ceremonies, right? It's almost like that anxiety or that hurt, or that pain is just removed from your body and those little aches that you had before you came are gone. It's, I don't know, like I said, I think it ticks all those boxes."

The connection between language and spirit was prevalent throughout the interviews. The relationships between spirituality, language, and spiritual wellness are interwoven. Language is a connection to ancestors, the spirit world and Creator, and can contain information about how to lead a good life. When speaking their languages, participants felt very connected to their family members or community who had spoken their language to them. Others felt speaking their language nourished their spirit as an Indigenous person. Participants found spiritual connections were difficult to describe and was more of an experiential event that required a sense of knowing only experienced by Indigenous people.

For participants that felt their spiritual health was benefitted by language, their wellness was promoted by hearing, speaking, and the meaning of words in Indigenous languages. To provide an example, Knowledge Keeper June described this experience

as “heart words”, because words for feelings in her Indigenous language all had a root word of “heart” present in them. These “heart words” were very beautiful to the participant and the connection she felt through them. Knowledge Keeper Tina felt very connected to words that were built on her community’s relationship to the land, including fruit and animals native to her home territory. Hearing the word for the local fruit reminded her of who she was, and this fulfilled her spiritual health and sense of identity.

Elder Mike, who also works in healing through sweat lodge and traditional medicines, shared that speaking in an Indigenous language was a way to “translate ancestral information”. The messages he receives in healing spaces and how he translates them through song or prayer only come to him in Indigenous languages. This idea of “ancestral law”, traditional knowledge and values in Indigenous language which guides how Indigenous folks may choose to live the best version of their life, is another example of the spiritual nature of language.

Interestingly, participants described language as something they felt in their DNA, and something that allowed them to feel “at home” in themselves. As Knowledge Keeper Tina described, deciding to begin speaking her language “was this like coming home to myself”. April described hearing her language spoken as “a sound that feels like home” May, who is newly reclaiming her identity and songs, described her experience as a re-awakening, telling me that our language “it’s in our DNA. We have blood memory.” May found she felt more secure in herself and was coming back to herself, and her identity as an Indigenous person served as a ‘home’ in a more spiritual sense.

Language strengthens identity

All participants found that language strengthened some aspect of their identity as an Indigenous person. For some, language allowed them to live better lives or connect to others more meaningfully, strengthening their identity within a group. Language provided a tangible way to reclaim their heritage. As Knowledge Keeper June describes “When I think about what language has done for me in my identity in my place in this world - It has profoundly changed my life for the better.”

Being able to introduce themselves, either by traditional name, clan, and family or by a simple greeting are ways the participants felt language improved their sense of

identity. Mitch gained a sense of confidence by learning how to introduce himself and his family in his language. Leah had a different experience, wherein she previous felt she had no right to claim or take ownership of her Indigenous identity. She felt it would be "stupid" to learn an Indigenous language when she didn't know all the details of her family's Indigenous history. Nevertheless, she eventually decided to take a language class closely related to her traditional language. She now feels stronger in her connection to her identity and continues to practice speaking. Knowledge Keeper June shared what she had witnessed in her language learning peers, who may be anxious about learning a language that feels like it doesn't "belong to them" because they did not grow up immersed in their Indigenous language or culture:

> "And I like to reinforce that to everybody I speak to. It's that this is yours. I really want you to know that this is yours. All the words I'm saying are the words that belong to you, too."

Elder Mike and May discussed a generational shift in reclaiming one's Indigenous identity. Both are older individuals who experienced first-hand how volatile it was to identify as Indigenous when they were younger. Elder Mike described how when he was a young man, he had to search for Elders and essentially pester them to learn his language. He contrasted this with my generation (of youth/young adults), who have been asking for language and cultural engagement as a right and the traditional knowledge is shared with us. May sees a generation of Indigenous youth and adults as "a resurgence in people trying to reclaim, relearn, unlearn, and learn again… Reclaim their identity and language is usually first and foremost, people are just yearning to learn their language, to have a connection."

Participants also spoke to the importance of reclaiming their Indigenous identity and revitalizing their languages to make them more accessible for future generations. These participants were always cognisant of how their choices, to reclaim an identity or relearn a language, would influence multiple generations to come. Participants felt it was imperative that the struggles they experienced in reclaiming their identity and learning their language were reduced for future generations, so more of their family/community could reconnect. Participants that had children in their lives felt compelled to teach children the language and keep it alive. In remarking on her experiences as a sixties scoop survivor, May felt that she not only had to reclaim her language and identity for herself, but also her children and grandchildren so their Indigenous identity did not get

lost. April has two children who she has taught her language to since birth/early childhood, and her children understand and speak her language back to her. Knowledge Keeper June teaches her nieces and nephews, and Brad used language in his role as a child and youth worker at a friendship centre. Jack shares his language with his younger siblings and cousins when he can, but he sees they are leaning towards speaking English or French. Children are the future, and will be the future language teachers, so it is paramount that the knowledge of who they are is planted within them by older generations and allowed to grow.

Reclaiming identity and language is a complex act of resistance

As I have made abundantly clear in this thesis, colonialism and racism still impact the lives of Indigenous people. Whether by overt acts of racism or microaggressions, Indigenous people still fight to be seen, heard, and respected in Canada. But there is power in our Indigenous identities, with April, Elder Mike, Mitch, and Knowledge Keeper Tina all remarking on the power of language. Despite attempts to assimilate Indigenous peoples into the settler realm, language is a strong way to remind people of whose territory they are on, that our languages are still living, and as May says, “They haven't gotten rid of us.” But that does not mean the process of reclamation is easy. Reclamation is still complicated by trauma, mixed identities, and the reality that racism is still pervasive in the lives of these interviewees.

Although language is healing for these participants, the process of reclaiming language can be difficult for folks who have experienced trauma or who continue to face racism (which can lead to trauma). Participants who learn language from community members know silent speakers or have seen how community members may not be ready to engage in language learning due to trauma. There is seemingly a “push and pull” between the healing nature of language and the harms that some community members are reminded of when speaking their language. The reality is that although language is profoundly healing for these participants, language does not erase racism or trauma that has happened to some members of community. Racism is still part of the current lives of interviewees who proudly speak their language. Jack, who is a first language speaker of his language, moved to the city where his language is not common. He had an experience where, when speaking with a peer in his language, he was told to “go back where [he] came from”. By identifying himself as Indigenous by speaking his

language he was at risk of harm and racism. Jack went on to say that although this experience was harmful, he will continue to speak his language proudly and be strong in his identity. Jack's strength is palpable, but others may feel reluctant to speak their language if this experience had happened to them. This is a way Indigenous languages are still silenced by settlers in contemporary times.

Participants who came from mixed backgrounds expressed the additional complexity that came with re-identifying with their Indigenous heritage. For Knowledge Keeper Tina, who was told previously she could not identify as Indigenous because she was both Black and Indigenous, the experience of being in her first language class was like being seen – her classmates all visually looked like her. Brad also describes being unable to identify fully with either of his racial identities – being "too much". He was "too Asian" to feel like he could engage in cultural learning about his Indigenous heritage, but he was viewed as being "too Indigenous" to be part of the Asian community. Having gone through the process of learning about his heritage and language, he now works closely with Indigenous healers and feels strong in who he is as a mixed Asian-Indigenous man. For both Brad and Tina, seeing others who looked like them and sharing space with others of mixed ancestry provided a sense of community that aided in feeling welcome to reclaim their cultures, and their unique identity as Black-Indigenous and Asian-Indigenous people.

Elder Mike and Leah experienced having their identities policed by non-Indigenous people. Elder Mike says he sees how mixed Indigenous youth are told who or what they are when they enter the mainstream schooling system. Based on visual appearances, some youths are barred from identifying as Indigenous because they don't look or act "Indigenous" enough - regardless of if they have been raised fully immersed in their culture. Leah experienced people not even knowing what her identity was as a Métis person. Non-Métis people assume it is not a real identity based on the unclear definitions on what being Métis means, popular discourses which undercut her identity, or people not even knowing who the Métis are. For context, people who are not Métis identify as such based on the belief that anyone with any mixed Indigenous heritage, regardless of the definitions on Métis identity, is Métis. The differences between how Provincial Métis organizations identify who is Métis adds to this issue, with one province having a non-Indigenous person who married a Métis person listed as Métis in their registry. In summation, reclaiming an Indigenous identity is complex regardless of

parentage, but it is increasingly difficult for those of mixed racial backgrounds, and further complex for those with non-White identities.

Language facilitates connection to community

Learning an Indigenous language can create and strengthen connections to language learners' family and their community regardless of distance through the use of technology. Knowledge Keeper Tina remained immersed in her home community through digital learning spaces, and Tom regularly shares online space through Discord (a messaging platform) with his language community. There is a degree of accessibility when using digital spaces that makes it easy to retain a relationship with your home community regardless of physical distance. There is also opportunity to pose questions to one another, both peers and Elders, as Tom regularly did on the discord channel.

In-person learning also offer an opportunity to build relationship with a language learning community. Elder Mike remarks on his first language class as a young man and being surrounded by people from his community. He told me, "I felt good because I was in the room with a bunch of other [Indigenous] people and other people who didn't know the language but wanted to learn their language. And my own relatives were there and it was so cool. And I still know most of that community". He continues, saying the part he remembers wasn't so much about the language, but the process of community building: "I don't remember so much of what we did, I remember more that we ate, we laughed a lot, we drank tea and coffee. We joked around like [Indigenous] people do, and we had a good time. And it builds community". April shared how her connection to community goes beyond just language learning, "What is the end goal for language learning for me? To be acknowledged, to be supported, to be stood up.[3] That whole circle of care." Knowledge Keeper June felt that when she can't share space with her living language community "my heart feels lost". Being in the same physical location as others not only facilitates language learning, but can create a healing space.

Participants related language to ancestral knowledge, demonstrating how understandings of community go beyond the living. Connection to land was important to

[3] In this instance, to be "stood up" means to feel supported by your community and have them stand you up, to honour you and see you. I hear it often in Indigenous circles, but the term may be unfamiliar for non-Indigenous readers.

how participants described the relationship between language, the land, and physical wellness. Elder Mike related knowledge of plants and plant medicine, translated through language, as one way language improves physical health. When the knowledge of how to identify and use traditional plants is passed on, the plants can continue to be used – this becomes ancestral knowledge.

Knowledge Keeper June spoke about the relationship between language, family, her language community, and her ancestors. She said that when she speaks her language “I feel my grandmother right here, hugging me. I feel my grandfather”, and she continues “[Language] brings me so much closer to my grandparents who are gone, and it brings me so much closer to my grandmother who I still have”. May also related speaking her language to be in relationship with “the circle, the Creator, to the ancestors”. Here, “the circle” refers to a common practice of sitting in circle when sharing teachings or learning together.

Connection to land

As knowledge of the land is held in the language, speakers can connect to ancestral territories by learning and speaking a language. Knowledge Keeper Tina explains that “place and space are communicated to us and through us, through our Indigenous languages.” Language serves as a knowledge system and guide for what has always been an important place or relationship in a particular community. This connection to territory is because certain dialects/languages are spoken on specific territories. Mitch explains “I know that when I speak my Indigenous language, I know I come from [my home] territory”. May and Leah both mention that what is considered an important plant, or how a person relates to non-human creatures, is engrained into language.

April uses her language as a form of resistance to ongoing settler occupation of lands, which is called “Land Back” by both the informant and in popular media. When she speaks her language to settlers or when trying to include her Indigenous languages onto street signs/public places, it is her “subtle way of reminding people they are actually on [our] territory and it does actually belong to someone, and this is the language that is spoken here”. April felt incredibly frustrated to have to remind settlers that “we are in fact

still here and still occupying the land", it is her form of resistance, and it is a very important reminder for her to share.

Discussion

The results of my analysis support the multifaceted meaning and importance of Indigenous languages for language learners' self-identity and wellness. Indigenous perspectives on language emphasize its relationship to spirituality, land, and a holistic stance on health. My findings additionally contribute novel evidence on contemporary barriers that Indigenous language learners experience.

The barriers faced by the participants I spoke with could be used to provide insights for planning more accessible Indigenous language programs. As I conducted interviews during the COVID-19 pandemic, some barriers learners faced were related to public health measures (such as remote, online classes). The financial burden placed on both students and Elders/language teachers indicates the need for robust funding to allow people to teach and learn languages. This includes funding for learners to access technology so digital classrooms remain accessible. Institutions should provide the same funding to Indigenous language teachers as they do to French or other second-language teachers. Each community will have different beliefs and priorities for their own funding, and some Elders/language teachers may continue to provide this knowledge for low-cost/free. Community-specific research could investigate the support necessary (financial or otherwise) to facilitate language teaching.

While literature has already outlined the spiritual benefits of Indigenous languages for Indigenous peoples (Castellano, 2019), my research provides deeper insights in to how speaking a language supports spiritual wellness. Not only does language connect a person to their living relatives, but also their ancestors, the Creator, the Earth, and sacred teachings most meaningful expressed through Indigenous languages. Interestingly, four participants used the term "home" when referring to how speaking their Indigenous language made them feel. This illustrates how comforting hearing and speaking language can be. This phenomenon emphasizes how paramount it is that Indigenous languages be protected and revitalized. If language is a "home" for these participants, the loss of language could lead future generations to miss out on this

feeling. Not learning one's language could also mean people may miss on the beneficial feeling of connection to community, territory, and 'home'.

My research also highlights the experiences of mixed-heritage Indigenous language learners and the unique experiences they face. Mixed-Indigenous identity is complex. Mixed-race participants in this study reported experiences of lateral violence and racism. Regardless, these participants did feel a strong connection to their Indigenous identity and benefitted from learning their language, particularly when they were around others with the same identity. Further research is needed to explore how having a mixed background, particularly non-White backgrounds, may influence a sense of self-identity and how that could modulate feelings of wellness. The complexity of these relationships is beyond the scope of this thesis, but such research is necessary as Black-Indigenous, Asian-Indigenous, and other minority Indigenous groups are currently unrepresented/underrepresented in studies.

The results of my qualitative study are important to my thesis research in two ways. First, I believe the results, taken as a whole, will contribute to a more holistic picture of the benefits that Indigenous languages have on wellness and reclaiming an identity. "Reclamation" is an unmeasured variable in my quantitative analysis and so providing some insights into what reclamation means for language learners was important for my purposes. I would feel I had not done my research in a good way if I did not give space to these stories. Second, the importance of hearing and speaking an Indigenous language was evident in the interviews. To focus my quantitative analysis, I used speaking and understanding as my two measures of language knowledge/fluency. I don't discount the importance of writing/reading Indigenous languages, but I believe speaking/understanding are more meaningful measures of language "knowledge", particularly as it relates to the potential wellness benefits that language knowledge may provide.

Chapter 5. Study 2: Using causal inference to model the strength of the relationship between wellness and Indigenous language Methodology

Data Source

The quantitative data source used in this research is the First Nations Regional Health Survey (FNRHS) Data: Phase 3, a cross-sectional survey with data collected between March 2015 and December 2016 (FNIGC, 2018). The FNRHS is an appropriate source because it is a survey created and administered by First Nations individuals, with input from non-Indigenous allied researchers. Hegemonic cultural assumptions and power imbalances between Indigenous and non-Indigenous peoples may cause surveys administered by Government officials or unfamiliar research institutions to reflect the lived experiences of Indigenous. This survey is also more appropriate for measuring cultural engagement and health because it was created to capture this data by First Nations communities.

Setting

Data was collected via a survey administered by First Nations community members from 2015 to 2016 using computer-assisted interviewed software. The FNHA serves as the data steward for the data collected in the FNRHS. The communities surveyed were randomly selected from those who consented to be part of the Regional Health Survey. Communities had to be larger than 75 people to be included in the survey to ensure for adequate privacy of data, and these communities consisted of less than 1% of the total population. A national response rate of 76.1% was obtained, representing 253 different First Nations communities. Communities surveyed continue to be engaged in knowledge translation activities with First Nations Health Authority and with researchers who utilize FNRHS data in their analysis. In British Columbia, 122 First Nations communities responded, comprising 5,739 individuals.

Participants

Participants of the FNRHS are First Nations people of all ages who live on reserve in what is known as British Columbia. Only adults (aged 18 and older) who have answered survey questions related to language use, outcome variables, and confounding variables are included in the study.

Variables for Quantitative Analysis

Directed Acyclic Graphs

Directed Acyclic Graphs (DAGs) are a visual representation of the proposed model of reality used in causal inference and help to ground theoretical understandings of relationships into a logical framework. In DAG's there are nodes, which represent constructs (each of which may be measured using one or more variables), and arrows, which describe the direction of the causal relationships between nodes. In a DAG, the absence of an arrow between two nodes is a strong causal claim that no causal relationship exists between the two variables. If there could be a causal relationship between variables, even if the magnitude of the relationship is small, it should be included in the DAG to model reality in a way that is most conservative (i.e. least likely to leave out something important to the validity of the model) for the purposes of designing a model. A DAG is complete when there are no missing parent nodes of any two nodes that are already in the DAG. Completeness is also a characteristic of a DAG that is necessary for the DAG to serve the function of helping decide model structure without leaving out anything important to the validity of the model.

In a DAG, there exist confounding variables, which are variables that are a common cause on both the exposure and outcome variables. The analysis of the DAG for the purposes of deciding upon a model that sufficiently controls for confounding depends on an idea called the "backdoor path." A backdoor path is a path from the outcome node to the exposure node along a path of nodes connected by arrows (without consideration of the direction of the arrows) other than the causal path from exposure to outcome that is the focus of the analysis. A backdoor path between the exposure and outcomes variables is said to be open unless at least one node along that path is "blocked."

If there is any open backdoor path between outcome and exposure variables, then there will be confounding in the estimate of the magnitude of causal effect of exposure on an outcome. This means there is a loss of validity in the observed magnitude of the causal effect on the outcome. In basic terms, without confounding, the precise outcome of the cause on the effect is changed because of all the other factors that lead to the effect. A central way to block a backdoor path is to control for a variable that is identified to measure the construct of a node along the backdoor path. In the DAGs below, variables that are controlled for (and as such have 'blocked' the backdoor path) are visualized as white nodes. How these variables were created using available RHS data is described below. There is one uncontrolled backdoor path through "reclamation", because the FNRHS did not provide adequate data to control for it.

As described in more detail below, in my model, I would like to control for reclamation to block a backdoor path, but it will be left uncontrolled in my models because I do not have data that measures any aspect of reclamation. This means that the magnitude of causal effect estimated for language fluency on the outcomes in this study will likely be somewhat overestimated. Overestimation due to confounding means that the true magnitude of effect of the cause on the outcome is inflated, to some degree, by an open backdoor path. The causal effect of reclamation will be combined with the causal effect of language fluency in the results, and the results will be further away from the null because of this. The degree to which reclamation exerts this causal effect is unmeasured.

Below I present two different DAGs: Figure 1 models the causal relationship between language fluency on suicidality, and Figure 2 between language fluency on wellness. In Fig 1, suicide attempts and suicidal thoughts are modelled under the same DAG because they are very similar variables. Wellness outcomes are modelled under the same DAG too, as they are also similar variables.

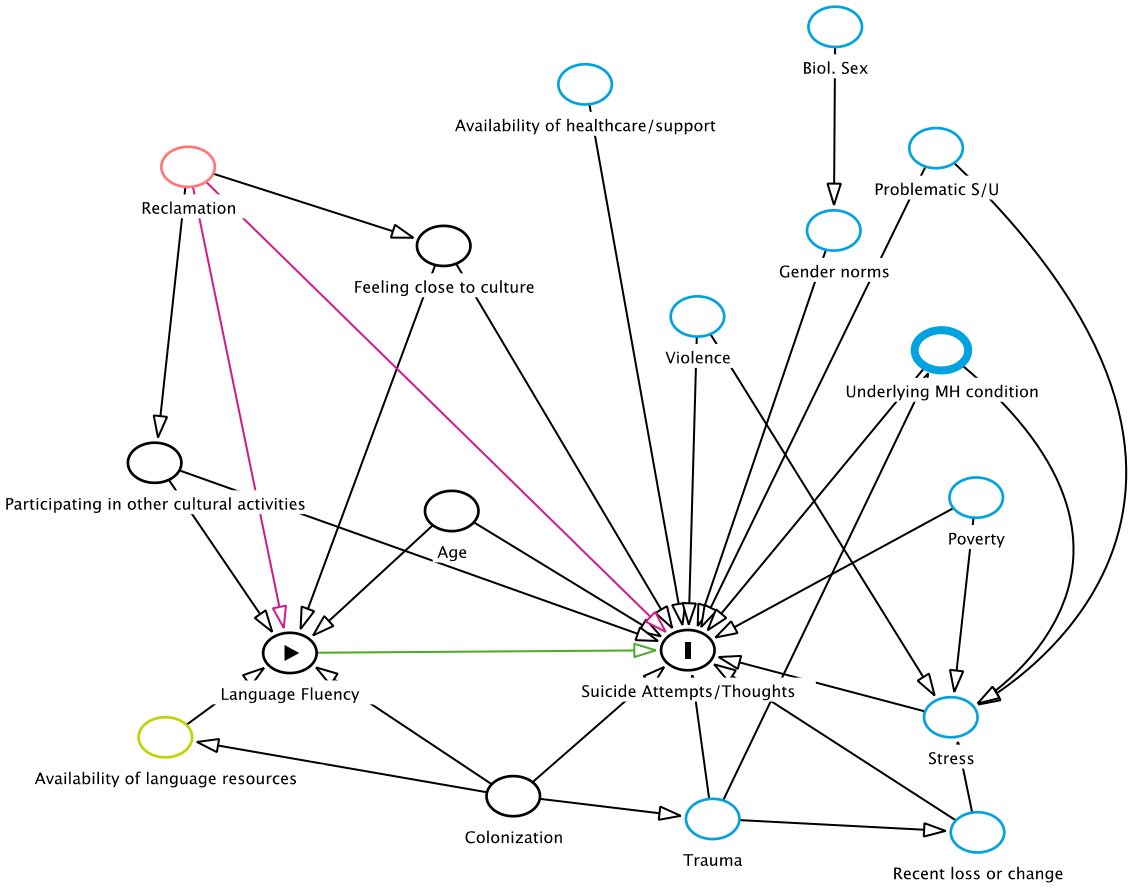

Figure 1: **Directed Acyclic Graph of language fluency on the likelihood of suicidal thoughts or actions. (MH= Mental Health, S/U= Substance use).**

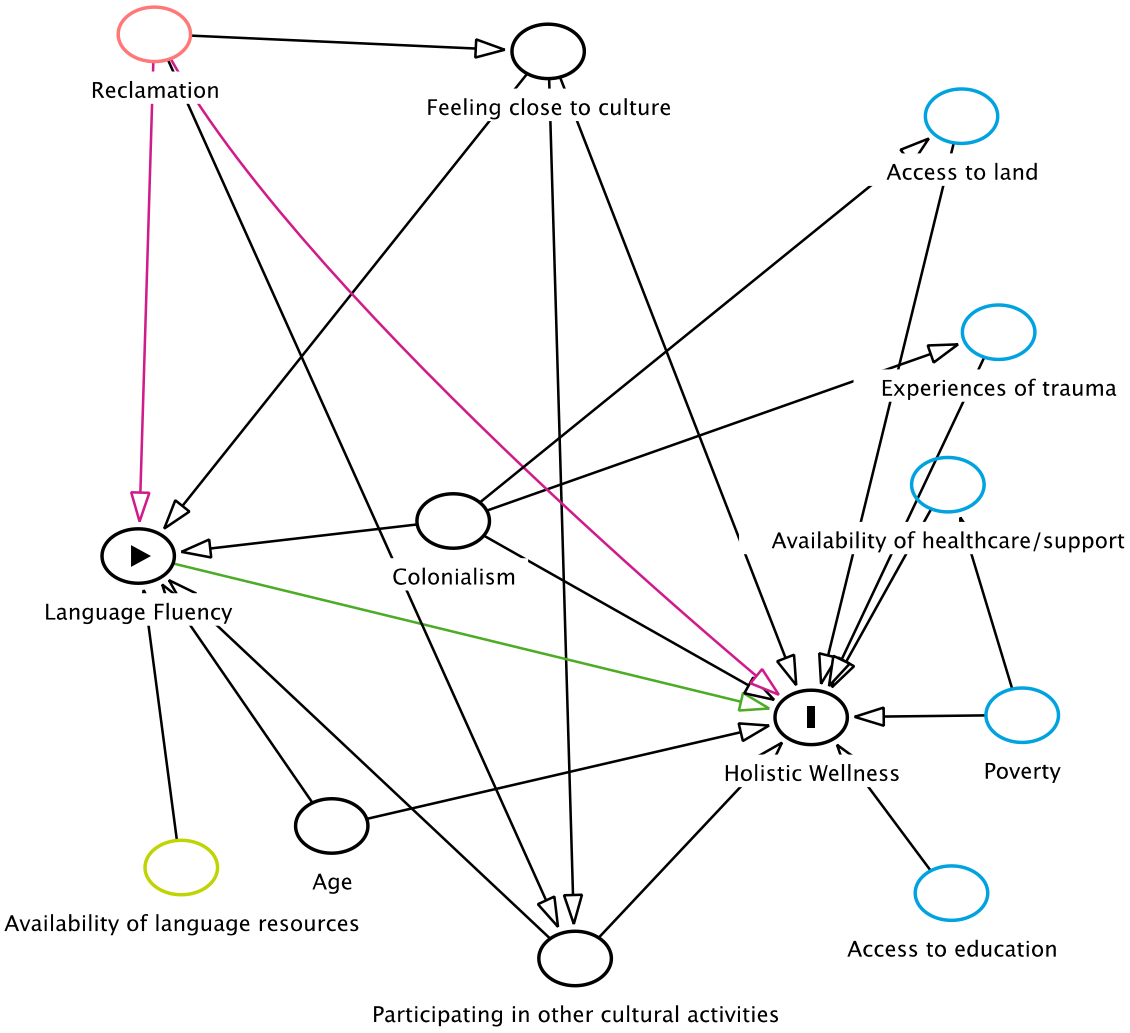

Figure 2: Directed Acyclic Graph on Language fluency and holistic wellness

Exposure Variable

In all analyses, the exposure variable is Indigenous language fluency and I have chosen to focus on speaking and understanding as measures in my analyses. The FNRHS data set records fluency at five levels, from “No knowledge” to “fully fluent”. The FNRHS records self-reported fluency beyond speaking and understanding. The survey includes writing, reading, and combined measures all measured on the same scale. As such, there may be disagreement about how best to measure and conceptualize fluency. Many Indigenous languages were oral languages and reading and writing as tools of communication only occurred after contact through assimilation (Bielenberg, 1999). Certainly, some communities have developed writing systems (such as the Cree syllabic system, orthographies based on the North American Phonetic Alphabet, or the Roman

alphabet and diacritics) and support reading and writing as skills to make language learning more accessible. In my qualitative study, participants emphasized the importance of speaking their language as a form of reclamation of identity and connection. I hypothesize measures of speaking and understanding will be more closely linked to concepts of reclamation of and connection to Indigenous identity, which are central to the framework through which I view my work.

In this analysis, I use three levels of exposure. The first level is high language fluency and combines participants who reported intermediate and full fluency in their language. Despite the FNRHS differentiating between the two levels of fluency, I had to merge them due to a small number of participants reporting a high degree of fluency. The second level is Basic fluency, which is all participants who reported a basic degree of fluency. The final level is Low/No knowledge. I initially planned to have “A few words” of fluency as a separate group of analysis, but I was unable to run the analysis without errors due to the small number of people who had no knowledge of a language. The most obvious path forward was to collapse No Knowledge and A few words of knowledge. From the distribution of the data, over half of respondents were clustered around the “Few words/Basic” level of fluency (Table 1).

An unmeasured group of language users are silent speakers, semi-speakers, or generational language speakers. These people are those who understand their Indigenous language at a highly fluent level but do not or cannot speak it. Traumatic experiences in IRS may prevent them from speaking their language, but they are able to understand the language completely. Others may have been raised with their language and previously spoke and understood their language at an advanced level, but after time away from their language, have lost some of their ability to speak their language. These generational speakers maintain a high degree of understanding. How these people may rank themselves using the RHS measures is varied. Those with trauma may underreport their ability in speaking and understanding or report their actual advanced abilities. Others from either group may rank only their understanding skills as high. It is likely that these groups of people would be older. In the data, I saw that most people ranked their speaking/understanding as equivalent. The upper two levels of fluency are collapsed. If a person ranks themselves as intermediate/fluent in either speaking or understanding, they automatically get placed in the ’advanced fluency/high knowledge’ group. This will reduce some measurement error.

The final crux of fluency is that, as discussed by Marianne Ignace (1998), how the FNRHS defines fluency is not based on definitions created by each community but rather self-report. The FNRHS surveys a large, diverse population of many Nations and creating community-specific measures of fluency was not completed. Therefore, the same issues that arose in Ignace's work where Elders, new knowledge speakers, and older knowledge speakers rank 'fluency' different may arise. Participants may over-report or under-report their ability given what they know about other speakers in their community and how 'fluency' is defined. How or if this will impact my analysis is difficult to say, but I expect people to self-report their language ability to the best of their ability, informed by their own community's definition of 'fluency'. However, how fluency is measured in the FNRHS still faces issues of construct validity due to this approach.

Outcome variables: A) Wellness Outcomes, B) suicidal thoughts and C) suicidal actions

A) Wellness Outcomes

I use six self-rated wellness outcomes to examine different aspects of a wholistic framework of wellness. "Wellness" is conceptualized as mental, physical, emotional, and spiritual health in the FNRHS.

Wellness outcomes included: 1) General Wellness, 2) General Mental Health and Wellness, 3) Physical Balance, 4) Emotional Balance, 5) Mental balance and 6) Spiritual balance. Each individual outcome was modelled separately to investigate if one measure of wellness had a stronger association with language fluency. All outcome variables were dichotomous.

B) Suicidal Thoughts

In my analysis, I was unable to proceed with what I envisioned to be the ideal measure of suicidal thoughts. In the FNRHS, suicidal thoughts are recorded in four categories based on when the thoughts occurred. The categories are A) The past 12 months, B) As an adult (above 18), C) As a youth (12-17), or D) As a child. There is also a lifetime measure of having ever seriously considered suicide. Respondents can also decline to answer, or answer "I don't know". Suicidal thoughts are also measured as having "seriously" considered suicide, which I will assume to partially control for those

persons who have passive suicidal thoughts in passing but are not actively, seriously considering suicide.

I initially chose to use measure A) Suicidal thoughts in the past 12 months as a binary outcome variable for both suicidal thoughts and suicide attempts. I hypothesized this would be the best measure for suicidality because it could give an indication of the immediacy of the effect language learning could have on modifying these suicidal thoughts. Over a longer period, it could become unclear what other unmeasured factors could have influenced these thoughts including age, where a person was living, their experience in school, and so forth. To the degree that language fluency changes for an individual in the year or two prior to when they responded to the survey, the ILF variable might be measured with some error relative to the ideal construct of the period of interest. Such measurement error would have likely been minimal but not ignorable. In a completely ideal world, I would have multiple measures of suicidal thoughts over a period (in years) with which I could compare reported language knowledge. But this sort of measurement would be emotionally taxing on participants and is not how the FNRHS is collected.

Using the measurement of suicidal thoughts in the past 12 months could also help to minimize reverse causality compared to other measures. Reverse causality means that the cause (language fluency) was caused by the outcome (suicidal thoughts or suicide attempts). This could be true over longer periods of time – as someone goes through a time of immense struggle, they may turn to culture and language to heal.

However, the amount of people reporting both suicidal thoughts and suicide attempts in the past 12 months was so few that it was not possible to run analyses with adequate power. I was happy to know that in the past 12 months, so few respondents had reported suicidal thoughts or attempts. The decision was made to model suicidal thoughts and attempts over the course of a lifetime as a binary outcome. Language fluency develops slowly, so it may develop over the course of the lifetime too. This does create the possibility of reverse causation, but the need to have adequate power and run valid analyses was more important than this potential error.

C) Suicide Attempts

Suicide attempts were measured in the same intervals as suicidal thoughts. The same issue of inadequate power arose. This outcome was measured with a binary variable of having ever attempted suicide. For this variable, participants were asked if they had attempted to end their life. The variable hopefully captures people who attempted suicide but did not end up in hospital. This matters because people may attempt suicide but not need or want to access healthcare. This could be due to severity of injury, access to medical care, or fear of racist care. What matters is that participants took what they believed to be a serious attempt on their life, regardless of how 'serious' it may be framed from a biomedical standpoint.

Variables on which to control for Figure 1.

According to the analysis using DAGitty, for the models of the causal effects of language fluency on suicidal thoughts and suicidal attempts (Figure 1), I must control for colonization, age, reclamation, participation in other cultural activities, and feeling close to culture. I consider each of these variables one by one in the follow section.

Controlling for colonization

Colonialism is felt by every person within Canada. This assumption is supported by critical literatures that detail colonialism as a pervasive structure that is entrenched in the daily lives of all people (Brown et al., 2012; Czyzewski, 2011), Indigenous or otherwise. While settlers or other communities may feel the effects of settler colonialism on their lives, the health effects of colonialism for Indigenous people are amplified because colonialism was perpetuated against them. It was intentional, and the harm that has resulted from colonialism is a centuries-long story of genocide. Colonialism creates a dispossession to self, land, and language, what Brown et al. refer to as "spaces of exclusion" (Brown et al., 2012).[4]

The causal model depicts no variability across the respondents because every person in the survey experiences the same magnitude of colonialism. The node for colonialism is conditioned because there is no variability, and no difference in the

[4] Please refer to section 1.1 for a more detailed account of colonialism and how the relationship to Indigenous health is understood in this work.

measurements between participants. Whether or not controlling the variable closes the backdoor path entirely was determined by analysis of the DAG and thus assumes that the DAG is written correctly.

There are limits to this assumption. Each Indigenous person and community is unique and has many factors and identities that create who they are. Through a lens of intersectionality, it could also be assumed that there is variability across people in their experiences of colonialism. Thus, these identities must be conditioned on to truly control for colonialism.

I will explain my positionality informed by my experiences and my discussions with Elders. It may fall outside of academic conventions. In short, I see colonialism as the base of a pyramid from which many different oppressions have resulted. So, the effects of colonialism are felt by everyone, and the different experiences one may face based on intersectionality may be a result of colonization. Colonialism disrupted gender norms and respectful relations between men, women, and two-spirit people. Colonialism changed perceptions on neurodiversity from gifts to disease. Colonialism created systems of capitalism that lead to poverty. Stories I have been told explained that greed and excess are antithetical to more traditional ways of life. Colonialism is an omnipresent weight in the lives of Indigenous people, and when you are surrounded by it on all sides, it is darkness from any angle. I will re-emphasize that my interpretation as outlined is relevant to my work at this time. How Indigenous people from different positionalities experience colonialism is equally valid and throughout time, I might learn more that changes my perspective.

Controlling for age

As time passes, a person may be more involved in learning their language, even if their experience with language is only through novel exposures or learning basic words (such as Hello or Goodbye). This set of the FNRHS survey interviewed people aged 18 and above, who are categorized by the FNRHS as being adults. Older adults (aged 55 and older) have a higher degree of language fluency compared to younger adults (aged 18-54) in the RHS data. These two categories represent 26% of total respondents, but 35% of older adults can speak and understand an Indigenous language at an intermediate to fluent level, compared to only 5% of adults. Older adults may have had more first-hand exposure to language through their parents and grandparents. Certain

age groups have higher rates of suicidal thoughts and attempts. Age could also influence how “well” a person feels in different aspects both positively and negatively. For models of suicide attempts a 3-level categorical variable of age was created. For all other models, a 5-level categorical variable was created. Controlling with the 5-level age variable in the model of suicide attempts resulted in the model estimation procedure not converging.

Controlling for feeling close to culture

Feeling close to community is one way in which reclamation is enacted. By reclaiming Indigenous identity, a person may feel closer to their community or family. When a person feels more in touch with their Indigenous identity, they will be more likely to engage in cultural activities and may choose to engage with language learning to strengthen their identity/connection to their home community. Brown et al. (2012) posit that part of feeling close to a culture is like feeling close to your specific community. However, some respondents may feel close to another community, but the survey question specifically asks about respondents’ sense of belonging to their ‘local’ community. I believe some respondents may not feel close to their actual geographic home community but have a strong sense of belonging within a chosen family/community, feel closer to an urban Indigenous community, or feel close to their culture in another way not captured in the survey data. As such, I hypothesize that the FNRHS data available to control for confounding by feeling close to culture will cover most people. Nonetheless, persons who feel closer to another, ‘non-local’ community not captured in a survey question will likely cause a bias away from the null. The residual confounding will likely cause a bias away from the null. This is because the promotion of wellness that is felt from being close to another, non-local community will not be controlled for and will overestimate the effect of language knowledge on wellness.

Controlling for participation in other cultural activities

Engaging in other cultural activities or traditional lifestyles can promote reclamation of an identity which is related to the central topic of my research. Participating in cultural activities also promotes aspects of wellness in all domains (Hodge & Nancy, 2011; Kirmayer et al. 2007; Oster et al. 2014), and some cultural activities may promote wellness more than others depending on the community or respondent. Learning about food sources, for example, could also increase Indigenous

language knowledge as a person learns the names of traditional foods, gathering places, or meals.

I have chosen to have a few variables available in the FNRHS to measure a respondent's participation in cultural activities. They include 1) using/harvesting traditional foods, 2) hunting 3) trapping, 4) fishing, and 5) using traditional medicines. Each of these variables are measured in the past 3 months, and the use of traditional medicine was measured in the past 12 months. Trapping is an important cultural activity, but very few participants reported trapping in the past 3 months. Ideally, each variable would be included separately in the data and analysis so relationships with each specific variable can be modelled and analyzed. Due to the distribution, the variable was causing convergence errors in the model estimation procedure. Trapping was collapsed with the hunting variable as they were similar (harvesting animals traditionally). If participants reported trapping or hunting in the past 3 months, they were included in the analysis as reporting "yes" to the question.

I also included participants' self-reported participation in community events. I used this variable to create a three-level variable measuring different degrees of engagement for all models except for general health. For the general health model, I created a binary variable as a log-likelihood error occurred. I checked to ensure it was this variable by running a descriptive statistics on which I used to create a variable for three levels of engagement for all models except for general health. For this model, I had to use a binary variable as a log-likelihood error occurred. I checked to ensure it was this variable by running a procedure to measure the number of participants in each cell in the model, and the cell sizes in the general health model were too small.

Controlling for reclamation

The causal effect of reclamation will be partially blocked through controlling for "feeling close to culture" and "participating in other cultural activities," which has been explained above. Part of the casual effect of reclamation will also be controlled through language fluency. Thus, the backdoor path through reclamation will not be entirely blocked by the control variables in the model. There was no specific measure of "reclamation" within the FNRHS, and no amount of proxy variables could control for it entirely. Based on literature, there is an assumption that people with "reclamation" of an identity will also be more likely to have higher measures of Indigenous language use and

holistic wellness, and potentially lower measures suicidal thoughts and actions. Thus, this inability to control the node will theoretically lead to a bias away from the null in the estimates of the magnitudes of the causal effects of language fluency on the outcomes. In crude models, the collective effect of all the confounders including reclamation will be uncontrolled for. The adjusted model will reduce the confounding effect of reclamation somewhat, but not entirely, meaning there will still be a bias away from the null due to reclamation.

Variables on which to control in the Wellness models (Fig 2).

Controlling for age: As someone ages their sense of feeling well and in balance in certain aspects may change. While physical wellness may change based on older age, an older person may also feel more spiritually or emotionally in balance as they reflect on their life. Therefore, I will control for age.

Controlling for colonialism**:** See explanation used for Figure 1.

Controlling for feeling close to culture: See explanation used for Figure 1.

Controlling for participation in other cultural activities. See explanation used for Figure 1.

Controlling for reclamation. See explanation used for Figure 1.

Statistical Methods

To explain causal inference in detail is beyond the scope of this thesis but working knowledge of this method is necessary to fully engage with the results. In addition to some sources I have used, I will provide a brief overview of the method. For readers unfamiliar with the counterfactual framework of causal inference, the works of Hernán and Robins (2020) provide a detailed overview that I have found to be consumable as someone who struggles with mathematical fluency.

In causal inference, the object of modeling is not to draw conclusions simply about the existence or not of a causal relationship. Rather, a causal effect is conceptualized as something with magnitude and the object of modeling is to estimate

the magnitude of the causal effect of one perceived aspect of reality on another. Conceptually, a causal effect is the magnitude of differences that would be seen in a target population in the distributions of the outcome variable under different conditions defined by levels of the exposure variable. For example, the differences in the distribution of wellness that would be seen under the condition of everyone having a very high degree of language fluency compared to what would be seen if everyone had a very low degree of language fluency. Causal effects are measured in effect estimates (for example odds ratios), which show the magnitude of difference a cause has on the distribution of an outcome variable, in either the positive or negative direction.

When using causal inference, data is manipulated to create counterfactual scenarios, in which the distributions of outcomes among individuals with a particular value of the exposure variable are used to represent what the distribution of outcomes (wellness, suicidality) would be if everyone in the target population had that value of the exposure variable (for example, high and low levels of language knowledge). The differences in the estimated population distributions in these different counterfactual scenarios is defined as the magnitude of the causal effect of the exposure variable on the outcome variable.

Causal inference depends on controlling for confounding to be valid – that is to adjust the analysis for differences in the outcome distribution within levels of the exposure variable that are due to things other than the exposure variable. Things that need to be adjusted are those things that have both causal effects on the outcome (thus leading to changes in the outcome distribution) and causal effects on the exposure variable (thus leading to difference distributions of the confounder within levels of exposure). That is the rationale for the technique of using DAGs to develop models.

Statistical Procedures

To estimate the total causal effect of language fluency on the outcome variables, logistic regression modelling within the framework of causal inference was completed. SPSS v 28 was used, with the Complex Samples – Logistic Regression (CSLOGISTIC) command used to complete analyses. First Nations Health Authority had a pre-defined sampling plan to use with the CSLOGISTIC command that would create appropriate

weighting for the sample. CSTABULATE was the command used to determine un-weighted sample sizes (n).

Odds Ratios (ORs), 95% Confidence Intervals (CIs), and p-values were generated for the effect of language fluency on each outcome variable. In this analysis, my committee and I took the approach discussed by Amrhein, Greenland & McShane (2019) who call for an end to the narrowly defined range of statistically significant results based on p values less than or equal to 0.05 and CIs that do not cross zero. We are not claiming that all results are strong associations, rather that a p-value should not be the sole basis for determining if a result is significant.

Table 1 shows the frequencies for all variables used in the analyses. Tables 2 through 8 show the crude and adjusted associations between language fluency and wellness. Participants with missing data in any variable were automatically excluded from the model by selection through the guided user interface (GUI) in SPSS. Crude models were adjusted to produce the same amount of missing people by re-writing the language variable (Language3) to be missing if any covariates had missing data in a separate data file. A frequency procedure was run on both crude and adjusted models to ensure the new variable ran correctly and produced the same sample size for each outcome variable.

Results

I report results for all quantitative models, including confidence intervals (CIs), crude odds ratios (ORs), adjusted odds ratios (AORs), and two-sided p-values. The variables for which each model was conditioned for are noted beneath each table. In the crude models, the collective effect of all confounding variables is included in the result. In the adjusted models, the confounding variables are controlled for except for one remaining pathway from reclamation to the outcomes (refer to DAGs). The results must be interpreted with this in mind, as there is a residual causal effect of reclamation on the outcomes away from the null.

There is an additional influence on the interpretation of my results which is explained clearly by Amrhein, Greenland & McShane (2019) in their article about statistical significance. Their argument is that there is a reliance on the use of p-values

as the most important factor in determining statistical significance, and without the right p-value (typically below 0.05) the results are not significant. The use of p-values as the deciding factor on analyses can lead to the other results being inappropriately accepted or dismissed as ‘significant’. For example, a p-value of 0.001 is statistically significant, but what if the confidence interval spans 1.01-2.00? The near-null value of 1.01 is compatible with the data. A very precise estimate of .99-1.01 may be dismissed due to a p-value larger than 0.05, but the interval indicates strongly that there is no association. The authors refer to confidence intervals as ‘compatibility intervals’, but I will use confidence intervals for the sake of clarity. The results of an analysis are compatible, 95% of the time, with the values in that interval. 5% of the time, the confidence intervals do not span the parameter being estimated. Outside of this 95% confidence interval, the results are incompatible with the data.

The sample of individuals responding to survey is not perfectly representative of the entire population of First Nations persons living on reserve in BC. To say that the association is perfect is not true because the sample isn’t representative. The results will span the parameter being estimated in 95% of samples (19/20 times), with the association in the sample being estimated. 5% of time it will not. Given all the unknowns in the model, including the uncontrolled causal effect of reclamation, the results can also not be considered unbiased. The influence of different kinds of bias are discussed below under ‘Limitations”.

The results reported are from the adjusted models and specific unadjusted models. All confidence intervals for adjusted models span the null value, so the many of the results are ambiguous. The reference group for all models are those with no reported language fluency and those with only a few words of language fluency.

After adjusting for all covariates, the odds of feeling in balance spiritually all of almost all of the time among those with basic language fluency were 0.803 to 1.424 times the odds among those with no fluency or a few words (OR 1.070, 95% CI 0.803-1.424, p=0.589). Those with intermediate to full fluency, the odds were 0.788 to 1.543 times the odds among those with no fluency or a few words (OR 1.102, 95% CI 0.788-1.543, p=0.256) (Table 5).

After adjusting for covariates, the odds of feeling in balance mentally all or almost all of the time among those with basic language fluency were 0.788 to 1.383 times the odds among those with no fluency or a few words (OR 1.044, 95% CI, 0.788-1.383, p=.676). Among those with intermediate or better fluency, the odds were 0.707 to 1.328 times the odds among those with no fluency or a few words (OR 0.969, 95% CI 0.707-1.328, p=.793) (Table 3).

After adjusting for all covariates, the odds of reporting mental wellness (in general) as good, very good or excellent among those with basic fluency were 0.637 to 1.272 times the odds among those with no fluency or a few words of fluency (OR 0.900, 95% CI 0.637-1.272, p=0.556). For those with intermediate or better fluency, the odds were 0.509-1.080 times the odds among those with no fluency or a few words of fluency (OR 0.742, 95% CI 0.509-1.080, p=0.173) (Table 6).

The results of ILF on emotional balance are similar to other models on the four aspects. After adjusting for all covariates, the odds of reporting being emotionally balanced almost all or all of the time among those with basic fluency is 0.819 to 1.477 times the odds among those with no fluency or a few words of fluency (OR 1.100, 95% CI 0.819-1.477, p=0.472). For those with intermediate fluency or better, the odds were 0.725 to 1.340 times the odds among those with no fluency or a few words of fluency (OR 0.986, 95% CI 0.725-1.340, p-0.812) (Table 4).

Even self-reported physical balance is positively associated by language fluency. After adjusting for all covariates, the odds of reporting feeling physically in balance almost all or all of the time among those with basic fluency is 0.853 to 1.474 times the odds of those with no fluency or a few words of fluency (OR 1.121, 95% CI 0.853-1.474, p=0.393). For those with intermediate or better fluency the odds were 0.703-1.324 times the odds among those with no fluency or a few words of fluency (OR 0.965, 95% CI 0.703-1.324, p=0.945) (Table 2).

For results related to suicidality, a confidence interval that is mostly below 1 means that the odds are reduced. This would align with the proposed hypothesis and a reduction in odds of suicidal thoughts or attempts compared to the reference group.

When all covariates are adjusted for, the odds of having ever attempted suicide during the lifetime among those with basic language fluency is 0.591 to 1.186 times the

odds of those with no fluency or a few words of fluency (OR .837, 95% CI 0.591-1.186, p= 0.313). For those with intermediate or advanced fluency the odds were 0.779 to 1.704 times the odds among that same reference group (OR 1.152, 95% CI 0.779-1.704, p=0.474) (Table 8).

Once all covariates are adjusted for, the odds of having ever had serious suicidal thoughts across the lifetime among those with basic language fluency is 0.771 to 1.446 times the odds of those with no fluency or a few words of fluency (OR 1.056, 95% CI 0.771-1.446, p=0.733). For those with intermediate and advanced fluency, the odds were 0.784 to 1.548 times the odds in the same reference group (OR 1.101, 95% CI 0.784-1.548, p=0.575) (Table 9).

Once all covariates are adjusted for, the odds of reporting good, very good, or excellent health (in general) among those with basic fluency was 0.906 to 1.595 times the odds of those with no fluency or a few words of fluency (OR 1.202, 95% CI 0.906-1.595, p=0.119). For those with intermediate or better fluency, the odds were 0.800 to 1.432 times the odds of participants with no fluency or a few words of fluency (OR 1.070, 95% CI 0.800-1.432, p=0.644) (Table 7).

I will report on the results of four unadjusted models for which there are statistically significant results. The four models fall in to three respective categories which I will use to organize this section of the results. First, Table 5, which shows the odds of feeling in balance spiritually most or all of the time among those with intermediate or better fluency was 1.380 to 2.447 times the odds of those with no fluency or a few words of fluency (OR 1.837, 95% CI 1.380, 2.447, p=<.001).

The second two models are group because the CI ranges from being close to the null value to a significant positive change in odds compared to the reference group. In the unadjusted model on feeling in mental balance most or all of the time among those with intermediate or better fluency the odds were 1.016 to 1.333 times the odds of those with no fluency or a few words of fluency (OR 1.327, 95% CI 1.1016-1.733, p=0.038) (Table 3). In the unadjusted model on feeling in emotional balance most or all of the time among those with intermediate or better fluency the odds were 1.036 to 1.736 times the odds of those with a few words of fluency or no fluency (OR 1.341, 95% CI 1.036-1.736, p=0.026) (Table 4).

The final unadjusted model is statistically significant, and the CI is less than the null value but spans from significant reduction in odds to a near null value compared to the odds of those with no fluency or basic fluency. In the model on self-reported wellness, in general, being good, very good, or excellent among those with intermediate or full fluency the odds were 0.557 to 0.981 times the odds of those with no fluency or a few words of fluency (OR 0.752, 95% CI 0.557-0.981, p=0.036) (Table 7).

Table 1: Frequencies for all variables

Variable Name	Variable Name in the Data	Variable Value	N	%
Language Fluency	Language3	No Knowledge, knows a few words.	1143	50.7
		Basic fluency	633	27.7
		Intermediate/Fully fluent	696	21.6
Suicidal Ideation (lifetime)	SIEver2	No	2216	77.5
		Yes	671	22.5
Suicide Attempts (lifetime)	SAEver2	No.	2431	83.5
		Yes	497	16.5
Self-reported Physical Balance	PhysicalBalance2	None of the time, almost none of the time, or some of the time.	998	33.2
		Most of the time or all of the time.	1947	66.8
Emotional Balance	EmotionalBalance2	None of the time, almost none of the time, or some of the time.	924	31.8
		Most of the time or all of the time.	2022	68.2
Mental Balance	MentalBalance2	None of the time, almost none of the time, or some of the time.	798	28.1
		Most of the time or all of the time.	2123	71.9
Spiritual Balance	SpiritBalance2	None of the time, almost none of the time, or some of the time.	840	30.1
		Most of the time or all of the time.	2064	69.9
	HealthBin2	Poor or fair.	1010	30.1

Variable Name	Variable Name in the Data	Variable Value	N	%
Self-reported general wellness is…		Good, very good, or excellent	1989	69.9
Self-reported mental wellness is…	MentalHealthBin2	Poor or fair.	534	18.2
		Good, very good, or excellent.	2468	81.8
Participation in community events (3 level)	Events3	Never	309	8.9
		Rarely/Sometimes	1935	68.4
		Always or Almost Always	754	22.7
How often do you participate in community events?	Events2	Rarely/never.	852	30.1
		Sometimes/Almost Always/Always	2146	69.9
Age (3 Levels) in years	NewAge3	18-35	715	33.6
		36-55	863	37.9
		55-97	1448	28.5
Age (5 Levels) in years	NewAge5	18-30.	497	23.4
		31-40	430	20
		41-50	394	17.7
		51-65	1056	26.2
		66-97	649	12.6
What is your sense of belonging to your local community?	Senseofbelongingfixed2	Very weak or somewhat weak	483	16.5
		Somewhat strong or very strong.	2374	83.5
Hunting & Trapping in the past 3 months (either)	HuntTrap2	Has not hunted or trapped	2527	82.7
		Has either hunted or trapped	453	17.3
Have you gathered traditional food in the past 3 months?	Gather2	No.	2346	76.4
		Yes.	634	23.6
Have you fished in the past 3 months?	Fish2	No.	2400	76.7
		Yes	580	23.3
Have you used traditional medicine in the past 12 months?	Medicine2	No.	1615	57.1
		Yes.	1368	42.9

Table 2: Relative odds of feeling in balance physically all or almost all of the time by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in BC. First Nations RHS - Phase 3, 2015-2017 (n=2407).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1108	Ref		Ref	
Basic fluency	614	1.131 (0.865, 1.478)	.365	1.121 (0.853, 1.474)	.393
Intermediate or fluent	685	1.085 (0.827, 1.423)	.544	0.965 (0.703, 1.324)	.945

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 3: Relative odds of feeling in balance mentally all or almost all of the time by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in BC. First Nations RHS - Phase 3, 2015-2017 (n=2395).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1100	Ref		Ref	
Basic fluency	613	1.129 (0.862, 1.479)	.373	1.044 (0.788, 1.383)	.676
Intermediate or fluent	682	1.327 (1.016, 1.733)	.038	0.969 (0.707, 1.328)	.793

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 4: Relative odds of feeling in balance emotionally all or almost all of the time by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in BC. First Nations RHS - Phase 3, 2015-2017 (n=2409).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1109	Ref		Ref	
Basic fluency	616	1.177 (0.880, 1.575)	.270	1.100 (0.819, 1.477)	.472
Intermediate or fluent	684	1.341 (1.036, 1.736)	.026	0.986 (0.725, 1.340)	.812

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 5: Relative odds of feeling in balance spiritually all or almost all of the time by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in BC. First Nations RHS Phase 3, 2015-2017 (n=2383).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1087	Ref		Ref	
Basic fluency	614	1.264 (0.961, 1.662)	.094	1.070 (0.803, 1.424).	.589
Intermediate or fluent	682	1.837 (1.380, 2.447)	<.001	1.102 (0.788, 1.543)	.256

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 6: Relative odds of good, very good, or excellent mental health by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in British Columbia. First Nations RHS Phase 3, 2015-2017 (n=2450).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1133	Ref		Ref	
Basic fluency	631	1.081 (0.784, 1.491)	.630	0.900 (0.637, 1.272)	.556
Intermediate or fluent	686	0.959 (0.681, 1.350)	.808	0.742 (0.509, 1.080)	.173

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 7: Relative odds of good, very good or excellent health in general by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in British Columbia. First Nations RHS Phase 3, (2015-2017) (n=2453).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1135	Ref		Ref	
Basic fluency	629	1.230 (0.935, 1.619)	.137	1.202 (0.906, 1.595)	.119
Intermediate or fluent	689	0.752 (.557, .981)	.036	1.070 (0.800, 1.432)	.644

* Adjusted for [Age, Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events (binary variable)].

Table 8: Relative odds of ever having attempted suicide by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in British Columbia. First Nations Regional Health Survey Phase 3, 2015-2017 (n=2399).

		Crude		Adjusted*	
	n	OR (95% CI)	2-sided P	OR (95% CI)	2-sided P
Language fluency					
No fluency or a few words	1108	Ref		Ref	
Basic fluency	615	0.861 (0.615, 1.206)	.382	.837 (0.591, 1.186)	0.313
Intermediate or fluent	676	1.018 (0.740, 1.400)	.911	1.152 (0.779, 1.704)	0.474

* Adjusted for [Age (3-level variable), Use of traditional medicine, gathering of traditional food, fishing, hunting and/or trapping, sense of belonging to community, and participation in community events].

Table 9: Relative odds of ever having seriously considered suicide by fluency of speaking and understanding one's First Nation language among First Nations individuals aged 18 years and older in British Columbia. First Nations RHS - Phase 3 (2015-2017) (n=2401).

		Crude		Adjusted*	
	N*	OR (95% CI)	2-sided P*	OR (95% CI)	2-sided P*
Language fluency					
No fluency or a few words	1084	Ref		Ref	
Basic fluency	631	1.110 (0.818, 1.507)	.499	1.056 (0.771, 1.446)	0.733
Intermediate or fluent	686	1.065 (0.806, 1.407)	.656	1.101 (0.784, 1.548)	0.575

* Adjusted for [Language3, NewAge5, Medicine2, Gather2, SenseBelongingFixed2, HuntTrap2, Events3, Fish2[a]].

Discussion

This research examined the role Indigenous language knowledge has on wellness. The wellness-promoting effects of language have been documented in theoretical, qualitative, and limited quantitative literature, but have not been examined to the degree of detail in this study. This research also utilizes a culturally engaged quantitative data source, which adds to the cultural validity of the results.

We expected to see language having a positive causal effect on wellness indicators and reducing odds of reporting suicidal ideation and attempts. Models for spiritual, mental, and emotional balance emerged as having results compatible with a

meaningful, positive improvements. This was true for those with both basic and advanced degrees of language fluency/knowledge. This was not surprising, based on the numerous literary sources that have documented this relationship (Brown et al., 2012; Castellano, 2016; Taff et al., 2018). The upper limit of the CI suggests there could be positive associations between language knowledge and wellness for all four aspects of health, but the lower limits would indicate an inverse relationship between language knowledge and wellness. This seems unlikely given other literature that supports the connection between language and wellness (Chandler & Dunlop, 2018; Oster et al., 2014; Whalen et al., 2016). There is still much to be learned about the importance of language on each aspect of health, and the results for advanced ILF demonstrate the potential for positive, negative, or null effects. This is an interesting phenomenon worth further investigation. What other factors may be at play for advanced language learners in similar populations that could modify their experiences of wellness and feeling in balance? I suspect that the weight of carrying such language knowledge that is at risk for loss could be very stressful. Additionally, there are systematic barriers to accessing culture that could also decrease feelings of wellness and lead to feelings of hopelessness. So, perhaps it is not that language leads to feeling less well or having suicidal thoughts (as some results from the confidence interval may suggest). Rather, perhaps the colonial processes in place that create barriers to accessing culture and the stress of lack of access to one's culture could be influencing the experience of this population.

The results for models on suicidality demonstrate that language, even at a basic level, could have beneficial causal effects on the lifetime odds of experience suicidal thoughts or attempting suicide. The width of confidence intervals could indicate both a strong reduction in suicidality, while the upper limit could show some relationship between language knowledge and increased suicidality. There is also the possibility that no strong association exists in either direction. This latter link between language knowledge and suicidality seems unlikely given studies that posit language as protective against suicide, including the use of culture/language in Indigenous suicide prevention models (Wise Practices, 2020). In terms of suicidality in particular, cell sizes for more recent measures of the outcome were low, which precluded modeling this outcome. Studies that have access to larger sample sizes would be beneficial in modelling this relationship with more validity and precision. For my study, I am fine with there being so

few people reporting suicide attempts or suicidal ideation that I had to run a model using a life-time measure.

The interpretation of the crude results for all models are fascinating when considering the role of the unadjusted causal effect of reclamation on the models. In the crude models, the causal effects of reclamation are only partially mediated through language. Additional pathways theoretically include participation in cultural activities, feeling close to culture, and additional non-specified pathways. In adjusted models, I was unable to control for confounding by reclamation so chose partial control by including measures of participation in cultural activities and feeling close to culture. Thus, in unadjusted models language fluency can be thought of as a proxy variable for reclamation and thus capturing in its associations with the outcomes the causal effects through all the mediating pathways downstream from reclamation (albeit still confounded by age).

In this framework of interpretation, we can interpret the crude associations of language fluency on outcomes as the associations of a proxy for reclamation with outcomes (confounded by age). It is notable that in crude models, I observed statistically significant positive associations between intermediate or fluent language fluency and emotional, mental and spiritual balance. With the caveat that these associations are confounded by age, these results are consistent with my hypothesis that reclamation of Indigenous culture and identity have beneficial emotional and spiritual effects. An unexpected result among the crude models was a statistically significant negative association between intermediate or fluent language fluency and good or very good general health, which I discuss more below.

There is no way to determine exactly how much of a causal effect reclamation exerts on ILF and other confounders versus how much of a causal effect reclamation has on the outcomes through uncontrolled pathways without a measure of reclamation to include in mediation analysis. In adjusted models of language fluency on outcomes, reclamation is partially controlled by measures of participation in cultural events and feeling close to one's culture. Part of the causal effect of reclamation on outcomes is controlled through these measures – but there still exists some uncontrolled confounding by reclamation in the associations between language fluency and outcomes. The

adjusted results, therefore, are all theoretically biased away from the null to some degree due to residual confounding by reclamation.

Future studies could benefit from a measure of reclamation not only to allow better control for confounding in models of specific aspects of reclamation on health outcomes, but also to focus on the health and wellness promoting effects of reclamation itself write large and to conduct mediation analyses to understand better the relative magnitude of causal effects through downstream pathways. I've considered how, moving forward, the concept of reclamation may be measured more fully to include in analyses. I believe the idea of reclaiming and feeling close to one's identity can truly modify wellness. In surveys like the RHS, questions on how close one feels to their own perception of culture, their own identity as an Indigenous person, and how strong that connection is could all measure part of how I and other scholars conceptualize 'reclamation'. A part of reclaiming an identity is spiritual, which is more difficult to conceptualize and measure. Is it possible to measure the feeling of coming home to yourself, or where you are on that journey?

Although interesting, the results for the adjusted models do not significantly change our understanding of the causal effect language has on these outcomes. Most results span through CI's that suggest a significant harmful effect, a null effect, and a significant positive effect. This problem is due to precision. This lack of precision means the results cannot be rejected as evidence of there being no association between ILF and the outcomes. One way to mitigate this in future analyses would be to use a larger sample size from the same source population. Possible options could be to pool the participants from other FNRHS's collected in previous years, either regionally or nationally. By pooling FNRHS data, this would ensure the results remain culturally sensitive.

Some of the results, both adjusted and unadjusted, have CI's where one limit is quite close to the null value. Examples from the adjusted results are those with intermediate or better fluency on the outcome of self-reported mental wellness and those with basic fluency on the outcome of lifetime suicide attempts. These results are more suggestive of a causal relationship in the direction of the confidence interval limit that is farther away from the null, rather than the complete ambiguity of results that span a meaningful change in odds compared to the reference group in either direction. But the

results remain ambiguous (even in the presence of statistical significance) whenever the confidence interval limit closer to the null contains values of association that, albeit not crossing the null value, are not meaningful from the viewpoint of health and wellness promotion. Pooling data from previous cycles of the FNRHS or utilizing national data would be an appropriate next step to try to reduce the ambiguity in modeling results.

As mentioned above, an unexpected result among the crude models was a statistically significant negative association between intermediate or fluent language fluency and good or very good general health. This was particularly surprising not only based on my expectations, but also in contrast with statistically significant positive crude associations between intermediate or fluent language fluency and emotional, mental, and spiritual balance. I tested a hypothesis that these crude associations might be explained, in part, by confounding by age. I anticipated that older individuals would have higher prevalence of intermediate or fluent language fluency based on my background knowledge. It is also rational that older people may report being in poorer general health (due to aging or physical decline), but may also report feeling in balance spiritually, emotionally, or mentally in their older years. This could account for the disparate results observed in crude models between language fluency and outcomes which were confounded by age. I spoke with my supervisor who suggested I analyze the associations between age and 1) language fluency and 2) each of the outcomes in these models. With enough time, one option forward would be to model each of these causal relationships again and stratify by age. I have provided the crosstabs results below on the distribution of participants by age by their responses to questions on language fluency, the sense of balance of emotional, mental, and spiritual wellness, and self-reported health (in general) (Tables 11-14).

As expected, intermediate and higher language fluency compared to basic or less fluency was reported by more older adults, especially Elders aged 70 and over (Table 10). This was a strong association, with 68% of individuals aged 70 and over reporting intermediate or fluent language fluency compared to only 6% among those aged 18-29. Amongst the outcome variables, the pattern of associations with age combined with the observed positive association between age and language fluency supported my hypothesis that confounding by age could account for the positive crude associations between Indigenous language fluency with emotional and spiritual balance and unexpected negative association with general health (Tables 11-14). A large

proportion of older adults report feeling spiritual, mental, and emotional balance and a smaller proportion reported their general wellness as good, very good, or excellent.

The above analysis not only gives an account of the reason for an unexpected result in the crude association between Indigenous language fluency and general health, but it also represents a picture of spiritual, emotional, and mental resilience in a context of colonial violence. This view suggests another analysis of these data, which is to investigate whether the magnitudes of the benefits of Indigenous languages on health and wellness outcomes might differ among those who are older or younger. This could be analyzed using stratification of models by age or the inclusion of variables for the interaction of age and language fluency.

Table 10: Indigenous language fluency by age (n=2472)

		Three level language combined speaking and understanding			
		No fluency/Few words	Basic Fluency	Intermediate/Full Fluency	Total
Age (years)	18-29	206 (63%)	103 (31%)	19 (6%)	328
	30-39	223 (62%)	107 (30%)	32(8%)	362
	40-49	171 (53%)	102 (32%)	50 (15%)	323
	50-59	283 (50%)	154 (27%)	127 (23%)	564
	60-69	202 (35%)	123 (21%)	250 (43%)	575
	70+	58 (18%)	44 (14%)	218 (68%)	320
Total		1143	633	696	2472

Table 11: Sense of spiritual balance by age (n=2904)

		Feeling in spiritual balance almost all or all of the time		
		No	Yes	Total
Six categories of age	18-29	149 (37%)	259 (63%)	408
	30-39	145 (34%)	278 (66%)	423
	40-49	131 (34%)	252 (66%)	383
	50-59	182 (28%)	467 (72%)	649
	60-69	164 (24%)	519 (76%)	683
	70+	69 (19%)	289 (81%)	358
Total		840	2064	2904

Table 12: Sense of emotional balance by age (n=2946)

		Feeling in emotional balance almost all or all of the times		
		No	Yes	Total
Six categories of age	18-29	154 (36%)	271 (64%)	425
	30-39	149 (35%)	282 (65%)	431
	40-49	137 (36%)	248 (64%)	385
	50-59	211 (32%)	446 (68%)	657
	60-69	187 (27%)	501 (73%)	688
	70+	86 (24%)	274 (76%)	360
Total		924	2022	2946

Table 13: Sense of mental balance by age (n=2930)

		Feeling in mental balance almost all or all of the time		
		No	Yes	Total
Six categories of age	18-29	132 (31%)	290 (69%)	422
	30-39	136 (32%)	294 (68%)	430
	40-49	120 (31%)	263 (69%)	383
	50-59	173 (27%)	477 (73%)	650
	60-69	161 (24%)	523 (76%)	684
	70+	76 (21%)	285 (79%)	361
Total		798	2132	2930

Table 14: Self-reported wellness (in general) by age (n=2999)

		Self-reported general health is good, very good, excellent		
		No	Yes	Total
Six categories of age	18-29	91 (20%)	354 (80%)	445
	30-39	96 (22%)	341 (78%)	437
	40-49	109 (28%)	278 (72%)	387
	50-59	274 (41%)	399 (59%)	673
	60-69	287 (41%)	406 (59%)	693
	70+	153 (42%)	211 (58%)	364
Total		1010	1989	2999

Limitations

I will provide a very brief overview of precision and bias as it relates to this study so the limitations can be understood. A reduction in the precision of an analysis is due to an increase in random error. In causal inference, this random error is primarily caused by random variability due to the vagaries of sampling. You get who you get in a study and each time you draw a sample of people it usually will not perfectly represent the underlying population from which it has been selected. As such, the results of models would be different in each sample, but on average the results you would find in an infinite number of repeated samples will match the results you would find if you ran your models with data from a census of the entire underlying population from which you are sampling (assuming of course there is no bias in your models). Here I am conducting an analysis using a single sample of individuals and so we know that random sampling error is present in the models.

Bias means that the associations observed on average in an infinite number of samples drawn from a population would not match the associations that would be observed in the entire underlying population with perfectly measured information. Bias can result from different mechanisms, but major types of bias include selection and information biases. Confounding can also be considered a type of bias, but I have already described confounding in the discussion section above.

Selection bias occurs when there is an imbalance in the probability of sampling for individuals within crossed levels of the exposure and outcome variables in a model. Thus, selection bias is model specific, not sample specific. For my analysis I used FNRHS data, which was generated using a stratified random sampling methodology that should theoretically be free of selection bias relative to the sampling frame. It is plausible that those who have better wellness might have been more likely to participate in a survey when invited, but it doesn't seem plausible that this tendency would differ by language fluency. And in the same way, it does not seem likely that any differences in the likelihood of participation due to Indigenous language fluency would differ according to wellness. Thus, selection bias does not seem to be a major concern in this analysis.

Information bias occurs whenever there is error in the measurement of the exposure and/or outcome variables in a model. Measurement errors in variables used to

control for confounding can lead to residual confounding despite control within the model. With categorical variables that classify individuals as belonging to a particular level of measurement, such as those I used in my analysis, measurement error is also referred to as misclassification. Theoretically, there are two types of misclassification: differential and non-differential. Non-differential misclassification of exposure occurs when misclassification of exposure is equal among those with or without the outcome. Non-differential misclassification of outcome occurs when misclassification of outcome is equal among those with or without the exposure. Differential misclassification of exposure or outcome occurs when these are not equal among levels of outcome (for exposure misclassification) or exposure (for outcome misclassification). Assuming no misclassification of variables used to control for confounding, non-differential misclassification leads to a bias toward the null in models and differential misclassification leads either to bias away from or toward the null. Theorizing which direction bias has in the presence of differential misclassification requires more thought but can often be hypothesized.

As bias relates to this study, the outcome variables may have been more susceptible to measurement error. For example, participants might have felt uncomfortable disclosing past or present suicide attempts or suicidal ideation. It seems unlikely that this would have differed by language fluency, so if present this would have been non-differential misclassification of outcome in the models of suicide attempts or ideation. Measures of wellness might have had misclassification due to participants wanting to present themselves as feeling better than they actually did, much in the same way as people often answer “fine” when asked “how are you doing?” despite their true feelings. Again, it seems unlikely that such misclassification if present would have differed by language fluency. Thus, such misclassification of outcome would also be non-differential. As for the exposure variable, I would not expect a lot of misclassification in self-reported language fluency. Overall, I hypothesize that all misclassification in this analysis was non-differential and would lead to bias toward the null.

This study was limited by the cross-sectional nature of the data. Measurements of both exposure and outcomes were taken at one point in time and therefore the possibility of reverse causality cannot be eliminated. Reverse causality is also plausible in several of the models. In the models for wellness, for example, there is a possibility

that feeling more well or in balance in the four aspects may give a person sufficient energy and motivation to want to practice their language. On the other hand, a person might be motivated to learn their language as an antidote to feeling less well or in balance in the four aspects. In the models on suicidality, a person may feel more compelled to learn their language as a connection to others or feel completely unable to learn their language because of their suicidal thoughts. As such, if reverse causality exists in these models, it is difficult to theorize the direction of effect on the model results. Further, the causal effects of learning a language on wellness may take time to manifest and so these cross-sectional data might fail to reflect the future benefits someone might have as a result of their present level of language fluency. This would most likely cause these models to underestimate the benefits of language on wellness if our theories of the beneficial effects are correct.

A second type of limitation with these data relevant to my study is construct validity. This is particularly relevant for measures of Indigenous language knowledge, reported as language “fluency” in the RHS. I have already explained the different ways to understand ‘fluency’ from an Indigenous context previously. From a perspective that reduces language fluency to how well an individual believes they can use a language to speak, understand, write, and read to others, the RHS records this information well. When understanding language knowledge from the perspective of Indigenous scholars, the RHS does not record measures such as hearing the language as a child. As such, the RHS can be improved by including these measures; nevertheless, it still provides a culturally relevant data source for this study. Additionally, I informed my use of the RHS measures with results from my key informant interviews. The results of this study are still meaningful for public health and the communities which have been surveyed.

The quantitative analysis relied on secondary data analysis, meaning there are limits associated with matching available data to concepts in the DAG. Measures available in the RHS can adequately create some of the constructs (such as participation in community events) but do not encompass every possible aspect of community engagement. Further, “reclamation” was not measured so could not be controlled in models. Because I hypothesize that reclamation would lead both to higher language fluency and better wellness outcomes, failing to control for this variable thus theoretically the results may be biased away from the null leading to an overestimation of the beneficial effects of language fluency on the outcomes. As described previously, despite

this limitation, the models support my hypothesis that reclamation in general, and language fluency specifically, have beneficial effects on wellness.

This study suggests future studies focused on reclamation could be relevant and the RHS survey could be modified to support this. Further investigation into reclamation of an identity, with questions about how survey participants view their relationship to their identity, would be beneficial in modelling the concept of 'reclamation'. Do people feel proud of who they are? Is speaking their language or engagement with other aspects of culture positive, neutral, or could it even be negative when considering colonial contexts? Understanding what strength that ownership of an identity gives to survey respondents would be beneficial in understanding the importance of being able to be 'who you are'.

Concluding thoughts

This thesis began by providing an overview of colonialism, both historical and contemporary, to provide context to the realities Indigenous people live in and how that impacts our health. An overview of literature on wellness, language learning, and the small number of studies that investigate the relationship between language and wellness outcomes provided further context to how my study positions itself amongst the existing literature. Indigenous language learning is challenging, considering both the many systematic barriers that exist due to neocolonial attitudes and few fluent speakers for some dialects. There is also the emotional labour involved with learning or relearning Indigenous languages that, through significant colonial efforts, were attempted to be eradicated. Nevertheless, language remains a significant part of First Nations culture and identification, and reclamation of language is an important part of reclaiming First Nations identity.

Using a lens of identity reclamation, this thesis utilized a mixed-method approach to model and document the role language plays in relationship to wellness and identity. Ten interviews with language learners as key participants provided insight into the many meanings and roles language takes on in their lives. Thematic analysis highlighted spiritual health, language as inseparable from DNA and self, and the importance of speaking Indigenous languages.

The qualitative findings informed quantitative analysis. Using logistic regression in the counterfactual framework of causal inference, the causal effect of language fluency on eight outcomes was modelled. The quantitative data source, the FNRHS Phase 3, provided culturally valid and meaningful data for this analysis because it is collected and centered on the needs of on-reserve First Nations communities. While the results for some models had ambiguous results, all together the results indicate the protective effect of basic to advanced ILF on outcomes in the population that was surveyed, 95% of the time. Community members had so few suicidal thoughts and attempts in the past year that my models couldn't run. Having communities that are too healthy for these outcomes is not a problem for me.

This study provides further evidence of the importance of language and adds to the lean quantitative data that models language-wellness relationships. The results are likely unsurprising to language revitalists and Indigenous communities who have been aware of the importance of language since time immemorial. This thesis honours the data provided by community members in taking this truth forward and continuing to document how vital language is to wellness and identity. This study also provides some insight to the role reclamation of identity can have in influencing wellness. Further research into identity reclamation, including how to accurately measure it, would be worthwhile.

The results of this thesis also call for further funding from all levels of government to support First Nations communities in their protected right to revitalize and protect their languages as they see fit. While Bill C-91 has provided protections and funding for Indigenous language revitalization, the effects of this Bill will take time to come into effect. For communities who are fast losing their fluent birth speakers, the lapse in time between the assent of the Bill and supports to be enacted creates a difficult situation. Government, regardless, has no place in directing how these language classes are created. Communities ought to determine how to define what language learning methods work best for them and how to define language learning metrics (such as fluency). My hope is that the communities surveyed and the key participants I interviewed may use the results of this research to further the aims of their own communities as well.

This research has shown me a lot about myself as a young Indigenous person navigating academia. I have been called to try and relearn my own languages. I learned I have dyscalculia, which made quantitative research more mentally and emotionally intensive than it was intellectually. I used to assume I was not cut out for the sciences, but I believe that brains like mine are what science needs. In the struggle to wrap my head around statistics there was an expanse of opportunity to see how I could make the statistics more relevant and digestible for community members. I felt I was able to consider not only what the data told me, but what was missing. There is so much more to analysis than reading numbers, but strong conceptual underpinnings that I thrive with. What motivated me to continue most was the people I spoke with during interviews and knowing that the results of this research would benefit Indigenous communities. I would like to use the space I have been afforded in academia to be of service to community.

I have moved beyond the idea that there will be some grand upheaval of academia and that Indigenous knowledges will receive the full respect of all settler institutions. This is not to be pessimistic, just realistic considering the legacy of colonialism in education. Rather, I know that I can make the space around me and my work one that holds this space for community, knowledges, and worldviews. There are other Indigenous scholars holding this space wholly and authentically. Together, there is a shift of both new and seasoned academics where the needs, knowledges, strengths, and truths of community are held up and honoured. The call to hold this reality is rooted in our identity as Indigenous people, and we are all very powerful.

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Appendix A.

Interview Questions

1. Tell me about the ways that your Indigenous language has played a role in your life?

2. Did you hear your Indigenous language during your upbringing? Who did you hear speak your Indigenous language?

3. Tell me about the ways that your Indigenous language has played a role with regards to your health?

4. Tell me about the story of your relationship to your Indigenous identity, and in what ways language has been a part of that journey?

5. Does language impact any aspect (physical, emotional, spiritual, mental) of your health more so than another? If so, describe that experience.

6. How important is it, from your perspective, that your Indigenous language continues to be used and spoken?

7, From your perspective, do you feel like your Indigenous language is making a comeback? What do you think is causing/preventing this?

8. Do you have opportunities to relearn/learn your language? If so, what are they? If not, what are some of the barriers they experience?

9. When you began/continued to practice your language, how did it make you feel?

Appendix B.

Where this work has been presented and awards received

University of Saskatchewan: National Gathering of Indigenous Graduate Students (June 2022).
Presentation: Indigenous Language and Wellness: A journey towards combining methodologies
Awarded runner-up for “Best Presentation – Masters Student”.

Graduate Indigenous Health Research Conference (June 2022).
Theme: Voices of Tomorrow – Indigenous mentorship
Presentation: Panel presentation on Indigenous mentorship in the academy and visions for future Indigenous health research

19th Annual Indigenous Graduate Student Symposium (IGSS) 2022.
Theme: Indigenous Empowerment and Resurgence
Presentation: Indigenous Languages and Wellness: A journey towards combining methodologies